

Leveraging technology for learning in Latino families

Findings from the Denver field site

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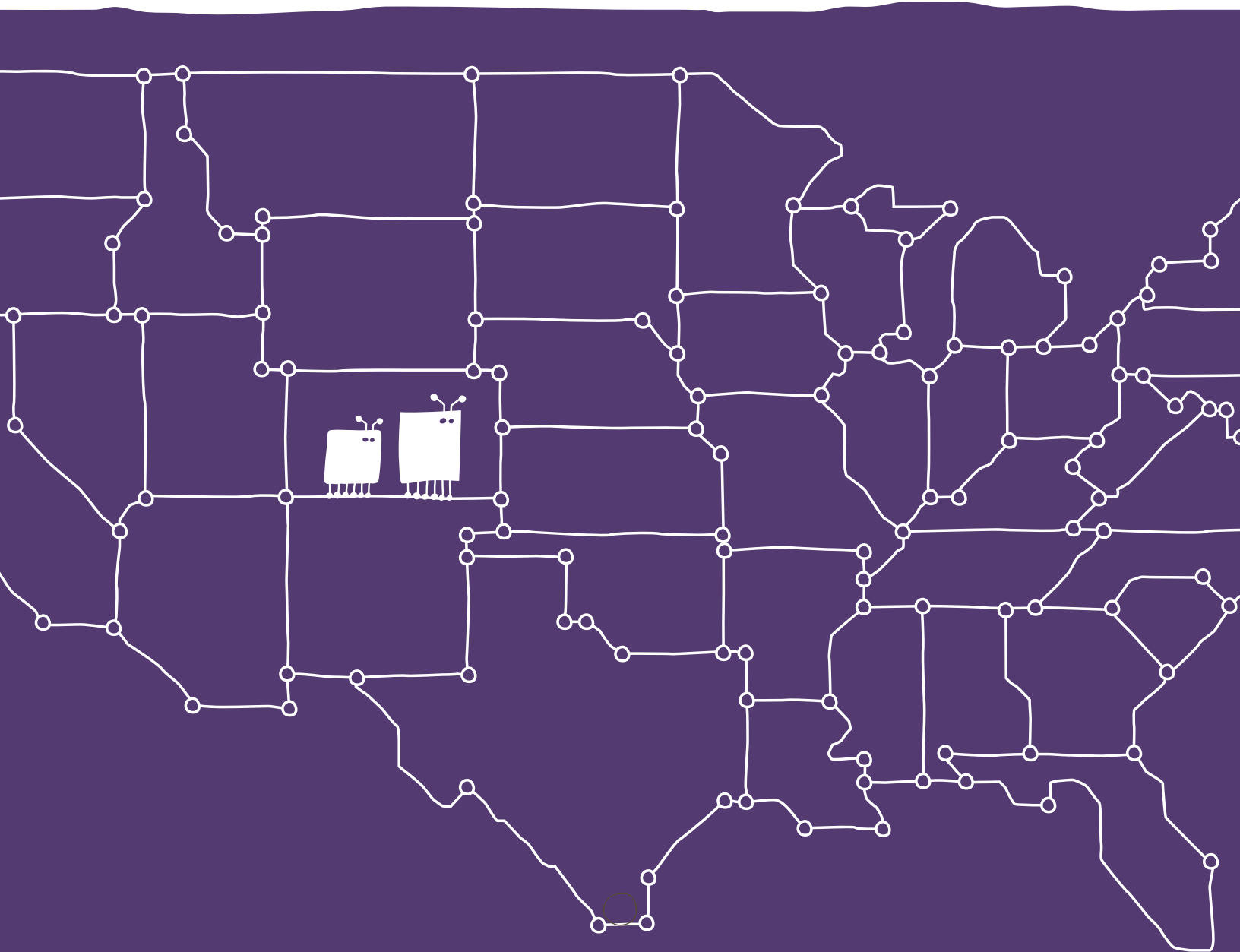
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introduction

Increasingly, broadband access and related digital technologies are being recognized as crucial to closing persistent social gaps between lower- and higher-income families. Efforts ranging from school district-level initiatives, to President Obama's repeated calls for outfitting under-served schools across the nation with high-speed Internet access via E-Rate, all draw attention to the growing linkages between students' technology-related skills, learning, and academic attainment. Similarly, research by the Social Science Research Council points to adults' growing needs for meaningful online access, given the range of information and opportunities—from health and education resources, to employment and training—available primarily or exclusively online.

Studies in the U.S. and beyond have emphasized that having broadband access at home is most strongly associated with meaningful connectedness—which refers to individuals' abilities to use the Internet broadly, intensively, and productively to achieve their own goals (Kim et al., 2004; Livingstone & Helsper, 2007; Lopez, Gonzalez-Barrera, & Patten, 2013). Connecting only at school and in public community locations is not sufficient for developing the levels of comfort and sustained use that lead to real learning gains, formal and informal, for parents and children.



Over the past 12 months, Vikki Katz (Rutgers University) has led a multi-sited study to understand how Connect2Compete—currently the only national effort to increase home-based broadband access for families with school-age children—has been implemented in three distinct localities (Chula Vista, CA, Sunnyside, AZ, and Denver, CO). The program emerged from the United States’ 2010 National Broadband Plan with the goal of providing broadband at home for \$9.95 per month, a discounted refurbished computer, and free local skills training to families with children receiving free or reduced-cost lunch at school. To roll out the initiative at scale, Connect2Compete was organized as a public-private partnership, meaning that local telecommunications companies provide discounted broadband access directly to families in school districts across the country, and in some locations, offer them the reduced-cost computers and skills training as well.

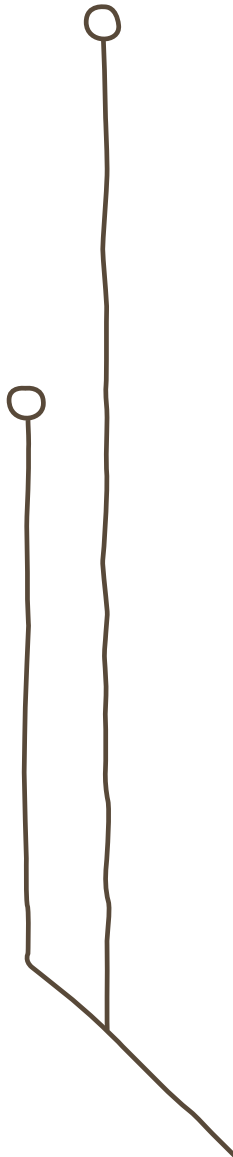
The goal of the research is to explore how different versions of the Connect2Compete program have been deployed in three school districts. The study identifies key variations among parents, children, schools, and communities that influence (1) family decisions about adopting broadband and related technologies, and (2) how these technologies are integrated (or not) into a broad range of family routines and activities. The overarching aim is to take the lessons learned from talking with families and educators to guide future efforts to tailor digital equity initiatives to the needs, interests, and concerns of low-income families. This research has been funded by the Bill & Melinda Gates Foundation.

This report summarizes findings from Denver, Colorado, the last of the three sites where the research was conducted. School districts in all three sites serve high-poverty, predominantly Mexican-heritage student populations, and all are working to encourage home-school connections through a variety of technology initiatives, with the Connect2Compete¹ program as a central element of those efforts. The research focuses on Mexican-heritage families because children of Mexican descent, born either to immigrant or U.S.-born parents, account for a full 16% of all U.S. children (Child Trends, 2012). These families also experience greater social disparities than other groups of U.S. Hispanics, as children of Mexican immigrants are more likely to grow up in poverty than any other U.S. children and to have parents who have not completed high school and who report difficulties speaking English (Child Trends, 2012; Johnson et al., 2005; Lopez & Velasco, 2011). These are families that therefore stand to gain the most from digital equity initiatives like this one.

Methods

This report summarizes findings from interviews conducted with 60 parents and 60 children attending two K-8 schools in the Denver Public School District, between September 5 and September 20, 2014. These 60 families were selected from randomized lists of all students who attended each of these schools, and school staff members at each location made recruitment calls for interviews. Families qualified to participate in interviews if their focal child was currently receiving free or reduced-cost school lunch (and therefore, qualified financially for Internet Essentials), if they identified as being of Latino heritage, and if they had Internet access of any kind at home in the prior year.

¹ While the national program is called Connect2Compete, different Internet service providers have coined different names for the offer; in Denver, Comcast’s offer is called Internet Essentials.



Of the 123 parents who were randomly contacted for interviews, one-third were not eligible to participate because their families did not have Internet access at home. Two contacted families were not eligible because their child was not receiving free or reduced-cost lunch. Among contacted families who did meet the three study criteria, 74% participated in interviews.

During the two-week study period, Katz and a bilingual, bicultural research team (including Gonzalez and Raynal, co-authors of this report) conducted in-depth, separate interviews with parents and their focal child, in their preferred location (i.e., at school or at home) and language (i.e., Spanish or English), for approximately an hour each. Parents were compensated with \$25 in cash. Younger children were given two Sesame Street computer games and older children received a \$15 iTunes gift card to use on games, apps, or music.

Parents and children answered complementary questions about their technology adoption decisions, how connectivity affects family communication and activities, and how these new technologies are integrated into their media environments. Katz complemented family interviews by interviewing the school principals and district administrators for their perspectives on the rollout of Internet Essentials.

Between January 26 and January 30, 2015, Katz and Gonzalez returned to Denver to share the findings in this report with district leadership and parents and children interviewed. This visit had two interlinked goals. The first was to conduct “member checks” on the validity of our conclusions. The second was to discuss, based on our findings, what kinds of interventions local stakeholders would suggest to improve digital equity efforts in their district, and others like theirs. A brief summary of these meetings is included at the end of this report.

Community description

With a population of approximately 600,000, Denver is the third-most populous city in the Mountain West. The city’s demographics reveal growing diversity, with 52% of residents identifying as White; 32% as Hispanic or Latino; 10% as Black or African American; and 4% as Asian.² The contrast between the racial/ethnic proportions in the overall population, and in the school district, portends the considerable demographic shifts on the horizon.

Denver Public Schools (DPS) serve the city and county of Denver, operating 185 schools (including 86 elementary and 22 middle schools) and enrolling approximately 90,000 students. The student body is primarily Latino/Hispanic (57%), 22% White, 14% Black/African American, and 3% Asian.³ Approximately one-third (35%) of DPS students are classified as English Language Learners (ELL), and 70% qualify for free or reduced-cost meal programs.

Compared with the district overall, the two schools where we interviewed families had larger proportions of Latino students (95% and 90%), more ELL students (65% and 62%), and more students on free or reduced-cost meal programs (86% and 98%).⁴

² Source: 2010 U.S. Census

³ Source: www.dpsk12.org/communications/facts.html

⁴ Source: www.planning.dpsk12.org/enrollment-reports/standard-reports

Both schools served children in grades K-8. One of the schools was a dual-language immersion school, offering instruction in English and Spanish and contributing to a greater proportion of children choosing to be interviewed in Spanish.

Family demographics

All interviewed families self-identified as Latino or Hispanic. As Table 1 shows, parents are mostly female (90%), with a median age of 33. A majority of parents (62%) are married, and 51% reported that they had not completed high school. The median household size is five, and 53% of parents reported an annual household income of less than \$25,000.⁵ More than half (59%) of interviewed parents are employed either part- or full-time, and another 30% described themselves as homemakers. Foreign-born parents (62%) had lived in the U.S. for a median of 17 years. Whether immigrant or U.S.-born, parents reported that their family had lived in their neighborhood⁶ for a median of 8 years.

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Table 1: Interviewed family demographics

	Parents	Children
Number of interviews	60	60
Median age	33	9
% Female	90	47
% Interviewed in Spanish	48	30
Education		
% Without high school diploma (parent)	51	—
% Parent completed school in U.S. (immigrants only)	28	—
Median current grade (children)	—	4
Median household size	5	—
% Annual household income less than \$25,000	53	—
% Parent married	64	—
Parent employment		
% Employed (full- or part-time)	59	—
% Homemaker	30	—
% Unemployed	5	—
% Parent born outside the U.S.	64	—
Median years living in U.S. (immigrant parents only)	17	—
Median years living in neighborhood (all parents)	8	—

⁵ The 2015 federal poverty level for a five-person household is \$28,410 (aspe.hhs.gov).

⁶ Neighborhood was self-defined by interviewees.

Just over half of parents (52%) chose to be interviewed in English, and 67% of children completed their interview in English. When asked about family language use, 28% of parents reported that their families only speak Spanish at home; 33% reported that mainly Spanish is spoken, but also some English (see Table 2). Parents reported different language dynamics among their children, with 26% noting that their children speak mainly English but also Spanish with each other, another 26% that they speak Spanish and English equally, and 31% indicating that their children only speak English with each other.

! **Table 2: Parents' reports of languages spoken at home**

	Among parents and children	Among children only
% Only Spanish	28	9
% Mainly Spanish but also English	33	9
% Spanish and English equally	18	26
% Mainly English but also Spanish	10	26
% Only English	12	31



overview of report

In this report, we summarize results from interviews conducted with 60 parents and 60 children in two K-8 schools in Denver. The findings are presented thematically. Quotes included in each section are representative of the dominant themes in the data on that particular subject.

We begin by discussing *technology adoption histories*, as a means of providing context for the underlying motivations of obtaining devices and the Internet. Parents also reflect on how their families' Internet usage has evolved over time, and on the sacrifices they have made to provide technology for their families. This section also includes parents' knowledge of and perceptions of the Internet Essentials program being offered in their district.

The second section focuses on *families' media environments*, which includes perspectives on what technologies they use at home and for what purposes. Parents and children also reflect on how they help each other with technology, and any technology-related concerns they might have. This section includes parents' strategies to address concerns about the time their family spends with technology or the content their children access online.

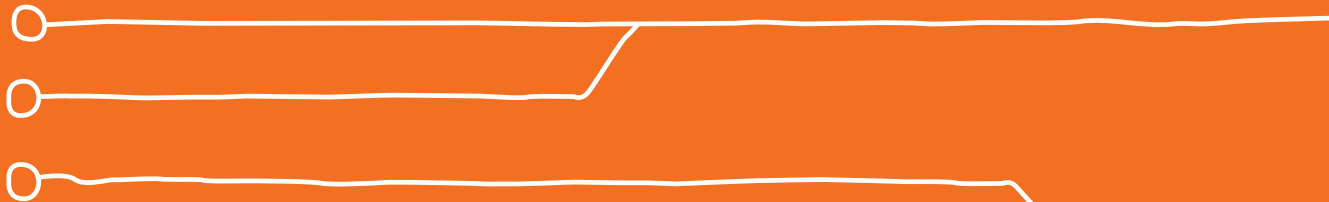
The third section focuses on *home-school connections*. We report parents' comfort levels with their children's schools and teachers, and how they are tracking their children's progress and communicating with schools, both through technology and in person. This section also includes children's descriptions of how they are using technology at school and parents' evaluations of technology initiatives at their children's schools.

In the fourth section, we discuss formal and informal *learning at home*. We cover parents' and children's perspectives on completing homework, parents' capabilities to help their children with their assignments, and how technology is implicated in these routines. We review parents' and children's reports on their educational media use at home, including what kinds of devices and content they consider educational. This section also includes examples of informal learning that are driven by children's interests, and often supported by parental encouragement.

The fifth and final section focuses on parents' perspectives of *family and community life*. As a broad indicator of family well-being, we discuss how parents describe their family's health and their challenges in obtaining health information. This section also includes parents' reflections on their neighborhoods, and their concerns and hopes about raising their children in the U.S.

technology adoption histories

Parents were asked to give a detailed account of their families' histories with the Internet, computers, and other digital technologies. For some, their decisions to adopt these technologies had been motivated by their children's school-related needs, while others had purchased their first computer primarily for their own use, with children becoming more active users only in subsequent years. Our analyses revealed differences with regard to whether underlying motivations for technology adoption had been initially guided by parents' or children's needs.



Approximately half of parents explicitly linked their decision to purchase their first computer to supporting their children's education. This group included many immigrant parents who had completed their own schooling in Mexico.

“Pues tenemos que estar pagando esos 40 dólares por mes. Ese dinero se podría ahorrar para agarrar un [carro] más nuevo. Y es un gasto que no podemos dejar de hacer porque nuestra hija lo necesita. Nos da mucho orgullo que ella es buena para las matemáticas... y la maestra me dijo que era muy necesario que ella use los programas en la computadora. Well we have to keep paying those \$40 per month. That money could be used to get a newer [car]. And it's an expense that we can't avoid because our daughter needs it. It makes us very proud that she is good at math... and the teacher told me that it was very important that she use the computer programs.”

—Mother of an eighth-grade girl (age 13)

These parents acknowledged U.S. schools' emphasis on technologies being critical to their children's educational success. For some parents, the linkages they saw between technology use at home and school success had been deepened by schools' requirements that homework assignments be completed or submitted online.

“Cuando entró el niño en la escuela necesitaba hacer trabajos por la computadora y el Internet. De primero, no supimos cómo usarlo. Pero poco a poco, fuimos aprendiendo. When the boy entered school he had to complete assignments using Internet on a computer. At first, we didn't know how to use it. But little by little, we started learning.”

—Mother of a seventh-grade boy (age 11)

Parents across study sites were motivated to adopt technology in order to support their children's learning. Participants at the Denver site, however, were more likely to frame their technology acquisitions differently. Parents

who had completed their schooling in the U.S.—whether immigrants or U.S.-born—had often acquired computers and Internet for their own use, and years before their children needed these technologies for school. Their most common motivations for tech purchases were: to support their own development (e.g., as part of pursuing higher education or to facilitate their interests in studying English or religious materials); to store photos or documents; to communicate with relatives abroad; to facilitate job searches; and to map local resources or locations.

“I needed the computer for school and I didn't have time to go to the library. By the time I got out of school, [the library] was closed.”

—Father of a sixth-grade boy (age 11)

Some parents reported acquiring their first computer and home-based Internet connection simultaneously. This was particularly likely when families had purchased their first computer recently (i.e., in the past three years). Most parents who had bought their first computer earlier (i.e., 6 to 10 years ago) had started with basic dial-up at home, or had used local libraries to go online. These families had upgraded to wireless broadband or personal hotspots in the past few years.

When asked to reflect on how their families' Internet use has changed over the years, parents often noted that their children's use has become more intensive as they have progressed through school. In some families, this meant that parents who had previously been the primary computer users now engaged their other devices (i.e., smartphones) for their personal connections more often, so that their children could use the computer(s) when needed.

Some parents also reflected on how they have become more comfortable with computers and the Internet over time, and with exploring how to use them. These findings are consistent with the broader literature, which has clearly established that having new technologies at home—as opposed to only using them at school, work,

or in community locations—is most strongly associated with developing the skills and confidence to engage with technology productively to address a broad range of goals (Livingstone & Helsper, 2007).

Most parents reported that engagement with technology and the Internet has become integral to family routines and practices. For children, these activities most often related to completing homework, playing games, or watching videos. For parents they included paying bills, researching topics of interest, and communicating with friends and family.

“ Now I use it for everything. I’m probably on the Internet every day... I Google the [ingredients] I have and see what recipes come up. [My son] likes to draw, so he’ll say, “Mom, can you pull up pictures or drawings of Spiderman or Transformers?” So then I’ll Google the cartoons and he’ll try to draw whatever is on the screen. I use it for music, YouTube, and I check my email. I log onto my bank...”

—Mother of a first-grade boy (age 6)

Sacrifices for technology

Parents were asked if they have made any sacrifices to afford technology. Some parents opted not to purchase items for themselves or to cancel cable TV service in order to pay for the Internet or devices. When they made decisions to purchase new devices for the family, parents developed a number of financial strategies to manage these costs. One common strategy was to combine gifts for multiple children into a larger financial investment (e.g., a tablet or a computer) for children to share. Another was to plan for technology-related expenses ahead of time, and save toward it.

“ They wanted a computer for a long time. So we had to wait until I actually got my tax refund... I’m a single parent and my check isn’t really big, so we had to wait. We also had cable and I told them they had to pick one or the other, because I can’t pay both of them.”

—Mother of a fourth-grade girl (age 9)

“ One of the things I did for the tablet we got [is that] I traded something. That’s kind of how I get a lot of stuff we have, I trade for it. So I traded a car audio amplifier that I had.”

—Father of a third-grade girl (age 8)

As Netflix and other streaming services have become affordable alternatives, many families have decided to forego cable subscriptions to pay for their Internet service. Because families see the Internet as capable of serving multiple functions, many consider it a wiser financial investment.

“ We don’t pay for cable, because if they want the Internet, that’s what we’re paying for. They can either watch normal TV or movies. That’s their choice, and they usually YouTube movies if they want to see them or something, which is much cheaper than cable.”

—Mother of a third-grade girl (age 8)

Parents reported wide-ranging and considerable sacrifices to bring technologies home for their families; the Internet Essentials program is a promising avenue for accelerating broadband adoption at an affordable price. All of the families we interviewed in Denver financially qualified for the free or reduced-cost lunch program for their children, making them eligible for Internet Essentials’ subsidized broadband access. The next section summarizes families’ knowledge of, and experiences with, the Internet Essentials program.

Experiences with Internet Essentials

Of the 123 families contacted at the two schools for participation in the interviews, 39 did not qualify to be interviewed because they did not have Internet at home.

Of the 60 parents we did interview, only 9 reported that they had signed up for Internet Essentials. These families had decided to sign up because they wanted their children to have Internet access for educational purposes. They also noted that they had previously paid much more for Internet

and therefore found the \$9.95 offer more appealing. Two of these nine families volunteered that they were getting Internet at home for the first time through the program.

Many interviewed parents had never heard of the Internet Essentials program or did not know enough details to determine if they were eligible. Parents who did know about the offer had learned about it via flyers sent home from their child's school, information posted in the school hallways, or through family members, friends, and neighbors. Those with some knowledge of the offer shared an understanding that Internet Essentials was being offered to help children with schoolwork, including a mother of a fourth-grade girl.

“ **Interviewer:** As you understand it, what is the purpose of this offer [Internet Essentials]?”

Mother: To help kids, to make Internet accessible to families who probably don't have enough money to pay for Internet. You know, the glamour of having Internet. So kids can do schoolwork and all that stuff that helps them.

Interviewer: And why did you choose to sign up for Internet Essentials?”

Mother: Because I knew my kids needed it, to help them with schoolwork. Because it was more and more going to the library..., so I was just, “Okay, \$10, we can do that.” ”

—*Mother of a fourth-grade girl (age 9)*

Parents who were familiar with the offer but had not signed up had an existing contract for Internet service or desired a faster connection than Internet Essentials provided. One of the eligibility requirements for Internet Essentials was that families had not had Internet service through Comcast for at least three months; for many families, disconnecting for that length of time in order to qualify was not a viable option. A few parents who had signed up for the offer

also noted that they were unsatisfied with the connection speed offered to Internet Essentials customers.

“ I had it because [my children] had assignments that they needed the computer for... I hated it. It wasn't working. It was too slow, it would freeze and they couldn't get anything done. We had it for almost a year. I just got rid of it. I was paying \$10 [a month] to not use it. ”

—*Mother of a seventh-grade boy (age 12)*

Internet Essentials offers download speeds of up to five megabits per second (Mbps) and upload speeds of up to one Mbps. Comcast's average Internet speeds in Denver are 42 Mbps for download and 10 Mbps for upload,⁷ perhaps explaining why some families felt the connection was not fast enough to meet their needs.

Internet Essentials also provides families with a single-wired Ethernet connection and a basic (non-wireless) modem. For families who owned a number of Wi-Fi-enabled devices, the offer generated some confusion because they would have to purchase an additional wireless router to make full use of their broadband connection. Overall, parents' perspectives on Internet Essentials—in addition to the third of families contacted for interviews that did not have Internet at home, despite qualifying for the offer—suggest that the program has not reached all the families who would benefit from it. Considering the rich media environments in these households, as described in the following section, families need broadband access that supports their wide range of online activities.

⁷ Source: www.speedtest.net

families' media environments

Children's interviews began by asking them to map out the technology in each room of their home, including stationary media devices (e.g., televisions, computers, DVD players, landline phones, video game consoles), the usual locations of mobile media (e.g., cell phones, smartphones, laptops, e-readers), and non-digital media (e.g., books, magazines, newspapers, board games; see example in Figure 1). It was clear from children's maps that their homes were generally more media-rich than would be presumed for low-income families, as most families had multiple televisions and at least one tablet, smartphone, laptop, computer, and/or video game console.

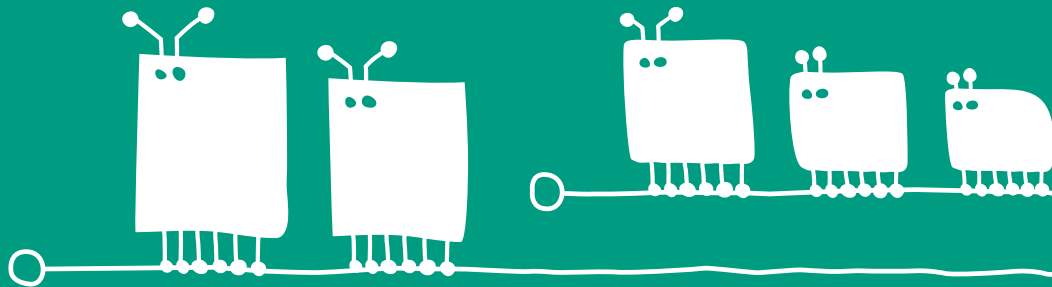
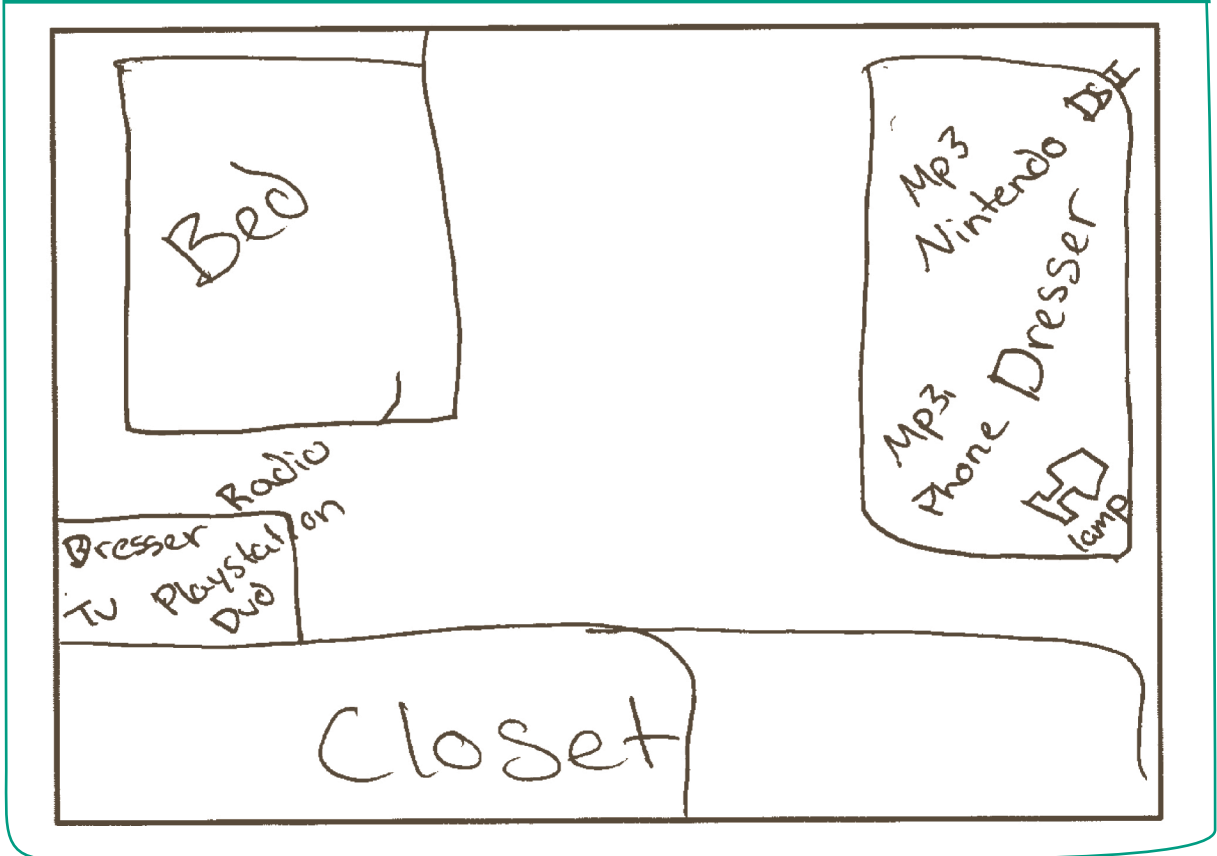




Figure 1: Media environment map: Bedroom of a boy in seventh grade (age 12).



After mapping out all of the devices in their homes, children were asked to identify the most important media in each room and to describe who used that device most, and for what purposes.

Children judged the relative importance of media devices on different criteria. They often factored in cost. They considered devices that were more expensive and/or required months of savings more significant for these reasons. Children were also aware of the financial implications of losing or breaking expensive devices. Their detailed awareness of these expenses suggests that children are involved in decisions to purchase new devices, which is consistent with prior research (e.g., Zelizer, 2002).

“ The most important rule is to not break anything that costs a lot. So that’s the TV... My mom raised a lot of money for it.”

—Girl in fifth grade (age 10)

In the living room, children most often chose the television as the most important device. While children sometimes described family disagreements over what to watch, the living room television was often used for family co-viewing of movies or shows. In their own bedrooms (which were often shared with a sibling), children identified books or computers as important media because they were a source of entertainment and homework help. In their parents’ bedrooms, children most often selected televisions and parents’ mobile phones. These televisions were used slightly differently from

those in the living room; children reported that their parents would watch their own shows in their bedrooms (e.g., telenovelas or news shows) and children were sometimes allowed to join. Children considered parents' mobile phones important because they helped family members communicate with each other, particularly during emergencies.

When parents gave children costly devices (like tablets or video game systems) as gifts, children considered them even more special. This was especially true when children acknowledged the sacrifices that their parents had made to afford these devices.

“ [El PlayStation Portable (PSP)] es el más importante porque es el regalo más especial que he agarrado de mis papás ... porque no somos alguien que tenemos mucho dinero... Es más caro y, pues, es algo muy especial que me [dieron mis papas].
[The PlayStation Portable (PSP)] is the most important because it is the most special gift I have received from my parents ... because we do not have a lot of money... It's more expensive and, well, it's something very special that [my parents gave me]. ”

—Boy in sixth grade (age 11)

The quote that follows describes how an eighth-grade girl's concern about the cost of Internet service echoes her mother's reflection on sacrifices for technology (see page 10).

“ Se les hace difícil pagar [el Internet] porque es mucho. Mi papá necesita una nueva van porque la suya casi no funciona, y el Internet le gasta dinero. Cuarenta dólares.
Well, it's difficult for them to pay for [the Internet] because it's a lot. My dad needs a new van because his isn't really working and, well, the Internet costs money. Forty dollars. ”

—Girl in eighth grade (age 13)

Children also evaluated the educational value of media and described how devices (most often television and tablets) were useful for both entertainment and learning.

“ I think the most important media of the living room is the TV... Because sometimes when we don't have anything to play with, we look at stuff... There's shows about how to learn stuff, like how to be a doctor. They show you what you want to be when you grow up. ”

—Girl in fourth grade (age 9)

Children's technology use

Children were asked to describe what specific activities they engage with the devices available at home. A common online activity among children across study sites was searching for and watching “funny videos” on YouTube. These videos were accessed on mobile devices and desktop or laptop computers. Other websites that children regularly accessed on computers included Google, Cool Math, Facebook, Netflix, and ABCya.

Among participants at the Denver site, most children had their own tablets, or at least had regular access to a mobile device they used independently at home. The apps that children mentioned most often were YouTube, Minecraft, Facebook, Subway Surfer, Pandora, and Instagram. These apps were all free, consistent with parents' reports that they restricted mobile app purchases. Children indicated that the mobile devices they used were usually registered to their parents' accounts, thus needing a password to download or purchase any mobile apps. While children used a wide range of apps, they were usually able to distinguish between strict entertainment (e.g., Crazy Drift) and educational games (e.g., Geometry Dash).

Most of children's online activities, except for Minecraft, were solitary. Children described playing Minecraft with their siblings or watching Minecraft-related videos together on YouTube.

As was the case in our other two study sites, Minecraft seemed to facilitate regular joint media engagement among siblings.

Most children did not have their own mobile phones. For those who did, the primary reason for the purchase was communicating with their parents. Other children used their parents' old phones, which no longer had service plans but could still access the Internet through Wi-Fi. Children who did not have a cell phone had mixed feelings about whether or not they wanted one. Some were impatiently waiting for an age when their parents felt owning a cell phone was appropriate; others felt that the digital tether would reduce their freedom or attention to things that mattered to them.

“ [I don't want my own cell phone] because then I won't play with my family. I'll be, like, into my phone. All my cousins have phones now, so they don't hang out with me anymore. ”

—*Boy in fifth grade (age 10)*

Children were also asked to reflect on how the Internet might make things easier for their families. Many had difficulty coming up with specific examples, which is understandable given that many tasks that implicate the Internet (e.g., using GPS for directions or online shopping) are commonplace and thus largely invisible to them.

Some children mentioned specific family tasks that were facilitated by having Internet access at home, including doing research for schoolwork; searching for jobs; purchasing items (e.g., tools, cars, clothing); finding recipes; talking to family in Mexico; and reading digital books. Children liked that the Internet enabled them to video chat with friends and family, especially relatives in Mexico whom they otherwise saw infrequently.

When asked if the Internet makes anything more difficult for their family, a few children mentioned that a slow Internet connection makes it difficult for multiple members to go online at the same time.

Parents' technology use

At least half of interviewed parents reported using the Internet mainly on their mobile phones and/or tablets. Parents felt these portable devices were more convenient because they provided quick Internet access in most places.

Parents used a broad range of apps. When asked about apps that they use most often, parents listed online banking sites (e.g., Wells Fargo, ProPay), job search tools (e.g., LinkedIn, Indeed), shopping apps (e.g., Craigslist, Amazon, Walgreens, Walmart), and ClassDojo to keep track of their children's school progress. They also reported using social networking sites (e.g., Facebook, Instagram, Snapchat, Pinterest), games (e.g., Candy Crush, Hay Day, Subway Surfers), dictionaries (in Spanish and English), and music applications (e.g., Pandora, iTunes, iHeartRadio).

Parents also frequently noted that their children had downloaded free educational games onto their phones (e.g., Umizoomi). Some parents play these games with their children, but many had trouble recalling the names of the games that were on their phones. This pattern suggests that children often play these games on their own, when parents are not using their devices. As stated earlier, most parents restrict children's access to apps that cost money.

“ We hardly ever pay for an app. I don't let [my kids] get games that they have to pay for. [I'm] the only one that handles the iTunes app because I use my credit card. The kids don't have free rein to buy. ”

—*Mother of a fourth-grade boy (age 9)*

Parents and children generally used mobile apps separately; the exception to this pattern was their use of apps like Skype, WhatsApp, FaceTime, and Facebook to talk with friends and relatives who lived far away. Parents felt these apps were particularly valuable for staying connected to family in Mexico, because they are free and can be accessed through multiple platforms.

“ Tengo uno importante para mí que se llama WhatsApp, porque tengo mi familia en Mexico. Entonces ellos no gastan y yo no gasto [dinero], es por medio de [mensajes de] texto. I have one that is very important to me that is called WhatsApp, because my family is in Mexico. So they don't have to spend [money] and neither do I. It works through text [messages]. ”

—Mother of a fourth-grade boy (age 9)

While parents felt comfortable using their smartphones independently, their views on using computers to go online were more mixed. Many parents noted that computers have greater utility for certain tasks than their phones do—in particular, they felt that a larger screen and keyboard are more conducive to completing complex tasks. They also noted that they prefer using a computer for co-viewing content with children when helping them with homework. Immigrant parents were more likely than U.S.-born parents to worry that their independent computer use might damage these devices or interfere with their children's schoolwork.

“ En la computadora, le digo, no quiero moverle a algo que luego se vaya a descomponer... o que me meta a otro lado—ya ve que puede uno meter virus a la computadora. On the computer, I tell her, I don't want to move something that might break it... or access something I shouldn't—you know, since you can make the computer get a virus. ”

—Mother of a fifth-grade girl (age 10)

Technology use across generations

Parents who felt that they had limited skills with technology often still tried to complete tasks on their own, relying on their children for additional support as needed. They were most likely to ask their children for help with technical issues (e.g., logging into websites), translating English content into Spanish, and helping out with business-related tasks (e.g., Craigslist postings).

“ Por ejemplo, para sacar nuestros talones del cheque [del trabajo] nos vamos a la página, y a veces, batallo un poquito y es cuando me ayudan... porque esta todo en inglés entonces hay algunas cositas que no le entiendo. For example, to get our check stubs [for work] we go to the page, and sometimes, I struggle a little bit and that's when they help me... because everything is in English and there are some things I don't understand. ”

—Mother of a second-grade boy (age 7)

“ They'll help me, like if I want to post something or create something... There's an app that we use... where you can make a professional [flyer], forward it to your email, and print it. So they help me do that. Last night my son helped me put an ad in Craigslist. ”

—Mother of a fourth-grade boy (age 9)

When children were asked how they help their parents with technology, they most often described translating content for them. Parents asked their children for translation help during tasks they deemed especially important, like making purchases, applying for a job, signing electronic forms, and understanding their homework or other school documents.

“ When my mom is doing something important, she needs us to say the word in Spanish because she doesn't know how to talk in English. ”

—Boy in third grade (age 8)

“ Sometimes when [my parents] don't understand a word, me or my brother go see what they need, what they can't read and we say it. Sometimes it's important, or it's for their job. ”

—Girl in fourth grade (age 9)

Most children felt confident using technology at home on their own and did not report asking parents for help regularly. Younger children, however, relied on their parents to

start the computer, download apps, and block pop ups, reflecting families' joint work to solve technical issues.

“ [Sometimes] something pops up and I can't take it off, I just tell my mom or my dad. Sometimes [I asked for help] if my tablet freezes, but not anymore.”

—*Boy in fourth grade (age 9)*

Parents' technology concerns and strategies

Parents were asked to reflect on their concerns about their children's technology use and whether they have any strategies or rules that they use to alleviate their concerns. In general, parents' concerns about how much time their children are spending with technology increases as their children near their teenage years. Parents expressed concerns about how their children's access to personal technologies disrupted time that they spent together as a family.

“ Antes podíamos salir a caminar o a estar en el parque, y ahora sí vamos, pero él va con su tablet y yo voy con mi teléfono. We used to go out for a walk or spend time in the park, and we still do, but now he takes his tablet and I take my phone.”

—*Mother of a fourth-grade boy (age 9)*

“ Ha cambiado en el hecho de que estamos un poco más separados. Ahora que estamos usando todos el Internet, de repente traemos el teléfono para todos lados. Es la hora de estar la familia junta, y en lugar de convivir más la familia, pues cada uno trae su teléfono. Things have changed in the sense that we are a bit more distanced. Now that we are all using the Internet, all of a sudden we take our phones everywhere. Instead of spending time together during family time, everyone is on their phone.”

—*Mother of a third-grade boy (age 8)*

Parents from the Denver site were more concerned about children's tech use than parents in the California and Arizona sites; a number used the word “addicted” to describe their worries about how much time their children were spending with personal technology. As noted previously, these families' media environments frequently included multiple devices of the same type, therefore children who participated in the study at the Denver site were more likely to have devices that they did not have to share with siblings as compared with participants in the other two sites. When children have to share an iPad, for example, parents worry less about “addiction” because siblings' competing demands for the device regulates how much time any one child spends with it.

“ I worry because it's addicting to them... It's like they can't put it down, so I have to take it away from them. I don't have trouble with the youngest one... but the oldest one, she hides it from me and then I have to go through the room and find it, or she gets really mad and doesn't talk to me for a couple of days, but I still have to take it away.”

—*Mother of a third-grade girl (age 8)*

Parents were often aware that their own technological habits influence their children's behaviors. They reported that they make a conscious effort to disconnect from technology in order for their family to spend time together both inside and outside of the home.

“ Sometimes I just have to put my foot down and say, “You know what, it's time to eat,” or “Let's do something, let's go outside.” Or take them swimming. You know, “Let's go all watch a movie together” and they [say], “Okay.” So they agree to certain things... they know they have to follow the rules, because if not, then we won't have Internet anymore.”

—*Mother of a fourth-grade girl (age 9)*

Another common parental concern is children's access to inappropriate online content. Parents worry that their children may be exposed to "bad things" on the Internet or engage in potentially harmful behavior on social networking platforms. The proliferation of free apps has heightened this concern. Parents worry about their children downloading inappropriate apps onto their devices without their knowledge, and therefore develop strategies to regulate children's use and access.

“ I'll check the history... I know that they can erase all the stuff, but I [tell them], "I'll find out if you guys erase something. I'm not too smart at using the computer, but I'll get somebody to come help me, and I will find out if you guys are doing something inappropriate." And my daughter learned the hard way. "You know, anything that we put up in the Internet is traceable, even though you guys might think you erase it, so don't try to play smart." ”

—*Mother of a fourth-grade girl (age 9)*

“ With the accounts that I have set up, Microsoft actually sends me a weekly report on what [sites] they've been on. So it will automatically go to my email and I can check to see what websites they've been on, and if there's something that I don't like on there, then I can go on there and actually disable that website so they can't go back on it. ”

—*Mother of a fourth-grade boy (age 9)*

Parents with children in the lower grades also expressed uneasiness about when to allow their children access to Internet-capable devices. These decisions are complicated by social pressures to provide children with access to technologies that are rapidly becoming normalized as part of everyday life.

“ Right now, it's a challenge, because my kids always see other kids using their parents' phone. They even have a tablet and an iPad and [my kids] don't have it. And... they automatically want to know, how do you work it. I know

they'll have one eventually, but I want to push it out as far as I can. Because of that, I feel like he's more interested in books than a lot of his peers. He has memorized a lot of the books that he has read. ”

—*Mother of a first-grade boy (age 6)*

To address and alleviate these concerns, parents employ multiple strategies for managing the time that their children spend with technology and for monitoring their online activities.

Parents' technology rules were often time-based; most commonly, they reported a hard stop time in the evening after which devices could not be used, or that children were limited to an hour of online recreation daily. Limiting time spent with devices, however, is difficult for many parents—especially when school assignments need to be completed online or children need to do research online during homework time. Mobile devices have also made it difficult for parents to closely monitor their children's online activity.

“ Nomás ando detrás de él viendo. Mi marido me dice "Ya se fue para el cuarto," y ahí voy "Vente para acá donde te mire." "Ama, estoy textiando." "No le hace, vente para acá." Tampoco me gusta estar como hostigándolo, pero estoy vuelta y vuelta y me hago tonta que nomás estoy haciendo algo, pero estoy mirando. I'm always on his back, observing him. My husband tells me, "He's off to his bedroom." And there I go, "Come over here where I can see you." "Mom, I'm texting." "I don't care, come over here." I don't like to pester him all the time, but I take my rounds and pretend like I'm doing something else but I'm really just watching him. ”

—*Mother of a third-grade boy (age 8)*

The most common consequence for breaking technology rules was to take devices away from children for a specific amount of time. Another common strategy was to prohibit watching television or playing video games when parents feel that their children are spending too much

time online. A more extreme consequence enacted by some parents was to disable the Internet as punishment for not following house rules.

“ [Ellos] tienen que tener un límite para estar en el Facebook o la computadora. Porque como nomás es una tableta, se pelean los dos. Le digo “No, turnos, un ratito uno y un ratito.” [Y si rompe las reglas] lo castigo una semana y no le doy el celular ni [la] tableta. No sale a la calle... Los tengo en la casa. Los pongo a limpiar su cuarto, a recoger su ropa. [They] have to have some limits for Facebook or computer use. Because since there’s only one tablet, they fight over it. I tell them, “No, take turns, one has it first and then the other one.” [And if he breaks the rules] I punish him for a week. I don’t give him the cellphone or tablet. They don’t go out... I keep them home. I have them clean their room, their clothes. ”

—Mother of a third-grade boy (age 8)

Overall, parents’ and children’s perspectives on how media is used at home were quite similar. Denver families have media-rich households, with families owning a broad range of devices. And, more so than in our other two study sites, families often own two or more of a single device type (e.g., iPads) so that children share with siblings less often, and parents and children don’t have to share with each other as frequently, either. As a result, children have regular access to mobile devices that they use independently and confidently.

Furthermore, while parents and children reported helping each other to address technical issues they rarely engaged with digital technologies, or online content together. This pattern was confirmed by their responses to a set of fixed-answer questions about technology use. Participants at the Denver site were in closer agreement than in the other two study sites that they do online activities together infrequently or never (58% of parents, 60% of children).

While parents and children expressed concerns about the Internet disrupting family time, this worry seemed less salient than in our other sites. Children who participated at the Denver site were noticeably more involved in after-school and recreational activities than those in our California and Arizona sites. Their time with technology at home was therefore more circumscribed and more likely to relate to schoolwork only, at least during the week. As a result, parents felt quite comfortable with their children’s tech and Internet use.



home-school connections

Children's learning trajectories are heavily influenced by their families' relationships with their schools and teachers. Researchers have long documented how strong home-school relationships benefit students. For parents with limited formal education, connections to trusted educators are especially critical for locating resources that directly support their children, in addition to finding opportunities to augment their own skillsets so that they can better support their children's progress (Katz, 2014; Stanton-Salazar, 2001; Valdés, 1996).

In the sections that follow, we cover key themes in the data that relate to home-school connections. These include parents' perspectives on their on-campus experiences and on technology initiatives being implemented by the schools. Children also describe how they are using technology at school, and parents reflect on the opportunities and disadvantages that technology can bring to teaching and learning.



Parents on campus

Most parents who participated at the Denver site felt comfortable going to their children's schools and communicating with teachers, especially if their children had attended the same school for a long time, or if multiple children had attended the same school. Some parents even volunteered as classroom assistants. For Spanish-speaking parents, having bilingual staff on campus made them feel welcomed and comfortable. Overall, parents reported feeling well-informed and supported by teachers and staff.

“ La maestra que tenía el año pasado era muy amable. Ella explicaba bien las cosas. Nos entendíamos muy bien porque ella hablaba español. Cualquier duda, podía hablar con ella. Last year's teacher was very kind. She explained things very well. We understood each other very well because she spoke Spanish. I could speak with her about any questions I had. ”

—Mother of a fourth-grade boy (age 9)

To facilitate home-school connections, Denver Public Schools launched an online platform called the Parent Portal, where parents can check students' grades, attendance, test scores, and schedules. The Parent Portal was also made available via kiosks on various campuses across the district, so that families without Internet access could still use it.

While many parents had heard of the Parent Portal, few reported using it regularly. Only a few parents were aware that parent kiosks were available on their children's campuses. The most common reason parents gave for not using the portal was their limited understanding about how it worked. Other parents said that they did not have the time to use it, or that they felt that the limitations of connecting with teachers through the portal overshadowed the conveniences.

Compared with English-speaking parents, even fewer Spanish-speaking parents used the portal—but they welcomed the possibility of

learning more about it. These parents felt it was important for schools to not only promote new methods of keeping track of their children's progress, but to also provide training to help parents use them effectively.

“ [Las escuelas deberían] darles clases a los padres para saber cómo entrar [al portal]. Más bien a los hispanos, que somos los más atrasaditos ... no sabemos ni cómo entrar. [The schools should] provide classes for parents to learn how to log in [to the portal]. Especially Hispanics, since we're often lagging behind... we don't even know how to log in. ”

—Mother of a first-grade boy (age 6)

The few parents who did use the Parent Portal considered it a useful tool for checking children's grades and attendance, though they often preferred face-to-face communication with teachers. They also generally preferred to access the portal on a computer, as opposed to a mobile device.

“ [I use the Portal on the] computer because it's hard to access it through the mobile device... I check it once a week. I just look to see if they're missing any assignments or where their grades are. I just want to make sure they're on top of what they need to be on top of. ”

—Mother of a fourth-grade boy (age 9)

“ I would rather meet with [teachers] one-on-one because that way they can tell me: “This is what's going on, this is what I recommend, this is how I would approach it.” The Parent Portal can have notes [from the teacher], but I don't know exactly what they mean. ”

—Mother of a fifth-grade boy (age 10)

A few parents also communicated with teachers using Class Dojo, a classroom management mobile app where teachers document students' performance and communicate with parents through messaging. While parents recognized

possible benefits of communicating with teachers in these new ways, their knowledge of available digital platforms was limited. This finding suggests that more parent education and training could maximize these services' potential for strengthening communication between parents and schools.

Children's perspectives on tech use for school

We asked children questions about how frequently they use technology in their classes, and for what purposes. Parents were asked complementary questions to assess how they feel about technology being integrated into their children's schooling. We also asked them about current tech-related initiatives in the district, including Colorado's move to online standardized testing.

Children described how their technology use had increased as they moved to higher grades. Children in early primary grades reported using technology infrequently or not at all; when they did, they shared netbooks and other devices in small groups. By fifth grade, students were using technology at least a few times a week and more individually, often to practice math skills. While older children used technology explicitly as part of their lessons, younger children mainly used devices during free time.

Most children said that they would like to use more technology at school. They noted that they would like access to faster computers and more devices.

““ I don't like using the computers, because some of them get messed up and they don't log in until like 20 minutes, and that's when we have to line up for lunch. ””

—Boy in fifth grade (age 10)

““ [W]e haven't got enough time to [do] research because we only have five computers in our classroom. ””

—Girl in fourth grade (age 9)

In general, technology use at school seems to vary across grades and classrooms, and it is often contingent on teachers' preferences or the availability of equipment. While it is clear that children desire more meaningful technology engagement during class time, parents are conflicted about the role that technology plays in children's learning, as detailed in the following section.

Parents' perspectives on tech use for school

Parents expressed a general optimism about the affordances of technology for teaching and learning. Many believed that technology is critical to their children's education, especially with regard to schools preparing children for a tech-oriented future.

““ I feel like that's the way we're going; the more they can learn to use [technology] and to conquer each thing that they can on it—as far as homework or research—I think the better and easier they're going to be able to understand the big picture when they're in college or if they are in the workforce; some workforces are only computer-based. ””

—Mother of a fifth-grade girl (age 10)

Parents' knowledge of how technology is being used during classroom instruction was limited, and they expressed conflicting views on the topic. On the one hand, they valued the development of technology-related skills, but on the other, they worried that technology could adversely affect student-teacher relationships and reduce personalized, hands-on instruction. Parents were also concerned about children losing handwriting, spelling, and grammar skills.

““ When they have the computer in the classroom, I feel like they'd be starting to learn what the computer is and get exposed to that, but then that kind of takes away the teacher time. ””

—Mother of a first-grade boy (age 6)

“ I think [technology takes away] the capability to communicate and work with someone. I’m a very visual learner, hands-on; I need to do it, and I know my daughter [does] as well. ”

—*Mother of a first-grade girl (age 6)*

“ Ahora existen CDs donde ya no tienes que agarrar el libro y leerlo, ya nomás escuchas el CD...¿Y cuál es la cosa positiva? Sí, tú te estás imaginando, escuchando, agarrando todo más rápido. Pero, no estás viendo cómo se escriben las palabras, no estás viendo un punto, una coma, cómo es escrito, detalles que no puedes observar si no lo tienes en tu mano. Now there are CDs where you don’t even have to hold a book to read it, you simply listen to the CD... What’s positive about that? Yeah, you’re using your imagination, you’re listening, and getting everything quicker. But you’re not looking at how words are spelled, the periods, commas, the writing, details you can’t observe if you don’t have it in your hand. ”

—*Mother of a third-grade boy (age 8)*

Parents also implicitly compared their children’s educations to how they had been schooled in a pre-digital age. In the process, they identified downsides of their children being able to quickly find answers to their questions online.

“ They need to have a little bit of a hard time looking for things, to not have everything so easy. Sometimes it is easy just to have [the answers] there, but I think they should have to work a little bit more; work their brain a little bit more. ”

—*Father of a second-grade girl (age 7)*

“ They don’t have to think as much, work out the problem, [or] write on the side how they came up with that answer. A lot of the kids just get on the phone or computer and look up 103 or whatever the question is, and I feel like I still want my son to learn how I learned. Go ahead and make it known how you got there

and give an explanation, even if the answer is wrong. The teacher is seeing that you get the concept.

—*Mother of a fifth-grade boy (age 10)*

Furthermore, given the increasing emphasis on technology use during class time, parents worried about their ability to extend children’s learning at home. They felt that losing Internet access at home, for example, could hamper their children’s learning.

“ I mean, I think it is kind of a good idea [that they are using more technology], but not everybody has that access. Just the other day, I was calling my cable company to cancel [the service] because I wasn’t sure if I was going to be able to pay it, you know? [Internet at home] is not something that everybody has. ”

—*Mother of a first-grade girl (age 6)*

Despite these concerns, parents identified several benefits to digital learning, including children no longer having to carry heavy textbooks, less misplaced assignments, and reduced visits to the public library. Some parents noted that their children had become more active device users at home since they started using computers in the classroom. Some parents also saw academic gains that had resulted directly from their children having access to digital resources.

“ I think [time with technology at school] has helped her... Her reading level has gone up dramatically and she had lots of trouble in math. It’s helped her, the website that the [teacher] gave her, so she could practice at home. ”

—*Mother of a fourth-grade girl (age 9)*

Furthermore, children’s increased familiarity with technology made them more capable of supporting their parents and siblings with technology-related tasks. Students’ skill sets had, according to some parents, become an asset to the family more broadly.

Reflections on online standardized testing

We also asked parents to reflect on the statewide move to online standardized testing, rather than the traditional paper versions.⁸ Many parents did not have well-articulated positions on the issue, and some admitted to first learning about it through our interviews. Parents generally felt optimistic about having children test on computers, particularly since they felt children are now comfortable with technology.

““ He’s been exposed to the computer a lot, [so] I don’t feel like it will make a big difference. ””

—*Mother of a first-grade boy (age 6)*

““ My kids will probably do a little bit better than before, just because they like computers. They like technology. They know how to use it, and they get distracted when [the test] is on a piece of paper and they have to keep looking down. It would be better for them on a computer. ””

—*Mother of a third-grade girl (age 8)*

The few parents who expressed concern about online testing questioned the age appropriateness of such a shift. They also worried that not all children are equally prepared to take tests on a computer.

““ I don’t like that idea so much; I think they’re not going to perform as good. A lot of the students barely have access to the Internet [or] a computer, and then all of a sudden they just throw them in. ””

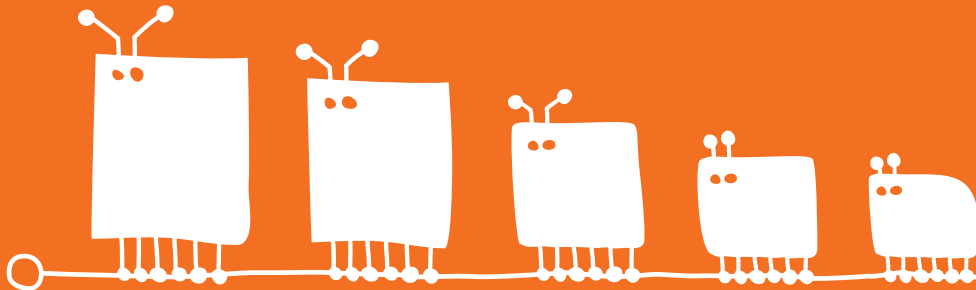
—*Mother of a fifth-grade boy (age 10)*

Overall, parents felt positively about their children’s technology use at school, despite having a number of critical, nuanced concerns about how these technologies are deployed and what losses may accompany the promised gains of increased tech engagement. Their feelings about technology use were of course not limited to schools, as a broad range of devices were also central to children’s learning activities at home. We address these in the following sections.

⁸ In 2013, school districts in Colorado launched new online state assessments in science and social studies. These online tests are administered through computer and tablet devices.

learning at home

Parents and children were asked complementary questions about collaborations around homework help, as well as questions about what forms of media they feel are most useful for a range of educational purposes, and for supporting children's interest-driven learning.



Formal learning and schoolwork

Across the three study sites, parents considered the Internet an important tool for increasing their capabilities to help their children with schoolwork. Parents who felt unfamiliar with new teaching methods often used the Internet to work alongside their children to address homework-related questions together.

“Homework is a whole different game from what it used to be when we were younger. [Children] bring stuff home, and we’re just out in the cold with it. We don’t know what’s going on, so we’ll try to use Google to... figure it out. We’ll try to work on it with them.”

—Father of a third-grade girl (age 8)

Most parents discussed the considerable differences between how they had learned particular topics in school—especially math—and how their children were learning them now. Parents therefore tried to avoid confusing their children, redirecting them to online resources that matched current methods of instruction, as opposed to teaching them the methods they had learned in school.

“The way they do math now is way different than when we were in school. They’ve changed how to do subtracting, multiplication. [It’s] way different. [As a parent] you try to teach them one way; school teaches them another way. So it’s kind of hard [to help] and I think we’re just confusing the kids.”

—Mother of a third-grade boy (age 8)

“I think math is hard for all of us. I get really frustrated when he needs help and I can’t even answer... So I try to help them as much as I can. We’ve even got to the point of looking on the Internet, and I just cannot figure it out. I tell him, “you need to ask your teacher.” Or I’ll put a note with a question mark to say, ‘[I] wasn’t sure what to help with in this part.’”

—Mother of a fourth-grade boy (age 9)

Denver parents with limited English skills relied even more heavily on the Internet to translate homework assignments or to encourage children to find answers on their own.

“Cuando le dejan [tarea] en inglés que yo no entiendo, [busco] en el traductor para ver qué es lo que le están pidiendo o para chequear que esté bien la tarea.

When they give her [homework] in English that I don’t understand, I [use] the translator to see what they’re asking her to do or to check that her answers are right.”

—Mother of a fourth-grade girl (age 9)

“Muchas tareas vienen en inglés, y si uno no sabe inglés, ¿cómo les va a ayudar? En el Internet, ellos se meten y buscan ayuda... Luego a veces le hablan a su maestro.

Many assignments are in English, and if you don’t know English, how are you going to help? With Internet, they can get on and get help... Sometimes they write to their teacher.”

—Mother of a fifth-grade girl (age 10)

Most children acknowledged their parents’ efforts to help them with their homework. Whether parents’ help comes in the form of instructing, checking, or revising, children generally felt confident working alone and asking for parents’ assistance only when needed. Some indicated seeking reading help primarily from mothers and math help from fathers.

“Me ayudan con matemáticas. Lectura ya lo tengo yo bajo control. Unas veces nos sentamos ahí, mi mamá me está ayudando, mi papá está ahí, y mi hermana.

They help me with math. I have reading under control. Sometimes we sit there, my mom is helping me, my dad is there, and my sister.”

—Boy in sixth grade (age 11)

“ My dad comes along as the math expert [Mom’s] just average; my dad’s above average. ”

—*Boy in fourth grade (age 9)*

Informal learning with educational media

Parents had difficulty identifying media that they feel are “educational,” which we defined for them as any media in the home that help their children learn, or that have helped parents to teach their children important lessons. Parents generally associated the term “educational” with formal schoolwork, rather than also including informal kinds of learning that can occur at home. For informal learning, parents had an easier time answering when we asked about the last time that their child had a sustained and deep interest in learning more about a certain topic (i.e., interest-driven learning). Parents were also able to provide concrete examples of how media content and devices helped support these learning endeavors.

Parents and children were asked complementary questions about which media they felt were specifically helpful for children’s language acquisition, for learning about their cultural heritage, for doing schoolwork, and for engaging with media together.

Parents and children felt that television programs (e.g., *Dora the Explorer*, *Blue’s Clues*, and other programs on the Disney channel) had helped children to learn English, particularly in their pre-school years. Now that their children were in school, parents felt that books were most useful in supporting children’s English language learning and vocabulary extension.

Parents indicated that Spanish-language television and websites like YouTube or Google Maps were useful for teaching children Spanish or sharing stories about their home country. Many parents emphasized how important it was for their children to maintain Spanish fluency, and they made a point of watching media in Spanish at

home to encourage children to learn it. Children, on the other hand, felt that Facebook, Skype, and WhatsApp helped them most in learning about cultural practices in Mexico and connecting with family members living there.

“ Yo les enseño el 12 de diciembre y cómo bailan los matachines en México. [Vemos] videos de la Virgen de Guadalupe. Les enseño de allá donde vivo yo. “Mira así es mi calle.” Nos metemos al Google Maps y [les digo] “mira aquí está mi casa, aquí fui a la escuela.” I show them what December 12 is, and the traditional dancing in Mexico. [We watch] videos of the Virgin of Guadalupe. I show them where I’m from. “Look, this is what my street looks like.” We go to Google Maps and [I tell them], “look, this is my house, this is where I went to school.” ”

—*Mother of a fourth-grade boy (age 9)*

“ La finalidad de que todo sea en español [en casa] es porque yo no quiero que mis hijos olviden su idioma natal. La finalidad de que estén en una escuela bilingüe es para que no olviden el español, porque sé de millones de casos que [los niños] crecen y se les olvida. The reason why everything is in Spanish [at home] is because I don’t want my children to forget their native language. They are in a bilingual school so that they don’t forget Spanish, because I’ve known a million cases where [children] grow up and forget it. ”

—*Mother of a third-grade boy (age 8)*

Digital media is an appealing educational tool for parents because it provides them with fun and visually engaging ways to teach content that would otherwise seem dull. One mother noted how historical movies had given her daughter an advantage in school.

“ My oldest [daughter] came home and said, “Mom, I got a perfect test for answering something about Nelson Mandela.” She said, “My teacher asked me how I knew, and it’s

because you make me watch those movies.” So I always make them watch different history movies. If they don’t want to read [about] it, they can see it, and that actually made her [want to] read a couple of books about it.”

—*Mother of a third-grade girl (age 8)*

In this sense, digital media is used not only as a replacement for print media, but also as a way to entice children to seek other resources (including print) to learn more about a topic. The following section takes a closer look at the resources families use to collect information about particular topics of interest.

Interest-driven learning

Parents and children were asked to think about the last time the child had a sustained interest in a topic, and what kinds of activities or media resources parents had engaged to support that interest.

For younger children, historical figures (e.g., Archimedes, Emily Griffith), animals (e.g., dolphins, dinosaurs), science (e.g., weather, space), and gaming (e.g., Minecraft) were common topics of interest. Older children had a stronger interest in celebrities (e.g., Justin Bieber, Drake), sports (e.g., Denver Broncos, Lionel Messi), and television, movies, and music (e.g., *Girl Meets World*, *Frozen*). Children’s interests in these topics often stemmed from something they learned in class or from their friends and classmates.

While children had a difficult time providing detailed descriptions of what they do to sustain these interests, they often reported looking things up online (via Google or YouTube) and checking out books at the public library.

“ Me llamó la atención Arquímedes. Estábamos estudiando de él y me llamó la atención de las cosas que inventó... iba a Google y le ponía, “inventos de Arquímedes.” Cada página tenía diferentes inventos. Así que iba yo [para] saber

cuál invento me interesaba. Pues, me interesó como una garra que la usaban para agarrar los botes, pero a muchas personas se les hacía peligroso.

Archimedes caught my attention. We were learning about him and his inventions caught my attention... I would go on Google and type in, “inventions by Archimedes” [in Spanish]. Each page showed different inventions. So I would go there [to] see which invention interested me. I thought the claw to pull boats was interesting, but many people found it dangerous.”

—*Girl in eighth grade (age 13)*

Parents agreed that children, particularly the older ones, often turned to YouTube first when they were interested in a topic. They described how their children watched movie trailers and how-to videos to learn more about sports and crafts. Parents also used the Internet themselves to try to answer children’s questions and to engage in joint media activities around these interests. Some parents reinforced children’s interest-driven learning by taking them to community spaces like libraries, museums, and the zoo.

In the excerpt that follows, the mother of a first-grader discusses her son’s interest in sharks, and how it evolved over time. She took him to the library, watched films with him, ordered an educational book on the topic, and found an affordable way to take him to the aquarium. Through these outings and forms of joint media engagement, she sustained and encouraged his interest in learning about sharks.

“ He’s really interested in sharks. He thinks it’s, like, the most amazing animal in the ocean. He’d ask questions and want to know more. He wanted to go to the aquarium... every time we passed by the aquarium, he always wanted to go. We have relatives that work there and we said, “Do you guys have any discounts?” because it’s expensive to go to the aquarium. So we were able to take him over the summer and wow, he just loves sharks. [To encourage him], I went in the library to find out more,

telling him there's a lot we can learn from the books in the library... now he has a book and he reads that all the time. We also found this documentary, which was great. And then there's this movie he had seen, *Dolphin Tales*. It's a dolphin, but it was close enough. He loved it. ””

—*Mother of a first-grade boy (age 6)*

Likewise, the mother of a second-grader described how a summer school lesson had sparked her son's interest in tigers. She watched videos and read about tigers with him, in addition to helping him prepare a summer school report on tigers. It is important to note that the teacher recognizing and validating both the student's interest and his mother's investment in his learning is a powerful example of social closure (Coleman, 1988), which refers to the benefits that accrue to students when parents' and teachers' values are in clear alignment.

“ En la escuela de verano hicieron un libro de tigres... “¿Ma' y cuántos tigres hay? ¿Y cuál es el tigre de no sé cuánto? Vamos a buscarlo.” Entonces los buscábamos y le decía, “Mira mijo, este es el tigre.” “Sí, mamá, pero este es el tigre de Bengala.” Veía videos y luego consultaba. A veces venía un reportaje escrito. Nos poníamos y lo leíamos los dos para poner más información en su libro que estaba preparando. Entonces agarró más información, fue y se lo presentó a la maestra, y la maestra le dijo: “Oh muy bien. ¿Dónde lo investigaste?” [Y él dijo], “Mi mamá y yo lo investigamos en la computadora.”

They made a book about tigers at summer school... “Mom, how many tigers are there? And what is this specific tiger? Let's go look for it.” So we would search and I would say: “Look son, this is the tiger.” “Yes, mom, but that's the Bengal tiger.” He would watch videos and then ask questions. Sometimes there would be written reports. So we read them together to include more information in the book he was preparing. So he collected more information, took it to his teacher, and

the teacher said, “Oh, very good. Where did you get that from?” [And he told her], “My mom and I looked it up on the computer.” ””

—*Mother of a second-grade boy (age 7)*

It is possible that parents are more hands-on when it comes to supporting interest-driven learning in the early years of their children's schooling—and that children become more independent in pursuing their interests as they grow older. Older children were more likely to address their interests exclusively via the Internet, usually beginning with searches for images and then involving video and text-based content. Younger children also used online resources (especially images), but parents were more likely to diversify the range of places and media forms that helped younger children locate information about their interests.

family and community life

In this final section, we contextualize family experiences further through parents' reflections on family health, community experiences, and child rearing. We explore families' experiences with health care resources, including how technology and the Internet are implicated in these activities, because family health is a basic and critical indicator of overall family well-being. Doing so also provides some context for how families engage technology for everyday goals beyond those related to communicating with schools and supporting their children's education. We also report on parents' perceptions of their local communities as places to live and raise children, as well as their worries and hopes related to raising their children in Denver, and in the U.S.



Family health

Parents were asked if they currently have any kind of health coverage; 51 out of 60 parents (85%) reported that they did, but with varying degrees of knowledge about what types of coverage they had. Many parents reported that their children had Medicaid coverage, even if they were unsure about their own coverage. When asked to evaluate the health care they had received in the last 12 months, 13% described it as “fair or poor,” 57% as “good or very good,” and 30% as “excellent.” Parents were also asked to evaluate their own general health and their children’s general health. Children’s health was more often described as “very good or excellent” (65%), than parents’ own health (32%).

When asked how they seek health information, parents most often mentioned asking health professionals or searching for things online. Parents considered the Internet a useful way to obtain health information because it provides quick and free access to a number of resources in English and Spanish. Having Internet access at home has made it easier for parents to search for symptoms or remedies (through Google, WebMD, and YouTube) when faced with non-urgent health problems. Parents also described searching online for healthy food recipes, particularly when someone in the family had a condition with dietary restrictions like diabetes.

Because communication with doctors and other medical professionals was sometimes difficult or involved delays, parents took comfort in being able to look up health information online. Some considered the Internet a more comfortable alternative, as compared with discussing sensitive health topics with doctors or friends.

“ Yeah, just looking up for any concerns or questions that I might have. It’s just easier than me trying to get ahold of the doctor, calling the nurse ... because then you get a voicemail [saying] “We’ll call you back in two hours,” [and] those two hours turn into two days. ”

—Mother of a fourth-grade girl (age 9)

“ Because when they tell you something is wrong with you and you don’t understand, you’re embarrassed to ask the doctor. You can go on the Internet and look for that. ”

—Mother of a second-grade boy (age 6)

“ Uno casi no busca esa [información] con los amigos o familia. En el Internet es más fácil. A veces por no hablar, ya ni la busca uno la información.

One does not really ask for that [information] with friends or family. It’s easier on the Internet. Sometimes not wanting to talk about it can keep one from looking for information. ”

—Father of a sixth-grade boy (age 11)

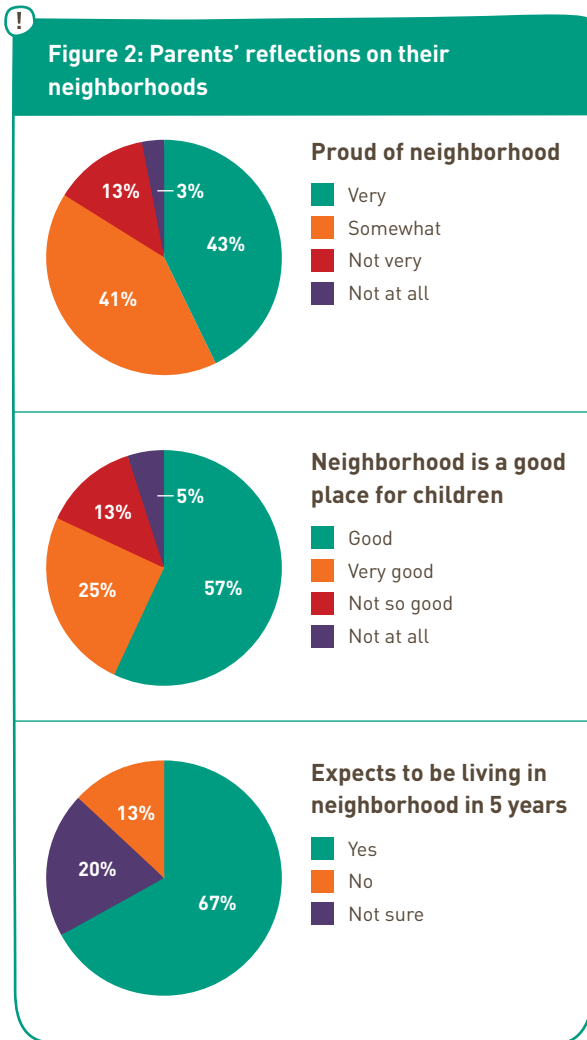
A few parents did mention, however, the need to be cautious when accessing health information online. They recognized the risk of being misinformed by uncertified sources. Some parents distrusted the Internet as a health information source for that reason, preferring to speak with a medical professional directly (either by phone or in person).

Perspectives on community life

In a fixed-response portion of the interview, parents were asked about their community perceptions, including how proud they are of their neighborhood, whether they considered it a good place to raise children, and if they thought they would still be living in their neighborhood five years after the interview was conducted.⁹

The majority of parents (84%) were either very or somewhat proud to say that they lived in their neighborhood. A quarter felt it was a very good place to raise children, with 57% feeling it was a good place to raise children. When asked if they expected to be living in the neighborhood within five years—considered a measure of likely investment in the community in the near future—67% of parents said yes, 13% said no, and 20% were unsure (see Figure 2).

⁹ These questions have previously been used in a series of quantitative surveys conducted by the Metamorphosis Project at the University of Southern California.



The majority of parents therefore felt at least somewhat positive about their communities as places to live and raise children, and two-thirds expected to stay for at least five more years. Parents also shared their perspectives on what they worried about when it came to raising their children in Denver, and in the U.S. more generally—and conversely, what opportunities they felt their children had as a result.

Parents' child-rearing concerns

While parents were optimistic that growing up in the U.S. improved their children's life chances, some also had safety concerns related to gangs, drugs, sex offenders, and school shootings. When asked to elaborate on their concerns about

raising children in the U.S., parents often framed these concerns locally; there was broad agreement among parents that children in Denver were experiencing too much peer pressure and bullying at school, and that they might eventually become exposed to drugs and gangs. For these parents, legalized drugs and school shootings in Denver were salient threats to their children's well-being.

“ [Me preocupa] la seguridad en las escuelas. Ahora en cualquier momento puede pasar algo. La otra vez en la escuela de mi hijo, los lockearon porque [alguien] se metió uno con pistola. [I worry about] safety at schools. Anything can happen these days. One time, my son's school locked them down because [somebody] came in with a gun. ”

—Mother of a fourth-grade boy (age 9)

Parents' concerns about children's safety at school were reinforced by media narratives, and many were aware that their perceptions had been affected by such coverage.

“ La seguridad sí, porque uno se alarma por las noticias... si piensa usted que cualquier cosa les puede pasar a tus hijos. Y más depende del temperamento de los niños, piensas que hasta en la escuela les puede pasar algo. Pero, pues hay cosas que uno no las puede evitar o no puede estar siempre con ellos también. Safety does [concern me], because the news is very alarming... if you think about all the things that could happen to your children. And it also depends on the children's character, to think that something can happen to them, even at school. But there are things you just can't avoid, and you also can't always be with them. ”

—Mother of an eighth-grade girl (age 13)

Immigrant parents also mentioned a set of concerns related specifically to their migration experiences. They discussed anxieties about their limited capabilities to help children navigate U.S. institutions, and divulged fears about family

separations resulting from deportation and government surveillance.

“ Es lo que me preocupa, no estar con ellas cuando ellas crezcan. Ya ves como están separando a las familias, que sacan al papá o la mamá.

What worries me is not being there for them when they grow up. You know how they're splitting families now. They'll remove the father or the mother. ”

—*Mother of an eighth-grade girl (age 13)*

Immigrant parents have a dual frame of reference (Reese, 2001) that allows them to make direct comparisons between conditions in their country of origin, and the one in which they have settled. Some were concerned about how their children may be affected by growing up in the U.S., as compared to in Mexico. Longer settled parents were more familiar with their host communities and generally felt more secure about raising their children in them. Regardless of their residential tenure, immigrant parents were united in their conviction that family safety and a healthy upbringing depended primarily on the values instilled at home, as opposed to larger environmental conditions.

“ Mi preocupación más grande cuando llegué recién embarazada del mayor, mi pendiente de que él creciera aquí eran las pandillas. Porque uno está en México y escucha que en Estados Unidos, que puras gangas, cholos, delincuentes. Y me preocupaba de eso y que de la obesidad, pero ya veo que no. Depende como uno los crie.

One of my biggest concerns when I first got here pregnant with my eldest, was to think he would grow up around gangs. Because while in Mexico you hear about U.S. gangs, punks and delinquents. I worried about that and obesity. But now I see that it's not like that. It depends on how you raise them. ”

—*Mother of a third-grade boy (age 8)*

Parents' hopes for their children's futures

Despite the concerns detailed in the previous section, most immigrant parents were emphatic about stressing that their children were better off being raised in the U.S. than in Mexico.

“ Puede decir que hay muchas [preocupaciones], pero no es específicamente aquí en Estados Unidos siempre. Uno como padre se preocupa por la forma [en] que los estamos criando. Pero no es específicamente porque estamos viviendo aquí en este país.

You could say that there are many [concerns], but they're not always specific to the United States. As a parent you worry about the way [in] which you're raising them. But it's not specifically because we live in this country. ”

—*Mother of a sixth-grade boy (age 11)*

Most parents were quick to identify their children's education as the greatest opportunity they enjoyed by growing up in the U.S. Scholarships, grants, and government support were often cited as specific educational opportunities for children, especially when compared against parents' own opportunities growing up in either the U.S. or Mexico. For most parents, the U.S. seemed like a more intellectually nurturing environment (with extracurricular activities and cultural institutions) for children than the one in their countries of origin.

“ Aquí tienen muchas oportunidades, tanto como para el estudio como para tener un mejor futuro... Yo les digo que este es el trabajo de ellos, estudiar. Esa es la herencia que nosotros como padres les vamos a dejar. They have a lot of opportunities here, from education to having a better future... I tell them that this is their work, to study. Because that's the inheritance that we, as parents, will leave for them. ”

—*Mother of a fourth-grade girl (age 9)*

“ Que saben el ingles; eso les da la oportunidad de que el gobierno les dé préstamos, algo para sobresalir ellos más adelante. Y el Internet también, se me hace que es una tecnología que les ayuda en todo lo necesario. That they know English; that gives them the opportunity to get loans from the government, something to be successful in the future. And the Internet also, I think is a technology that helps them with anything they need.”

—*Mother of fourth-grade boy (age 9)*

Parents believed that growing up in the U.S. would provide children greater access to educational and professional options. They viewed their children's bilingualism and technological skills as resulting from opportunities gained through migration.

conclusions and implications

The findings presented in this report were shared and discussed with Denver Public School officials, as well as with 16 parents and 18 children in follow-up meetings held with interviewed families at the two school sites between January 26 and January 28, 2015. In returning to Denver, our primary goal was to conduct “member checks” with families by confirming that certain findings from the Denver site that contrasted with what we had seen in the other two study sites were indeed valid.



The first finding we wished to confirm was that interviewed families have broad-ranging media environments—meaning both the range of digital technologies they report having at home, and the high rates of owning multiple devices of the same type. Parents and children who came to these meetings once again described rich and varied media environments. When we asked parents and children if there were any devices that their family needed but did not currently have, neither parents nor children could easily think of any. Children generally felt they had every device they wanted (other than a few who really wanted a cell phone, but had to wait until their parents felt they were old enough to have one), and parents were more likely to say that their families had too many devices, than to feel their families lacked sufficient access to them.

Second, we found more evidence of parents and children using tech independently than in either of the other sites. Our visit confirmed that parents and children spend less time engaging around technology together. In part, these patterns stemmed from having more devices in the home—less sharing was required than in the other two study sites. That a greater proportion of parents from the Denver site had adopted computers and Internet for their own use, before their children needed it, was likely a contributing factor.

Finally, our follow-up focus groups confirmed that parents who participated in the study at the Denver site have especially good communication and very high levels of trust in teachers—especially with regard to decisions about tech use during class. Parents reinforced our finding that teachers frequently recommend particular websites, apps, or activities for their children, and that parents readily adopt these suggestions at home. Parents' belief that teachers know best was reflected in interview data across sites—if recommendations for tech use at home come directly from the teacher, parents are more likely to believe that they have academic benefits for children. In Denver, we confirmed particularly robust relationships between families and schools/teachers.

While parents trust teachers' decisions about tech use, most had only vague ideas about how their children are using technology and/or the Internet at school. What they know comes mainly from hearing their children talk about a website or game that they used while in the computer lab or when computers were brought to their classroom. Taken together, parents' willingness to adopt teachers' recommendations and their limited understandings of what their children are doing with technology highlighted the need for additional parental support.

To varying degrees, parents reported feeling ill-equipped to monitor their children's online activities, and indicated that they would like to learn about resources that can help them do so. While schools have communicated to students and parents about online safety, and parents generally feel satisfied with the supervision of their child's online activity at school, many would still appreciate more hands-on training on the topic. Only a few parents used online tools to monitor their children's activities and to disable access to certain websites. Building on parents' willingness to accept teachers' technology-related recommendations can further strengthen the home-school connections that are already strong as evidenced by the findings in Denver.

Finally, there are opportunities for schools to help support children's interest-driven learning, which is how informal learning at home really happens. The parents who are already supporting these experiences were more likely to be college-educated (whether in the U.S. or in Mexico). Parents with less education are more likely to be unfamiliar with how media can stoke their children's curiosity and facilitate enriching learning experiences. Media-based school assignments that encourage the kinds of investigations that are typical in interest-driven learning experiences could bring parents into the learning process. Such assignments would have to be consciously designed as to motivate (and perhaps require) parental involvement. These efforts could be fruitfully supported by schools providing expanded access to parent computer and language classes, further building their capacities to meaningfully engage technology with their children for a broad range of learning goals.

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