This report provides the research foundation for the design of School2Home. The overall School2Home comprehensive approach is delineated and the 10 Core Components are described along with the evidence for each. The report highlights recent far-reaching reforms in state and federal education policy and illustrates how School2Home supports these changes in policy and practice. It concludes by discussing and documenting how new education policy and the growing body of research on educating college-and-career-ready students argue for additional investments in School2Home. School2Home informs a path forward for education leaders from the public, private and philanthropic sectors to work together to prepare a new generation of California workers.

The need and opportunity for California to invest in learning facilitated by technology within and beyond the classroom to address the needs of students in low-performing schools have never been greater. There is a growing body of research that demonstrates the benefits of educational technology applications, personalized and project-based learning, and real-time assessments that help teachers understand their students’ progress. Moreover, recent changes in state and education policy provide districts and schools with more flexibility, funding, and resources. This supports educators and parents in their efforts to equip underserved students with the deeper learning skills they need for college and careers. Policymakers note the importance of implementing community-driven, culturally appropriate, and comprehensive interventions that address student performance on a number of dimensions. In an increasingly interconnected world, a sole focus on any one dimension is bound to fail. In addition, state and federal education policies recognize the potentially-transformative connecting role that technology can play in these multi-dimensional interventions, from engaging students and reducing absenteeism, to strengthening parent engagement with their child’s school and learning, to improving academic proficiency and preparation for work. New technology tools and methods also offer expanded ways for teachers and school leaders themselves to learn, communicate, and collaborate with others in their field and in their communities.

1According to the Hewlett Foundation, “deeper learning” is a set of six competencies aligned with success in today’s educational and economic world and features critical thinking, mastery of academic content, effective communication, collaboration, self-direction, and a belief in one’s ability to grow.
These critical technology developments have so much potential—but one persistent problem, if not addressed, will impede progress. In spite of recent gains in broadband adoption, the Digital Divide persists. More than five million California residents remain offline at home. The rate of broadband adoption varies by socio-economic status, race and ethnicity, and level of education. Of all California households with children under age 18, those without broadband are more likely than those with broadband to be Latino, foreign-born and non-English-speaking, and with a family income of less than $50,000. The head of households without broadband is also less likely to have attended college.ii

The Digital Divide follows other systemic inequalities and contribute to what leading education experts call a digital use divide—a divide that separates students who actively use technology at home and at school in ways that transform their learning from those who only passively use technology to complete similar tasks as before but with an electronic device.iii These divides perpetuate and reinforce differences in school ratings and related student outcomes between schools located in low-income neighborhoods and those in affluent neighborhoods. They exacerbate educational inequities faced by students of color and children from low-income families.

“Schools across the country need to start providing more learning opportunities for students to create and collaborate with technology instead of just using it to consume information,” claims Joseph South, Chief Learning Officer at the International Society for Technology in International Education (ISTE) at a 2016 conference. “It is not enough to have the connectivity; it’s not enough to have smartphones.”iv Establishing an active learning environment requires school buy-in and executive leadership to pivot an entire school and district. And students and families need appropriate devices and Internet access at home.v

In the 2016 Annual Infrastructure Survey conducted by the Consortium for School Networking (CoSN), 42 percent of the nation’s district technology leaders ranked addressing the lack of home broadband access as a very high priority (on a scale of 1 to 5).vi Students need pervasive access to technology outside the home to enrich their educational experience,” wrote David Hutchins, vice president of higher education and K–12 education for CDW•G, in an article exploring these survey results. “Roughly 7 in 10 teachers make assignments that require home broadband.”vii Students without the right digital tools and access are at a serious disadvantage in developing the skills they need for college and careers.

“The Digital Divide perpetuates differences in student performance between high-performing schools and low-performing schools. Over time, these imbalances can translate into a widening chasm that keeps low-income youth, students with disabilities, immigrant youth, and youth of color disconnected from the skills and resources they need to better their circumstances. A comprehensive technology integration intervention, thoughtfully implemented in low-performing schools, can begin to level the playing field for these young people.”

Sunne Wright McPeak, President and Chief Executive Officer of the California Emerging Technology Fund
In 2009, the California Emerging Technology Fund (CETF) and The Children’s Partnership brought together leaders from the public, private, non-profit and philanthropic sectors to design an evidence-informed initiative to help close Achievement Gap and the Digital Divide. The result of this investment was School2Home, a statewide initiative to improve student outcomes by integrating technology into low-performing middle schools to improve teaching, learning and parent engagement.

Research on effective teacher professional learning development, school leadership, systems change, place-based initiatives and parent engagement informed the design of School2Home. Focus groups with parents, teachers and students in low-performing schools helped ground the program in the realities and challenges of working in high-poverty neighborhoods. Research and evidence that identified factors related to successful implementations were also carefully considered. Implementation factors associated with success included:

- Leadership
- Positive Teacher Attitudes toward Technology
- Extensive Teacher Professional Learning
- A Solid Technology Infrastructure
- Technical Support

The conceptual design was beta-tested in two sites (Robert Louis Stevenson Middle School in Los Angeles and Central Middle School in Riverside). Lessons learned from these test sites further enhanced the final design of School2Home. It is based on research and evidence and a shared understanding by California leaders that technology is not an end in itself but rather a vital tool for learning.

**School2Home Today**

School2Home is managed by CETF and is in various stages of implementation at 35 low-performing middle schools in 12 districts throughout California. The schools are located in high-poverty neighborhoods and communities where broadband adoption rates are below that of the state as a whole. These schools have high percentages of students who are English Learners and who are eligible for free and reduced lunch.
Although the 10 Core Components of School2Home are continually updated to reflect changes in technology and policy, the critical elements of success, as gleaned from rigorous academic research, interviews with education technology leaders, and observations from School2Home staff remain largely unchanged. The prevailing evidence on what it takes to consistently raise the bar on student outcomes continues to reinforce the need for a multi-faceted approach.¹

The School2Home 10 Core Components remain the guiding framework. These mutually-reinforcing interventions that transform school culture to improve student outcomes on a range of measures. School2Home provides the essential framework to turn around low-performing schools and the requisite platform for innovative pedagogy, personalized learning, and Common Core State Standards. School2Home program managers and community partners provide participating schools with ongoing capacity-building services and implementation supports. Together, these partners work with School Leadership Teams to facilitate proper planning, stakeholder engagement, implementation, evaluation, and sustainability in order to seed a high-performing culture that extends beyond the initial three-year program period. In addition to helping weave School2Home into the fabric of the community, the local partners also help ensure the implementation plan is culturally relevant and has strong support from the neighborhood. The School2Home Theory of Change and Logic Model are in the Appendix.

“The Digital Divide is really about inequality, as is the Achievement Gap. All you have to do is look at your data, and what you find is that the kids who have the greatest disadvantages, and the schools who are serving the kids who are poorest, are doing the least well...so the disparities we see in access to technology and the Internet mirror the disparities we see in achievement outcomes, mirror the disparities in health, the disparities in wealth and life chances. It’s all part of the same picture. And why that is important is because if you try to focus only on one part of the puzzle—and you don’t realize how they’re connected—you’re not going to make any headway.”

Dr. Pedro Noguera, Distinguished Professor of Education and Director of Center for Study of School Transformation, University of California, Los Angeles in remarks to 2016 School2Home Leadership Academy.
A brief description of each of the 10 Core Components along with rational and supporting research is provided below.

1. School Leadership, Assessment, and Planning: A School Leadership Team is formed to assess needs, analyze data, set goals, develop a work plan, and oversee implementation. Headed by the principal and supported by School2Home staff, the Leadership Team works with all school staff, parents and the community to establish a shared vision for the role of technology in their school. As is practical, they align this vision with the district Local Control Accountability Plan (LCAP) as well as the Single Plan for School Accountability (SPSA) that is required for schools receiving Title I funds. School strengths and weaknesses are identified through a variety of indicators to align the work plan with school academic goals and strategies. Assessments provide benchmark data points against which to measure academic progress. Care is taken to leverage technology to meet other LCAP and SPSA requirements, including community, student and parent engagement; school climate; and student engagement.

Rationale and Research
A substantial body of research has demonstrated that successful school transformation efforts require a strong leader with a clear vision that the community and school partners support. Principal leadership, both within the school and with external stakeholders, is essential for the requisite change in school culture. Through the formation of a School Leadership Team, School2Home supports the principal in leading the improvement effort by: creating structures and incentives around a common agenda for learning; aligning resources with learning activities, needs and priorities; and building external relations that can support a school-wide learning agenda, including support from the community.²

“Adding a digital device to the classroom without a fundamental change in the culture of teaching and learning will not lead to significant improvement. Unless clear goals across the curriculum—such as the use of math to solve real problems—are articulated at the outset, one-to-one computing becomes ‘spray and pray.’”

Alan November, Founder of November Learning,
“Why Schools Must Move Beyond One-to-One Computing”
2. Technology Bundles for Students and Teachers: All students receive a computing device to use in the classroom and at home following parent training. Teachers receive powerful devices. School access is necessary for teachers to implement the kind of project-based learning activities that support deeper learning. A device for use at home extends the learning day, facilitates blended learning, and enables students to experience the kind of rich learning experiences their higher-income peers take for granted. It also provides them time to develop fluency needed for online testing and assessments. Home access also supports the Parent Engagement and Training Component.

Rationale and Research
Research on the effectiveness of technology integration endeavors in low-performing schools has shown that simply providing laptops on carts for use in certain classes and at certain times is of limited value. These findings are extremely important, but they are not always well understood. Many schools have been investing in devices for academic performance testing but they have not allowed students to take devices home. This severely limits the utility of school investments in devices. Additionally, research has demonstrated that the extent of students’ use of technology outside the home was the strongest positive predictor of their academic achievement.

Researchers and scholars Vikki Katz and Victoria Rideout note that: “Connectivity and device constraints are likely to have long-term consequence: underconnected youth have less opportunity to develop creative projects, access educational media, explore extracurricular activities, and complete homework.” They suggest that these limitations have long-term consequences, which can compound thorough the child’s K-12 experience, thereby constraining pathways to careers and college.

3. Teacher Professional Learning: Teachers receive professional learning about integrating technology into classroom instruction, homework assignments, and engagement of parents. Teachers are integral to the implementation of School2Home. Technology amplifies the impact of teachers by simplifying differentiation and enabling transformation of learning tasks. To support them in this effort, School2Home provides professional learning modules aligned to the Common Core Curriculum as well as the California Standards for the Teaching Professions. Teachers learn how to design, develop and infuse digital learning experiences that utilize technology in transformative ways. School2Home professional learning also helps teachers develop practices and policies that lead to a welcoming environment for families and parents, both online and in person.

School2Home incorporates a number of approaches. These include all-day planning sessions, group workshops, webinars, online courses and learning communities. Because no two schools are exactly the same, the pacing and content are developed in close collaboration with the Leadership Team.

Rationale and Research
For decades, education leaders have concluded that simply providing teachers with a technology tool and expecting them to maximize its learning potential with students is a strategy destined for failure. However, teacher professional learning is often overlooked. Teachers require sufficient and ongoing professional learning in order to transform their prior teaching methods.
School2Home professional learning activities incorporate best practices. Linda Darling Hammond and her colleagues at The Learning Policy Institute recently reviewed 35 methodologically rigorous studies that found demonstrated a positive link between teacher professional development, teaching practices and student outcomes (School2Home refers to teacher professional development as teacher professional learning). Their goal was to identify the key elements of successful teacher professional learning activities. They found that *effective professional learning* incorporates most, if not all, of the items excerpted and summarized below.\textsuperscript{xv}

### ELEMENTS OF EFFECTIVE TEACHER PROFESSIONAL LEARNING

- **Is content-focused:** It focuses on teaching strategies associated with specific curriculum content supports teacher learning within teachers’ classroom contexts. This element includes an intentional focus on discipline-specific curriculum development and pedagogies in areas such as math, science or literacy.

- **Incorporates active learning:** Active learning engages teachers directly in designing and trying new teaching strategies, providing them an opportunity to engage in the same style of learning they are designing for their students. This approach moves away from traditional learning models and environments that are lecture-based and have no direct connection to teachers’ classrooms and students.

- **Supports collaboration:** High-quality development creates space for teachers to share ideas and collaborate in their learning, often in job-embedded contexts. By working collaboratively, teachers can create communities that positively change the culture and instruction of their entire grade level, department, school and/or district.

- **Uses models of effective practice:** Curricular models and modeling of instruction provide teachers with a clear vision of what best practices look like. Teachers may view models that include lesson plans, unit plans, sample student work, observations of peer teachers, and video or written cases of teaching.

- **Provides coaching and expert support:** Coaching and expert support involve the sharing of expertise about content and evidence-based practices, focused directly on the individual needs of teachers.

- **Offers feedback and reflection:** High-quality professional learning frequently provides built-in time for teachers to think about, receive input on and make changes to their practice by facilitating reflection and soliciting feedback. Feedback and reflection both help teachers to thoughtfully move toward the expert visions of practice.

- **Is of sustained duration:** Effective development provides teachers with adequate time to learn, practice, implement and reflect upon new strategies that facilitate changes in their practice.
In the end, well-designed and implemented professional learning should be considered an essential component of a comprehensive system of teaching and learning that supports students to develop the knowledge, skills and competencies they need to thrive in the 21st century.


4. Coaching and Mentoring: School personnel are designated as technology coaches and content champions to support teachers and embed professional learning. They help teachers deepen their understanding of technology-integrated teaching by providing hands-on assistance in designing powerful learning experiences. The coaches also help teachers increase parent engagement and communication through the use of technology. Working with the Leadership Team, the coaches and champions help establish a learning culture in which instructional coaching is valued and perceived as part of an on-going continuous improvement process.

Rationale and Research
Peer-to-peer coaching offers a powerful supplement to other professional learning activities.

A 2015 report funded by the Bill and Melinda Gates Foundation on professional development found that teachers’ ideal coaching experience is when coaches: (1) Know what it’s like to be in their shoes; (2) Have subject-matter expertise; (3) provide specific feedback that can be applied immediately to the classroom; and (4) Are well-trained at providing feedback (but are not the same person who completes their evaluation). These best practices are incorporated into the Coaching Component of School2Home.

To develop teaching skills with online tools, those responsible for professional development need to model these experiences when developing professional learning offerings. Experienced technology coaches can play an important role in helping to train teachers to use new technological tools and resources.


5. Parent Engagement and Education: Parents receive basic digital literacy training to use the device, ensure online safety, communicate with the school, and support their child’s education. School2Home also works with school leaders to help ensure they establish a “parent friendly” environment and fully utilize digital tools to communicate with parents. Before students can take their school-provided device home, a parents or another adult must attend the training sessions to learn how they can support their child’s education both with and without technology. School2Home trainings also provide parents with other important information to help them gain insights on how they can support their child’s education both with and without technology. Trainers cover topics
such as student curriculum, the use of Smarter Balanced Assessment Consortium (SBAC) tests for measuring academic performance, and how to prepare for a teacher-parent conference. The trainings also help parents understand how to access and use the California School Dashboard, [Fig 1, page 18] to evaluate the strengths and weaknesses of the schools their children attend.

**Rationale and Research**
Perhaps one of the least controversial statements in American education is that parent involvement can make a difference in a child’s education. Decades of research has shown the important roles that families play in a child’s education—supporters of learning, models of lifelong learning and advocates for the right programming and placements for their child—with impacts on multiple indicators of student achievement, including student grades, achievement test scores, lower drop-out rates, students’ sense of self confidence and their beliefs about the importance of education.\(^{xvii}\) School2Home concentrates on leveraging the power of technology to help parents more easily become involved in their child’s learning at home, which has been found to have the most effect on raising student achievement.\(^{xviii}\)

**6. Student Tech Expert Development:** Students are recruited and trained to help provide basic technical support to other students, teachers, and families. The student tech training occurs in an elective course provided by a teacher recruited from the ranks of the teaching staff. Participating students not only empower their own learning, they help other students and teachers learn and become part of the “change management” team at their school. They are also available to help teachers design project-based learning experiences based on real-world issues of interest to youth.

**Rationale and Research**
Research on successful technology integration programs emphasizes the importance of providing teachers, staff and students with sufficient technology support.\(^{xix}\) Having teachers spend valuable classroom time trying to troubleshoot is not only inefficient; it frustrates the teachers and reduces their enthusiasm for using technology and negatively affects outcomes. School2Home ensures against this by helping schools select the right technology at the outset, and also by supporting the implementation of a well-established student technology training program that employs evidence-based learning modules and activities.

The benefits of having student tech experts are boundless. Students are actively addressing a challenge for the school community. They develop a vested interest in device care and they become knowledgeable about upkeep. This, in turn, reduces breakage and repair costs. Students who have not found success in other areas have an opportunity to shine, and they are learning skills that apply beyond the classroom while learning state standards.

**7. Online Resources:** The website provides support for teachers to prepare lessons and assistance for parents to acquire digital skills and engage with schools and teachers. The site also offers tools and resources to guide and support the Leadership Team as they develop goals
and their implementation plan for School2Home. Teachers can access the School2Home professional learning modules and find additional help with lesson preparation and parent engagement strategies. For parents, the School2Home site is the “go to” place to sign up for classes, complete required surveys, and gain access to a wide range of online resources that will help them support their child’s learning. Overall, the School2Home site serves as an important adjunct to the School Leadership Team, coaches, teachers and parents.

**Rationale and Research**

A key aspect of the success and sustainability of School2Home is the capacity-building services it provides to participating schools. Ready access to tools and templates make it easier for implementing personnel to focus on the end results they are seeking, rather than on the mechanics of implementation. These resources can help them manage their time more efficiently, conduct online research, improve their writing and other academic as well as technical skills. School2Home curates some of the best of these resources and tools to help School2Home participants.

**8. Learning Academies:** Principals and teachers participate in workshops and online sessions as learning communities to share best practices and learn from one another. This approach allows principals, teachers and support teams to master tools, strategies, and resources that will support identified goals.

Additionally, School2Home brings together the Leadership Teams from all participating schools at a Leadership Academy. This event is designed to augment and extend the learning communities that are developed at each site. The Leadership Academy is an intensive, off-site gathering where school leaders work together to tackle common problems and share lessons learned with each other as well as with external stakeholders who can support and accelerate their success.

In addition to the annual Leadership Academy, School2Home facilitates Regional Learning Collaboratives that meet 3-4 times a year. In a smaller setting, individuals can become better acquainted with colleagues who work in geographic proximity. These smaller learning communities provide additional peer-to-peer collaborations and represent a key element for ongoing sustainability as the culture of innovation is rooted in the entire district.

**Rationale and Research**

The learning communities (at the school, regional and state level) extend professional learning, facilitate cross-school collaboration, and provide valuable leadership training. These ingredients are critical to sustaining and scaling the intervention.

The learning communities also reinforce the role that leadership plays in implementing School2Home successfully. There is overwhelming evidence that “there are virtually no documented instances of troubled schools being ‘turned around’ without powerful leadership.” The Learning Academy addresses key functions of leadership, with sessions provided on visioning, enhancing school climate, improving instruction and managing people, data and process to foster school continuous improvement.
9. Affordable Home Internet Access: Parents receive information about affordable high-speed Internet service offers and the availability of public broadband access centers. When parents understand the importance of broadband to their families and have information about appropriate broadband service offers in their area, they are much more likely to adopt broadband at home. School2Home staff understands the complexities of the Digital Divide and the obstacles that must be overcome before low-income parents sign up for home broadband.

Rationale and Research
Pew Research Center has reported that there are five million households with school-aged children in the nation that lack home broadband service. Without a way to get online access, students are unable to develop the digital economy skills they need. Jessica Rosenworcel of the Federal Communications Commission (FCC) has said that the Digital Divide hurts our education system. She notes, “Surveys show that teachers are reluctant to assign digital projects when they fear that their students lack safe and consistent Internet access.” In addition, more than half of the principals nationwide now cite digital equity as a major challenge in their schools.

10. Evaluation: A comprehensive evaluation process provides feedback to schools for accountability and input to program managers for continuous improvement to achieve goals. The evaluation includes an implementation and a summative evaluation. The implementation evaluation provides information that school leaders and others can use to make decisions, clarify options, identify strengths and weaknesses, and provide insightful project improvements. The summative evaluation focuses on short-term and longer term impact.

Rationale and Research
The implementation evaluation is informed by the results, experiences and challenges of those who are closest to the work. This helps reinforce the usefulness of the data teachers collect, and it helps them learn how to gather and reflect on information about what they see in their classrooms every day. Educators have often not been given enough credit and responsibility for the insights they gather from their classroom experiences, and from what counselors and parent engagement specialists learn through their work. The outcome evaluation seeks to determine the extent to which School2Home has achieved its longer-term outcomes and impact as delineated in the Logic Model. The outcome evaluation focuses on overall student performance gains.
Funders often reward programs that have a proven record of success as identified through carefully crafted, rigorous evaluation programs of “what works”. This kind of evidence, which employs rigorous experimental or quasi-experimental methods, was in short supply ten years ago when School2Home was designed. Moreover, there was often a mismatch between the kind of learning sought from technology immersion or integration environments and what was tested in standardized assessment.

Since then, however, comprehensive one-to-one technology integration programs have continued to expand, and the number of rigorous evaluation studies centered on student outcomes has also increased. In a meta-analysis and research synthesis on learning in technology immersion environments, researchers Binbin Zheng of Michigan State University and Mark Warschauer of the University of California - Irvine found that digital technologies are indeed reshaping education, with positive results. In their comprehensive research endeavor, they sought to answer two fundamental questions:

1. What is the impact of laptop/technology immersion programs on academic achievement?
2. What is the broader program impact of teaching and learning processes, teacher and student perceptions, and other learning outcomes?

This important meta-analysis examined a total of more than 900 studies; ten of which employed rigorous methodologies and sufficient statistical detail to calculate the effect size of comprehensive technology programs on academic performance. As well, the study included a broader synthesis of other research including case studies, surveys, observations and focus groups that provide important information on other key measures of school and student success, many of which relate to priorities for education in California.
Key Findings on Academic Outcomes
Across all studies and in the main, comprehensive technology integration programs that included at least devices for each student, professional development for teachers, strong leadership, and tech support were found to increase achievement by 0.16 standard deviations, which is statistically significant. Other statistically significant findings included:

- Improved English Language Arts achievement.
- Improved writing achievement.
- Improved mathematics achievement.
- Improved science achievement.

Key Findings on Other Important Student Outcomes
Other important findings gleaned from the full review of the 900 studies included positive gains in the following areas of teaching and learning when compared to schools that were not implementing similar programs:

- Increased frequency and breadth of student technology use. This finding was especially true for writing, research, homework and exploring a wide range of learning opportunities.

- Increased teacher use of student-centered, individualized and project-based learning. Teachers found it easier to individualize learning experiences when every student had a digital device.

- Improved quantity and genres of student writing. Students wrote more frequently and were more likely to collaborate and share their work with others.

- Enhanced home-school relationships. Parents were more likely to pay attention to their child’s homework, grades and attendance.

- Improved student attitudes toward schools. Surveys, interviews and observations confirmed that students liked using their laptops for learning, enjoyed school more and thought they performed better.

- Enhanced teacher perceptions toward technology. When provided with sufficient professional support and continues learning opportunities, teachers became more positive about using technology.

- Deeper learning skill acquisition. Although these skills are more difficult to define and measure, the researchers found evidence of improved collaboration, complex problem solving through project based learning, and abstract thinking by students in technology programs.
Finally, a number of studies reported higher student motivation and persistence compared to students who were not in technology-integrated schools. However, two studies found that enthusiasm for laptops decreased over time, underscoring the importance of pedagogy and curricular support.

**Other Evidence Supporting the School2Home Intervention**

The findings in the large meta-analysis of initiatives and programs that integrate technology corroborate the findings of School2Home studies and evaluations. Integrating technology into the fabric of a school community is difficult in any school and it is daunting for those that serve students living in high-poverty neighborhoods. That is why School2Home is so important: it provides the essential framework as well as technical support and capacity building these schools need.

In the years that followed the design and launch of School2Home, additional research has been conducted on the role of technology in teaching and learning and methods for effective implementation, all of which has continued to support the comprehensive approach employed in School2Home. For example, in 2016, ISTE identified 14 “Essential Conditions” for effective technology integration. These conditions include: shared vision, empowered leaders, implementation planning, consistent funding, equitable access, skilled personnel, ongoing professional learning, technical support, assessment and evaluation, student-centered learning, engaged communities, support policies and a supportive external context. These conditions (and many of their standards) can be found in the School2Home framework.

Future Ready Schools, a project of the Alliance for Excellent Education in partnership with more than 50 national and regional partners, is working to make personalized, student-centered learning a reality in all schools. They have developed a Future Ready Framework to help schools make the transition to digital learning. Recognizing that the challenges are multifaceted, ranging from unifying a diverse set of stakeholders with divergent views, to building the capacity of educators to take on new roles and approaches to classroom instruction, to designing new learning models and resources, the Future Ready framework consists of seven key areas (called gears) that are combined with innovative leadership. The seven gears are: (1) Curriculum, Instruction and Assessment; (2) Use of Time; (3) Technology, Networks and Hardware; (4) Data and Privacy; (5) Community Partnerships; (6) Professional Learning; and (7) Budget and Resources. These key areas of focus have been present in the School2Home model since it was first designed.

Indeed, there is an abundance of research and case studies showing that technology integration programs, whether conducted at an individual school, a district or a state, can be effective when they employ a multifaceted, whole-school approach to transforming the school culture. Solid implementation supports, guidelines and standards are also critical to success.
Much has changed in education policy since School2Home was first designed, making the intervention all that much more relevant. After years of debating both the pros and cons of No Child Left Behind (NCLB), California policymakers and Congress took on the challenge to build a consensus for change and an environment to improve public education. These new policies removed many of the unintended consequences of NCLB (teaching to the test; reclassifying students, especially low-income students as special education; reducing music and other electives, etc.). They retained strong accountability provisions, but provided more flexibility in decision-making. Importantly, these changes in policy provide targeted additional funding to support the students and families who need the most, and they give parents and community members a strong role in developing a vision for their school and a roadmap for achieving it.

The policy-making environment is primed to support comprehensive efforts to achieve equitable and universal educational technology access and family support. Some of the most important policy changes in California and at the national level are highlighted below.

**California Adopts a New Vision for Education**

California policymakers undertook a series of bold policy changes starting in 2010 to address the persistent Achievement Gap and the need to graduate more students equipped with the 21st-century skills needed for college and careers. Even a cursory review of these changes supports the need for technology to be integrated into all aspects of teaching, learning, parent engagement and new forms of assessment. More information on each of these policy changes is available from the California Department of Education’s website at: http://www.cde.ca.gov.

**Common Core Standards:** In 2010, California adopted the Common Core State Standards, which were designed to improve students’ chances of success by setting uniform standards for what students should know in Math and English Language Arts (ELA) by the end of each school year and by the time they graduate from high school. These expectations mandate a solid grounding in standards-based content but also intentionally integrate proficiencies such as critical thinking, creativity and innovation, and self-direction. Deeper learning requires mastery of sophisticated information communications technology (ICT) literacy, life skills and opportunities for learning in today’s digital society.
The shift to Common Core not only alters what and how students learn, it also establishes new roles for teachers in the classroom, where they serve as educational designers, coaches and facilitators, guiding students through active and collaborative learning activities. The use of technology is integrated throughout the Common Core curricula; students and teachers without technology access are thus deeply disadvantaged.

**California Assessment of Student Performance and Progress (CAASPP):** Along with the Common Core State Standards, California adopted new assessment tools, including the SBAC battery of math and ELA tests designed to assess how well students are doing in their subjects using Common Core standards. The SBAC tests, which are part of CASPPP, require students to use computers to demonstrate their understanding of higher-order thinking. Students unfamiliar with technology are disadvantaged when asked to take important tests with tools they do not have at home or regularly use in the classroom.

**Local Control Funding Formula:** Starting in the 2013-2014 school year, the Local Control Funding Formula (LCFF), the new school finance reform plan, was rolled out. LCFF provides school districts with greater flexibility over the way they use state funding, which previously involved up to 50 different categorical grants. LCFF provides supplemental funds to schools with high percentages of students who are English Learners, eligible for free and reduced meals, and foster youth pupils—the same schools that are the focus of School2Home. These student demographic groups are the ones least likely to have access to technology in the home, and the schools they attend have historically been under-resourced, especially with regard to technology. The LCFF has 8 priorities for education. School2Home helps schools integrate technology to support these priorities.

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**8 PRIORITIES OF LOCAL CONTROL FUNDING FORMULA**

**Student Achievement:** Students increase proficiencies as measured through test scores, English proficiency gains, and college preparedness.

**State Standards:** Schools implement state adopted academic content and performance standards and English language development standards.

**Course Access:** Schools ensure that students have access to a broad course of study that prepares them for college and career, regardless of what school they attend or where they live.

**Basic Services:** Teachers are credentialed and prepared for the areas they teach, school facilities are well maintained, and instructional materials are up-to-date.

**Student Engagement:** Schools to take action to help students feel more enthusiastic about learning, miss fewer days, and become more likely to graduate.

*continued on next page*
**School Climate:** Schools promote a calm, safe, positive and productive school environment, including reducing suspension rates and misbehavior.

**Parent Involvement:** School and district personnel seek parent input into decision-making, promote parent engagement programs for all student, and provide information on progress their children are making.

**Other Subject Areas:** Schools and districts select other student outcomes on which to focus, including the arts, physical education and other areas of study.

**Local Control Accountability Planning:** The LCFF reforms also require school districts and County Offices of Education to prepare a Local Control Accountability Plan (LCAP) that details their strategies for achieving specific *multi-dimensional* state priorities for education. It is important to note that the LCAP requires that a significant effort be made to include parents and other key stakeholders in its development.

**The California School Dashboard:** To help parents, educators and community members understand how an individual school is performing on a wide range of measures, the California State Board of Education Department adopted a new accountability system in 2017. Rather than rely on a single metric (academic performance), the new system is based on a variety of measures that relate to the education priorities of California. To be used as part of a continuous improvement process, the accountability system provides information on both current performance and progress from prior years. These performance metrics are presented in the form of an online “Dashboard,” which is useful for parents who have digital resources at their fingertips but not for those on the wrong side of the Digital Divide.

> “You all (School2Home teachers) are implementing the new philosophy of California, which recognizes that if poor kids of color are going to be rescued, it will be by those who are closest to them!”

Carl Cohn, Executive Director of the California Collaborative for Excellence in Education, speaking at the School2Home Leadership Meeting in 2017.
California’s new accountability and continuous improvement system is called the California School Dashboard. It provides information about how districts and schools are meeting the needs of California’s diverse student population based on a concise set of measures.

The Dashboard shows performance of districts, schools, and student groups on a set of state and local measures that assist in identifying strengths, weaknesses, and areas in need of improvement.

**How does the Dashboard display performance?**

Two calculations are performed for each of the state indicators.

<table>
<thead>
<tr>
<th>Status</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current or most recent data on the state indicator</td>
<td>The difference between the current and prior year data</td>
</tr>
</tbody>
</table>

Status and Change are calculated for each state indicator and intersect on a 5x5 grid. The grid layout will vary for each indicator.

In the 5x5 grid, Status is displayed in the left column, and Change is displayed in the top row.

The performance level, or color, is determined by the point at which the Status and Change levels intersect.

In the example shown, the district has a Status of “high” and a Change of “maintained,” which meet for an overall performance level of green.

For more information, please visit the California Accountability Model & School Dashboard Web page at [http://www.cde.ca.gov/ta/ac/cm/index.asp](http://www.cde.ca.gov/ta/ac/cm/index.asp).
National Education Policy: The Every Student Succeeds Act

Soon after California passed LCFF, congress passed the Every Student Succeeds Act (ESSA), which significantly reduces the role of the federal government in education on everything from student testing to teacher quality to the elimination of prescriptive models for turning around low-performing schools. Highlighted below are some of the key policy changes embedded in federal education policy.

**Accountability:** Each state must set its own goals, accountability standards and evaluations.

**Low-Performing Schools:** Once every three years, states must identify schools that require additional support and meaningful action. These include: (1) At least the lowest-performing 5 percent of Title I schools; (2) High schools with graduation rates at or below 67 percent for all students; and (3) Title I schools with chronically low-performing subgroups that have not improved after implementing a targeted support plan.

**Interventions for Low-Performing Schools:** Unlike NCLB, with its prescriptive turnaround models, ESSA provides the states, school districts and schools with discretion and flexibility in their approach to improving schools.

**The Role of Technology and Funding for Tech:** ESSA recognizes the potential that technology holds for transforming teaching and learning. It contains provisions that encourage the use of education technology, including support for personalized learning, blended classrooms, and technology-focused professional learning for teachers, principals and school leaders.

**Parent Engagement:** ESSA requires states to describe how they will support effective parental involvement and lower barriers to participation by parents in planning, reviewing and approving programs. In fact, Title I Schools that want funding may receive it only if they conduct stakeholder outreach and develop and implement programs, activities and procedures to involve parents. Moreover, districts must provide capacity-building services to schools to help them reach their family and parent engagement goals, and a preferred use of Title I funding is for teacher professional development focused on parent and family engagement.
In summary, the combined changes in state and federal policy shift enormous responsibility to school districts and schools for finding and implementing effective interventions to make progress toward educational equity and excellence for all. Given the pervasiveness of digital technology in every sector, there can be little doubt that technology must be part of a quality, well-rounded education for every California student. To that end, closing the Digital Divide must be at the top of working agendas of leaders from all sectors in order to close the persistent Achievement Gap in California. Indeed, many of the reforms are useless unless these divides are closed.

However, integrating technology into the fabric of a school culture to support learning goals is not an easy task, especially in high-poverty schools. It requires full buy-in from teachers, parents and other stakeholders. Yet, the leaders responsible for this change management process are also tasked with fulfilling many other roles—logistical, budgetary and instructional— to establish the conditions that support teaching and learning and meet high accountability standards. The School2Home framework and its related capacity-building services are essential to closing the Digital Divide and Achievement Gap in high-poverty schools across California.

About the Author
Elaine Carpenter was the primary author of this report. Elaine was instrumental in leading the development of School2Home in 2009, while working as the Director of Technology Programs and Policies at The Children’s Partnership. Her background include almost 20 years of experience working for the telecom industry, including serving as the Chief of Staff at the United States Telecom Association. Her “second career” has included 15 years of working with the non-profit sector to bring the transformative power of technology to underserved communities. Elaine is a graduate of the University of Nebraska and has served as a Board Director on more than 30 organizations, including 3 hospitals. She has also served on a number of Blue Ribbon Committees and Advisory Panels established to review a wide-range of issues including education, the juvenile justice systems, and city revitalization initiatives. Staff members from the California Emerging Technology Fund, experts in Digital Inclusion and education, and School2Home shared valuable insights to inform this report.
REFERENCES


5 Ibid


11 Ibid


Ibid


The School2Home Theory of Change includes the following major tenets: (1) Digital literacy and deeper learning skills are critical for success in the today's digital world, and are especially important for children in poverty, many of whom lack access to technology at home. (2) Schools serving children in low-income neighborhoods face many challenges and require technical assistance to use technology effectively for improving student outcomes. (3) Improved student academic performance is best achieved through a comprehensive set of strategies that builds the long-term capacity of school leaders and teachers and establishes a culture of innovation and accountability. (4) Effective technology integration programs must be carefully planned and supported by all key stakeholders. (5) Regional and statewide communities of practice or learning communities will foster lasting systemic change.

The School2Home 10 Core Components each are a discrete intervention supported by research and evidence. They are integrated into a comprehensive program that transforms the culture of a school to a high-performing organization. When implemented with fidelity over 3 to 5 years, School2Home will result in: stronger school leadership and an improved learning environment; more technically-proficient teachers who are able to incorporate technology into teaching and parent engagement; more parents who are involved in their child's learning; extended learning beyond the school day; and accelerated academic performance improvement. Changes in school leaders, teacher, parents, and students will be expected and measured in common goals, objectives, and outcomes that align with California's priorities for education. This Theory of Change is presented in the Logic Model.

This Logic Model was developed to inform the design of School2Home and refined through implementation and annual evaluations since being launched during the 2009-2010 school year. The graphic representation of the Logic Model sets forth the interventions and shows the links between required resources, activities and outputs to achieve short-term (1-3 years), medium-term (4-6 years), and long-term (7-10 years) outcomes and impact. Short-term outcomes refer to changes at the organizational and individual levels in attitudes, knowledge, and skills. Medium-term outcomes relate to changes in policies, practices and programs at the school and community levels. Given that short-term and medium-term outcomes for the school, teachers, students and parents are the critical path for long-term impact on systems at the district and state levels, more detailed outcomes are delineated in the tables following the graphic. School2Home continuously monitors research in the field to inform practices essential to student success. The Logic Model serves as a guiding frame for evaluating School2Home.
School2Home Logic Model

Overarching Goal: Close Achievement Gap and Digital Divide in California

**INPUTS**
- Resources (What School2Home Contributes)
  - Grant funding.
  - Comprehensive technology integration model with 10 Core Components for low-performing schools in low-income neighborhoods.
  - Total school engagement, community support, and policymaker observation.
  - Experience and track record in achieving broadband adoption in underserved communities.
  - Excellent fiscal management of large programs.
  - Experienced staff and local community partners.

**STRATEGIES**
- Activities (Comprehensive Approach for How Goals and Objectives are Achieved)
  - Strategically identify sites. Establish School Leadership Team. Develop shared school/community vision and incorporate School2Home in LCAP.
  - Provide intensive teacher professional learning and ongoing job-embedded teacher coaching.
  - Help schools select and buy devices and provide ongoing technical support.
  - Deliver parent training on digital literacy, online safety, school communications, and affordable broadband offerings.
  - Conduct regional and statewide Learning Academies and facilitate communities of practice.

**OUTPUTS**
- Concrete Deliverables from Implementation
  - Partnership Agreement, Framework and Work Plan for School2Home developed and signed. Resources included in LCAP.
  - 100% of students engaged and trained in targeted grades (usually phased in a grade at a time, beginning with the starting grade in the school).
  - 100% of students and teachers have a device for use at home and school.
  - 80% or more of parents trained and signing agreement with school on device usage and digital citizenship.

**OUTCOMES**
- Short-Term Results (1-3 Years)
  - School culture changes (student and parent engagement). Gains in student outcomes greater than similar cohort schools not participating.
  - Increased teacher knowledge and use of tech in teaching, learning and parent engagement.
  - Increased student use of technology in school and at home with gains in student outcomes.
  - 80% or more of parents trained and signing agreement with school on device usage and digital citizenship.

- Medium-Term Results (4-6 Years)
  - School culture changes are sustained. School provides resources to sustain School2Home 10 Core Components (or equivalent).
  - Increased student-teacher-student communication.
  - Annual statewide Leadership Academy. Quarterly regional learning academies and other communities of practice.

- Long-Term Results (7-10 Years)
  - District adopts and incorporates School2Home (or equivalent) for all schools.
  - Digital Divide and Achievement Gap in California narrow.
  - Increase in high school graduation rates and enrollment in higher education.

**IMPACT**
- Employers have access to skilled workers.
## Context for Outcomes and Impact

The quality of outcomes and the magnitude of impact depend on the fidelity of implementation of all 10 Core Components of School2Home. It is essential that school leaders invest sufficient quality time before implementation in the first Core Component of Planning, Assessment and Leadership to develop a Framework and Work Plan that are understood, internalized and embraced by all school personnel. This process typically will take 3 – 6 months. Launch of implementation ideally coincides with the beginning of a school year with adequate preparation and distribution of information to students and parents in advance.

### Short-Term Outcomes for School2Home (1 – 3 Years):

Expected changes at the individual level in attitudes, knowledge and skills following School2Home interventions: Planning, Assessment and Leadership; Technology Bundles (1-to-1 device environment); Teacher Professional Learning; Teacher Coaching and Mentoring; Parent Engagement and Education; and Learning Academies. These benchmarks are used to assess outcomes in the site visits, interviews and surveys for Evaluation.

<table>
<thead>
<tr>
<th>School (Principal)</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Support technology integration in their school, complete the annual School2Home Framework in a timely manner, and lead implementation of School2Home with regular meetings of the School Leadership Team.</td>
<td>• Enhance pedagogy with technology (use the SAMR model to assess technology integration).</td>
</tr>
<tr>
<td>• Allocate requisite resources and secure funding for student devices, coaching and other Core Components.</td>
<td>• Know and teach California standards especially those related to technology, digital media and digital citizenship.</td>
</tr>
<tr>
<td>• Reinforce digital citizenship practices by engaging with students and parents to foster appropriate behavior.</td>
<td>• Meet California Standards for the Teaching Profession (CSTP) and the corresponding International Society for Technology in Education (ISTE) Standards:</td>
</tr>
<tr>
<td>• Distribute information about affordable high-speed Internet service offers and encourage adoption.</td>
<td>• 1.4: Using a variety of instructional strategies resources and technologies to meet students’ diverse learning needs. (ISTE 4c, 5b)</td>
</tr>
<tr>
<td>• Incorporate School2Home into the Local Control Accountability Plan to support at least 6 of the 8 state priorities.</td>
<td>• 2.2: Creating physical or virtual learning environments that promote student learning, reflect diversity, and encourage constructive and productive interactions among students. (ISTE 1c, 3a, 5c, 6b)</td>
</tr>
<tr>
<td></td>
<td>• 3.5: Using and adapting resources, technologies, and standards-aligned instructional materials, including adoptive material, to make subject matter accessible to all students. (ISTE 2b, 2c)</td>
</tr>
<tr>
<td>Students</td>
<td>Parents</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>✓ 5.6: Using available technologies to assist in assessment, analysis, and communication of student learning. (ISTE 7a, 7b, 7c)</td>
<td>• Support their students in adhering to digital citizenship standards.</td>
</tr>
<tr>
<td>✓ 6.2: Establishing professional goals and engaging in continuous and purposeful professional growth and development. (ISTE 1a)</td>
<td>• Use the parent portal of the school student information systems to oversee their student's performance and engage with school personnel.</td>
</tr>
<tr>
<td>✓ 6.3: Collaborating with colleagues and the broader professional community to support teacher and student learning. (ISTE 1b)</td>
<td>• Use the school-provided device responsibly to learn and support daily living.</td>
</tr>
<tr>
<td>✓ 6.4: Working with families to support student learning. (ISTE 4b, 4d)</td>
<td>• Purchase and maintain a high-speed Internet service plan.</td>
</tr>
<tr>
<td>✓ 6.7: Demonstrating professional responsibility, integrity and ethical conduct. (ISTE 3c, 3d)</td>
<td>• Understand and use the California School Dashboard to regularly check school performance.</td>
</tr>
</tbody>
</table>

- Develop and practice personalized learning opportunities for students.
- Share lessons that integrate technology with other teachers in a “community of practice.”

- Behave according to digital citizenship guidelines.
- Learn and comply with the California standards, especially those related to technology use and digital media.
- Become more engaged in learning, both on their own and with others, logging more time on tasks at home.
- Demonstrate improved engagement with school (reduced disciplinary problems and absenteeism).
- Meet or exceed California Standards in English Language Arts, Math and Science.
**Medium-Term Outcomes (3 – 6 years):** Expected changes in practices, programs and policies at the school, district and community level with accelerated improvement in student academic performance.

<table>
<thead>
<tr>
<th>School</th>
<th>District</th>
<th>Community</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Achieve gains in both status and progress in student performance measures, especially for underserved student groups, on state and local priorities.</td>
<td>• Complete device specification, purchase, replacement, and repair cycles annually.</td>
<td>• Advocate the use of School2Home as an effective intervention for improving student outcomes in low-performing schools at LCAP and other community outreach meetings and augmenting school-site implementation with additional resources.</td>
<td>• Approve policies and articulate professional standards that support ethical implementation of education technology, digital material and other digital resources that support student learning at school and at home, engage parents, and address the uneven distribution of technology that exists among high and low-performing schools.</td>
</tr>
<tr>
<td>• Provide ongoing resources to implement the 10 Core Components after the initial School2Home implementation to ensure the intervention is fully integrated into ongoing efforts to improve student outcomes and stakeholder accountability.</td>
<td>• Incorporate School2Home in the district LCAP and budget as well as other official documents to increase the use of School2Home in other district schools with fidelity and appropriate resources.</td>
<td>• Include School2Home in broader collective action initiatives, such as Neighborhood Transformation, that are focused on improving conditions for underserved communities.</td>
<td>• Allocate funding to School2Home to provide targeted technical assistance and capacity building to districts and schools that have significant achievement gaps as identified on the California School Dashboard.</td>
</tr>
<tr>
<td>• Serve as a model and a resource for other schools that want to use School2Home methods and tools.</td>
<td>• Engage in meaningful parent and stakeholder engagement to build broad-based support for School2Home from parents, businesses, local elected officials, and community based partners.</td>
<td>• Implement city and countywide strategies to close the Digital Divide by adopting comprehensive Digital Inclusion Action Plans that meet the needs of underserved communities and the agencies that serve them.</td>
<td>• Pursue state and national policies to close the Digital Divide in underserved communities and support coordinated Digital Inclusion and broadband deployment initiatives to this end.</td>
</tr>
</tbody>
</table>
**About School2Home**

School2Home was developed and is led by the California Emerging Technology Fund. School2Home is an innovative statewide initiative to close both the Achievement Gap and Digital Divide by integrating the use of broadband-enabled computing devices into teaching and learning coupled with significant parent engagement at low-performing middle schools. It is anchored in research and best practices for improving academic performance and effectively using technology. School2Home was designed by leaders from public, private, community and philanthropic sectors with two major goals:

- To improve student achievement at low-performing middle schools in California to help close the Achievement Gap.

- To increase the adoption of computing skills and broadband service by the families of underserved middle school students to help close the Digital Divide.

School2Home employs a comprehensive set of inter-related interventions to transform school culture in ways that support improved student outcomes on a wide range of measures. School2Home is the essential framework to turn around low-performing schools and the requisite platform for innovative pedagogy, personalized learning, and implementation of Common Core Standards. It is consistent with the Local Control Funding Formula (LCFF) reforms and implementation, the new school finance system in California adopted into law in 2013. Consistent with LCFF priorities, School2Home addresses academic attainment, school climate and parent engagement.