

Lost Connections in a World of Connectivity



Findings from a study on the use of technology with young children in Silicon Valley



Introduction

The Center for Early Learning (CEL) at Silicon Valley Community Foundation is committed to understanding today's early learning landscape, the region's most challenging problems and the ripest opportunities for improving the lives of Silicon Valley's youngest children and their families.



This paper summarizes a first-of-its kind study investigating how parents, educators and librarians in Silicon Valley, California use technology and its digital content with young children. This comprehensive study addresses questions of use, attitudes and access across four settings in which young children are learning and growing:

1. Households
2. Schools
3. Child care and preschool settings
4. Libraries

Background

A [2017 Common Sense Media report](#)ⁱ indicated that nationwide 98 percent of children, ages eight and younger, live in homes with mobile technologies, up from 75 percent in 2013 and 52 percent in 2011. Not only are there more tech devices in homes, but there has also been an explosion in the amount of digital content for these devices.

[According to Apple](#), there are now 80,000 apps in the education section of the App Storeⁱⁱ. These findings, and others from various national reports, created the impetus for CEL to convene researchers, educators, tech developers and funders over the past several years to explore the issues that surround the rapid rise in young children's technology use:

- How should parents and educators use technology with young children to help them learn?
- How can technology be used as a tool that promotes school readiness for all children and not just a select group of children?
- How can developers, distributors, researchers, educators and parents connect to ensure that the technology developed is widely accessible and optimal for children's development?
- What tools or resources can be developed to help parents and teachers identify developmentally appropriate and educational apps/programs?

From these convenings, CEL determined that in order to answer these questions, a better understanding was needed of how young children use technology in Silicon Valley.

Research Methodology

CEL partnered with New America and Joan Ganz Cooney Center to conduct both quantitative and qualitative research to gather information from parents, teachers, child care providers and librarians in three California counties: San Francisco, San Mateo and Santa Clara.

The primary data collection method was online surveys of 907 parents and 617 educators of children from birth through age 8. Public school officials and officials in early learning centers in the three counties distributed the survey electronically to educators. It was administered from May 20 to June 24, 2016, and respondents were encouraged to fill out the survey by participating in a raffle for \$200 worth of prizes. The survey of parents was conducted November 6 to 23, 2016, in English and Spanish, using a socioeconomically diverse panel of adults in the three counties. Participants were drawn from two large, national opt-in research panels administered by Qualtrics and M4. The survey was administered by the polling firm FM3. The margin of error for the survey of parents was +/- 3.3 percent at a 95 percent confidence interval.

Summary

From March 2017 through August 2017, CEL also conducted a community roundtable discussion with administrators, funders and researchers and an additional six dialogue sessions with parents and librarians.

Access

	Educators	Parents
Have internet access	90%	96%
Have at least one device (e.g. smartphone, tablet, desktop, laptop)	97%	96%
Are confident using technology	93%	90%

It is not surprising that in Silicon Valley, the global hub of technological innovation, parents and educators report near universal access to a technological device: a smartphone, tablet, laptop, desktop or e-reader. Not only are technological devices easily accessed, but parents and educators report both high confidence in using technology and high rates of usage.

Frequency of Use

Both surveys also highlight that young children are frequently using technology:

Parents:

- Two out of three parents report that their child watches a show online at least a few times a week with 29 percent reporting that their child watches every day
- Two out of three parents report that their child plays a game on a mobile device at least a few times a week with 26 percent reporting that their child plays a game every day

Educators:

- Of the educators that report having a laptop computer, 85 percent report using it every day or almost every day in their classroom
- Of the educators that report having a tablet, 60 percent use it every day or almost every day in their classroom

Study Highlights

Despite near universal access and high rates of usage, there are several sides to access, quality and uses of technology with young children in Silicon Valley. Our study also highlights:

- Disparities in access to high-quality technological environments between:
 - Families that are low-income versus high-income
 - Hispanic families versus white/non-Hispanic and Asian/Pacific Islanders families
 - Families in San Francisco County versus San Mateo and Santa Clara Counties
 - Inequities in the quality of technology available in education settings serving a higher number of lower-income children
- The need for resources to help parents and educators identify developmentally appropriate digital content and understand developmentally appropriate practices in using technology with young children

Parents view the use of technology as a necessity

"It is hard for us to meet our daily expenses but we have a cell phone plan. It is no longer a luxury, it is a necessity."

"Internet and technology opens new worlds. They allow people across income levels to have access to learn new things."

All quotes were collected during community conversations held between March and August 2017.

Data Highlights and Priority Findings

Top Challenges to Using Technology and Digital Content

Despite the fact that having a device, such as a smartphone, has become ubiquitous and even as commonplace as a television in households, there are many challenges to digital content use that affect the quality of technological environments in homes and classrooms.

What challenges do you face when trying to use digital content tools or software? (top 3 responses)

Educators		Parents	
Internet too slow	47%	Internet too slow	36%
Software problems	28%	Too many people sharing a device	34%
Device is broken or not working	23%	Device is broken or not working	30%

Top Challenges to Using Technology and Digital Content in the Home

These challenges become even more pronounced in lower-income households.

Percent of parents who report having experienced each challenge to technology and digital content use, by household income levelⁱⁱⁱ

Challenge	Less than \$48,600	\$48,601–\$72,899	\$72,900–\$121,499	\$121,500 or more
Lack of access to the right tools/software at home for school assignments	31%	28%	26%	18%
Home internet is cut off	34%	30%	27%	19%
Home internet is too slow	49%	49%	32%	25%
Home computer is too old/slow	40%	35%	28%	24%
Cell service is cut off	27%	24%	14%	18%

While there are no significant differences in households across income in owning a device, not surprisingly, lower-income families experience more technology challenges. Families whose household income is less than three times the federal poverty level (\$72,900) encounter the most challenges.

Note: The federal poverty level for a family of four is \$24,600 and three times the federal poverty level for a family of four is \$72,900.



Even in Silicon Valley, a digital divide exists

"There are whole neighborhoods in San Francisco that cannot get access to internet, most of them are the low-income neighborhoods"

"I have watched kids in the library type full papers on smartphones."

"Internet service in Pescadero is not very good at all. You'll see people standing in the parking lot outside of [the family resource center] trying to get service."

"With the increase in rent, more people I know, including me, have to cut off our internet."

All quotes were collected during community conversations held between March and August 2017.

Additional significant findings include:

- Hispanic families tend to experience more home technology challenges than white/non-Hispanic or Asian/Pacific Islander families. For example, 39 percent of Hispanic parents said that they have problems with broken computers, compared to 31 percent of white parents and 25 percent of Asian parents. (The sample of black parents was too small in this survey to make comparisons.)

Percent of parents who report having experienced each challenge to technology and digital content use, by race/ethnicity

Challenge	White/ Non-Hispanic	Asian/ Pacific Islander	Hispanic
Home internet is too slow	32%	37%	46%
Too many people sharing the computer or device	31%	34%	45%
Home computer device is broken or not working	30%	25%	39%
Hit the data limit on service	25%	22%	41%

- There is some indication that parents in San Francisco County experience more home technology challenges than parents in the other two counties. For example, 32 percent of parents living in San Francisco said that their children do not have access to the right tools/software at home for school assignments, compared to 18 percent of parents in San Mateo County and 22 percent of parents in Santa Clara County.

Percent of parents who report having experienced each challenge to technology and digital content use, by county

Challenge	San Francisco	San Mateo	Santa Clara
Don't have access to right tools/software at home for school assignments	32%	18%	22%
Hit the data limit on the device	39%	18%	26%
Cell service is cut off	29%	22%	15%

Parents struggle with identifying educational and age-appropriate digital content and technology

"Kids teach us. My kid taught me how to use my phone, so how can I expect him to listen to me regarding what is appropriate?"

"I have apps on my phone that I don't even know how they got there, let alone whether they are appropriate or not."

"Educational programs are the ones that are most expensive."

All quotes were collected during community conversations held between March and August 2017.

Data Highlights and Priority Findings *(continued)*

Top Challenges to Using Technology and Digital Content in Education Settings

As with households, there is not a significant difference in access to technological devices between education settings serving more children from low-income households compared with those serving children whose families have higher incomes. However, there is a significant difference in the quality of the technology. Schools with more lower-income students have a bigger problem with broken hardware. Further analysis reveals that educators from schools serving more lower-income children report a higher number of total tech challenges in the classroom, such as broken hardware, software problems and alignment between devices and software.

Percent of educators who report having experienced each challenge to technology and digital content use, by federal subsidy level

Challenge	Full sample	Majority of students on federal subsidy	Minority of students on federal subsidy
Broken hardware	25%	34%	16%
Software problems	26%	32%	21%
Alignment between devices and software	19%	24%	15%

Home and School Connection

Sixty-seven percent of teachers in transitional kindergarten through third-grade (TK–3rd grade) say they have at least on one occasion not assigned homework that requires technology or digital media because they think their students do not have access at home. This percentage increases in schools serving more low-income students.

Have you ever NOT assigned homework to kids because you thought they didn't have the right access to media or technology at home?

	Yes	No
Full sample	67%	33%
Majority of students on federal subsidy	81%	19%
Minority of students on federal subsidy	61%	39%

Forty percent of parents report that home technology challenges make it hard for their children to keep up with their peers in school. This perception is especially common among Hispanic parents and parents living in San Francisco County, with 49 percent of Hispanic parents and 52 percent of parents living in San Francisco County reporting that home tech challenges make it harder for their child to keep up with peers at school.

Percent of parents who report that home tech challenges make it harder for their child to keep up with their peers at school, by county and race/ethnicity

County	Yes	No	Don't Know
San Francisco	52%	41%	7%
San Mateo	32%	56%	12%
Santa Clara	35%	52%	14%
Race/Ethnicity			
Hispanic	49%	41%	10%
White/Non-Hispanic	38%	50%	11%
Asian/Pacific Islander	29%	58%	13%

Correspondingly, a greater percentage of Hispanic parents and parents living in San Francisco County report that teachers often assign or suggest homework that requires the use of technology.

Parents believe technology is a benefit to their children but also have real concerns about how it affects young children's development

"I'm really concerned about how technology affects other skills. I see my friend's kid who can use the tablet better than his mom at age 4 but still cannot hold a pencil."

"I think it can really affect socialization in many ways. My daughter is always on the phone, not with her friends. When I try to take the phone away there are problems."

All quotes were collected during community conversations held between March and August 2017.

Attitudes and Beliefs Toward the Use of Technology with Young Children

Both the parent and teacher surveys examined attitudes and beliefs towards the use of technology with young children. The intent was to gauge parents' and teachers' perspectives on questions such as:

- Are today's children benefiting from media and technology?
- Are digital technologies creating an easily distracted generation with short attention spans?
- Should children be kept away from technology at a young age?
- Are differences in access to computers and the internet at home contributing to educational inequality?

Educators

Educators serving more low-income children are more likely to agree that differences in access to technology at home are leading to inequality in the classroom.

Interestingly, educators serving higher-income children agreed more than educators serving lower-income children that technology should not be introduced early and that technology was leading to a distracted generation.

Elementary school educators (TK–3rd grade) tended to agree that technology led to a distracted generation, yet at the same time, they also agreed that it gave children an advantage and should be introduced early. Conversely, early childhood educators (birth–preschool) agreed that technology should not be introduced at a young age.

Groups that significantly agreed more with the following statements

Statements	Educators serving more low income children	Educators serving more high income children	Early Childhood Educators (Birth–3 Years old)	TK–3rd grade educators
Young children should NOT be exposed to technology so they can develop other skills before using digital content		✓	✓	
Children should be exposed to technology from a young age so they grow up learning to use it and feel comfortable with it	✓			✓
Technology is leading to inequality in the classroom	✓			✓
Technology is creating an easily distracted generation with short attention spans		✓		✓

Parents

Parents in general felt that educational media could be beneficial for their children in multiple subject areas (language, reading, and writing; math; science, art; social studies; social emotional skills; and creativity). There were no significant differences in these beliefs between subgroups of parents. Lower income and Hispanic parents were more likely to believe strongly that children should NOT be exposed to technology at a young age so that they can develop important skills first.

Data Highlights and Priority Findings *(continued)*

Most Trusted Resources to Help Identify Educational Digital Content and Technology

Both educators and parents report that other than browsing their most trusted resources to help identify educational digital content and technology are friends and family, educators and schools. Upon more in-depth discussions with parents, they indicate that while they would trust teacher recommendations, they receive few, if any, recommendations from teachers.

How do you identify educational media? *(top 3 responses)*

	Educators		Parents
Suggestions from colleagues	64%	Friends and family	80%
Browsing	51%	Teachers	78%
School lists or requirements	37%	School lists	69%

The Role Of The Public Librarian

When it comes to young children's use of technology, librarians uniformly agreed that the most important role they can play is to help parents navigate the use of technology with their child. However, nearly all of the librarians state that they are not currently prepared to adequately step into that role for a number of reasons:

1. There is simply not enough time to offer more than what they currently do
2. They need to have a better understanding themselves of how to identify what is educational and what is not
3. Programs and technology are constantly changing, so it would be challenging to stay up-to-date and provide meaningful guidance
4. It is difficult to reach the families who need the most help on using technology
5. Many of the librarians expressed their view that it is not their role to provide his/her own recommendation regarding media (print or technological) but to advise patrons based on patron interest. In addition, they are hesitant to recommend any media that the user would have to purchase.

Librarians agree that an understanding of how local education settings, such as elementary schools, recommend the use of technology with young children would be important for them in their role. However, in general, intentional communication between Silicon Valley public libraries and local elementary schools is rare, let alone specific to early learning technology.

The American Academy of Pediatrics released **new recommendations** for children's media use in October 2016

Not one of the over 80 educators, parents, librarians and other community stakeholders that participated in community dialogue sessions held in spring/summer 2017 knew of the new recommendations.

Parents trust both educators and health care providers regarding advice on the use of technology with young kids, but trust educators more

"I would trust both, but I would trust the teacher more. They spend more time with my children."

"It is hard to know who is credible or true. Doctors say technology is bad, and teachers say technology is good."

All quotes were collected during community conversations held between March and August 2017.



Recommendations

These findings show that in Silicon Valley, technology is a necessary tool for the future. However, there is clear evidence of disparities in access to high-quality technological environments, and a lack of resources to support parents, educators and librarians in their use of technology to support young children's school readiness and learning.



Silicon Valley is often considered the birthplace of global technological innovation. This is why it is a natural fit for Silicon Valley to lead the way in ensuring that digital media and technology designed for young children considers optimal child development and promotes, rather than hinders, equity in school readiness and learning.

Building upon a foundation of priorities New America proposed in its April 2017 report, *How to Bring Early Learning and Family Engagement Into the Digital Age*,ⁱⁱⁱ SVCF's Center for Early Learning offers the following recommendations for educational app developers and distributors, school districts, policymakers and investors.

Educational app developers and distributors

1. Educational app developers should consider the appropriateness of their product based on the age and developmental stage of the children that their app is targeting.
2. Educational app developers should conduct research with intended end users to ensure that positive child outcomes result from the use of the product.
3. App distributors, within their marketplaces, should spotlight or elevate programs and apps that are research-based and developmentally appropriate, so users can easily identify high-quality digital content for young children.

Schools districts

1. Local school districts should adopt policies that address the procurement of technological devices and include plans for consistent maintenance and upgrades for their devices.
2. Local school districts should provide joint professional development for all pre-K through 3rd grade administrators and teachers on developmentally appropriate use of educational technology with young students. Training should cover how to engage parents in conversations about educational technology use in the home and classroom.

Policymakers

1. State governments should task their own [State Advisory Council on Early Childhood Education and Care](#)^{iv} with examining technology issues in early learning and providing recommendations on technology use as a part of state early learning standards.
2. Librarians and public library leaders should be required to sit on State Advisory Councils on Early Childhood Education and Care and in other local decision-making bodies such as child care planning councils. They should be considered key stakeholders in recommendations on technology use with young children.
3. Federal government should fund research and development initiatives that build a stronger foundation of basic and applied research on the efficacy of new technologies to support children's learning, as well as the efficacy of approaches and tools that support teachers, librarians and parents.
4. The U.S Department of Education should create an early learning companion guide to the *Ed Tech Developer's Guide: A Primer for Software Developers, Startups, and Entrepreneurs*^v that focuses on the developmental stages of young children birth through age eight, the importance of interaction between a young child and caregiver when using tech with this age group, and the tech needs and desires that are specific to child care and early elementary school settings.

Investors

1. Investors should fund the creation and dissemination of resources that help parents and teachers find educational content and learn best practices of technology use for young children.
2. Investors must elevate the issues of access that still exist despite nearly universal access to a device. For example, investing in creating offline educational programs that, once downloaded, no longer need Wi-Fi or cell services in order to run can help address poor internet service or data limits.
3. Investors in educational digital media and technology should require developers of programs and apps marketed as educational to consider developmentally appropriate content and to back up their claims with research.

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<https://www.common sense media.org/research/the-common-sense-census-media-use-by-kids-age-zero-to-eight-2017>
 - ii Hirsh-Pasek, Kathy, Zosh, Jennifer, et al (2015).
Putting Education in "Educational" Apps: Lessons from the Science of Learning. Psychological Science in the Public Interest. 16(1), pp.3-34
 - iii Guernsey, Lisa and Michael H. Levine.
How to Bring Early Learning and Family Engagement Into the Digital Age: An Action Agenda for City and Community Leaders, April 2017.
 - iv Section 642 B(b)(1)(A)(i) of the Head Start Act requires the Governor of each State to designate or establish a council to serve as the State Advisory Council on Early Childhood Education and Care for children from birth to school entry. The overall responsibility of the State Advisory Council is to lead the development or enhancement of a high-quality, comprehensive system of early childhood development and care that ensures statewide coordination and collaboration among the wide range of early childhood programs and services in the State, including child care, Head Start, IDEA preschool and infants and families programs, and pre-kindergarten programs and services.
<https://www.acf.hhs.gov/ecd/state-advisory-councils>
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Glossary of terms

Digital content

digital media and software

Educator

child care provider, preschool teacher, and TK–3rd grade elementary school teacher

Silicon Valley

San Francisco, San Mateo and Santa Clara counties

Technology or technology device

a unit of hardware, such as laptop, desktop, smartphone, tablet, e-reader

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