School 2 Home

Bridging the Technology Gap for California's Middle School Families

The School2Home Program:

A Public-Private Initiative to Close the Technology Gap for California's Middle School Families

A Program Brief by Elaine Carpenter and Jessica Rothschuh
Of The Children's Partnership
With the California Emerging Technology Fund

CETF
CALIFORNIA EMERGING TECHNOLOGY FUND

School2Home is co-sponsored by the California Emerging Technology Fund and The Children's Partnership

The Children's Partnership

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GOVERNOR ARNOLD SCHWARZENEGGER

August 4, 2008

Dear School2Home partner,

Maria and I appreciate your interest in the California School2Home program. We believe, as we know you do, that every young person in California should have the opportunity to compete in the 21st Century economy, which is more and more dependent on the technology of connectivity.

Recent reports and surveys have found that millions of children and families in California do not have a computer or broadband at home. These digital disparities limit the ability of schools to fully incorporate technology to teach 21st Century skills and to extend school resources to the home. They also limit our state's ability to efficiently extend vital public services to millions of families. That is why the School2Home project is so important.

By equipping underserved children and families with digital tools and the skills to use them, the School2Home project will make California a global leader in deploying the resources of the private, public and philanthropic sectors to narrow this troubling gap and improve education. We appreciate your commitment to working with the California Emerging Technology Fund and The Children's Partnership to make this initiative a reality and an integral part of 21st Century education and family life in California.

Your involvement in School2Home will help boost opportunities for millions of young students in California and, in so doing, will help secure the economic future of our great state. Thank you again for your support and good work.

Sincerely,

Arnold Schwarzenegger

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JACK O'CONNELL
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION

CALIFORNIA
DEPARTMENT OF
EDUCATION

November 17, 2008

Dear School2Home Leaders:

I want to thank you for your support of the School2Home Program, spearheaded by The California Emerging Technology Fund and The Children's Partnership. This vital initiative will help ensure that California's underserved youth are equipped with the digital tools and skills all students need to be successful. The program will also help parents who are unfamiliar with computers and the Internet learn how to use these tools—connecting them with teachers and schools to become more involved in their children's education.

This unique two-pronged approach builds on what we know about how students learn and what makes schools successful. It is also critical to the California Department of Education's (CDE's) vision and commitment to closing the achievement gap in California. As you know, my statewide P-16 (Prekindergarten through Higher Education) Council, through their hard work, has provided data showing a disparity in technology use and availability for our students. It is from their work that the CDE has made recommendations addressing technology and data for closing the achievement gap. I believe this program aligns very well with those recommendations.

The CDE fully supports this exciting public-private venture. I look forward to working with you to design and implement it successfully and to ensure its sustainability. School2Home is a high-impact, forward-looking program that will demonstrate California's commitment to innovation and our youth. It will help us ensure that California's students are prepared with 21st century skills and that their families can also participate fully in our information society.

Sincerely,

JACK O'CONNELL

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INTRODUCTION

When California's students enter the workforce, they will face intense job competition at every skill level. As Thomas Friedman makes clear in his book, *The World is Flat*, students are not simply competing with the child sitting next to them in class. Thanks to digital technologies and fiber optic networks, today's students are competing for jobs in a global marketplace. Yet many students in California's schools today are not learning the skills they need for tomorrow's world. Across the country, low-income students, students of color, English-language learners, and children with disabilities are at greater risk than their peers of receiving an inadequate education.[1]

Young people who are most likely to fall behind in academic achievement are also the most likely to live in households without a computer or broadband — vital tools for education and to hone 21st Century Skills.[2] While few would suggest that this digital opportunity gap is the sole cause of an educational achievement gap, a growing body of evidence suggests that digital inequalities can translate into future disparities in education, job readiness, and economic outcomes.[3] Further, these digital disparities make it difficult for schools to fully incorporate technology into the classroom or use the Internet to engage parents.

The California Emerging Technology Fund and The Children's Partnership are leading a statewide, public-private initiative to ensure California's young people are equipped with the skills they need to be competitive in today's digital world. Called School2Home, this Initiative will provide home computing devices and broadband to low-income students attending one of California's 539 underperforming middle schools and will work with schools to help integrate technology into teaching, learning, and engaging with parents. School2Home will ultimately connect families and schools in a comprehensive learning process.

What makes School2Home unique is its large scale. The program will ultimately reach all middle school children attending underperforming schools in the state and their families. School2Home will target one middle school grade with its comprehensive school *and* home approach. Given California's size and its reputation of innovation, School2Home seeks to benefit Californians and offer a model that can also be employed by other states and countries seeking similar goals for their youth.

CETF's Digital Literacy Initiative

The CETF Board of Directors adopted digital literacy as one of its signature programs to close the Digital Divide and increase California's competitiveness. School2Home is an important component of this Initiative. Other elements include a focused effort to incorporate digital literacy into state policy and investments in community-based organizations to provide digital literacy training to underserved communities. The goal of the Digital Literacy Initiative is to ensure all Californians have the skills they need to participate in an ever-evolving digital world.

This Program Brief provides information about the vision for the School2Home program and the schools and students the program will serve. It also describes promising outcomes of similar projects — previewing the measurable gains that are possible through School2Home.

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SCHOOL2HOME'S TARGETED SCHOOLS, STUDENTS, AND FAMILIES

Middle School Years: Critical to High School Success

School2Home is targeting underperforming middle schools located throughout California. The middle school years are a critical, transitional time for youth. During this time, youth are becoming autonomous, asserting their independence, and developing study and work habits that will stay with them for a lifetime. School2Home will target the middle school grade in which it is determined the largest impact will be made.

Middle schools are critical to high school success. Recent studies by the California Dropout Research Project have found that middle school grades and test scores can predict a student's likelihood of graduating from high school and passing the California High School Exit Exam, a major hurdle for graduation.[4]

Research shows that factors such as parental involvement, academic performance, and English-language proficiency during the middle school years are strong predictors of high school graduation and college enrollment.[5] Parent involvement during these years is especially critical to youths' success, both in and outside school; however, parents are generally less involved with their child's middle school than they were in elementary school.[6] Many middle school students also experience major changes in academic motivation and school engagement, especially those who had a difficult time in earlier grades. Technology has great potential to address many of the challenges facing youth in these grades and to strengthen parental involvement.

School2Home Targeted Middle Schools and Students

There are 539 middle schools located throughout California that have been identified as underperforming.[7] These Title 1 schools have failed to meet federal performance criteria, which include meeting state academic performance standards, for two consecutive years. Data from the California Department of Education provide important insights into these schools and the students attending them.

Location: Urban Areas and the Central Valley
As shown on Map 1, many of the targeted middle schools are concentrated in urban areas and the Central Valley. Approximately 520,000 6th-, 7th- and 8th-grade students attend these schools, with an average of 173,000 per grade.

Map 1:
Geographic Distribution of California's Underperforming Middle Schools, 2007

Underperforming Middle Schools in CA
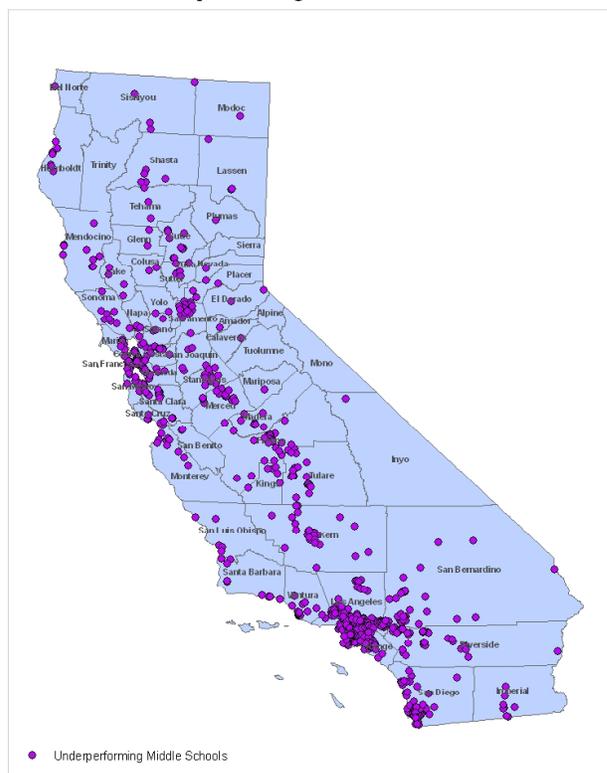
Source: California Department of Education; Map Created by The Children's Partnership

High Concentrations of Low-Income Students
Students attending these schools typically come from low-income families. The average percentage of students eligible for free or reduced school lunch at these schools is 62.5 percent, substantially higher than the state average of 50 percent. As is clear from Map 2, some schools have much higher percentages of

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low-income students — students who on average do not perform as well as their higher income and Caucasian counterparts on standardized tests.[8] School2Home may initially target schools with the highest proportion of low-income students.

Map 2:
Percent of Students Eligible for Free or Reduced School Lunch in California's Underperforming Middle Schools, 2007

Source: CA Department of Education
Map Created by The Children's Partnership
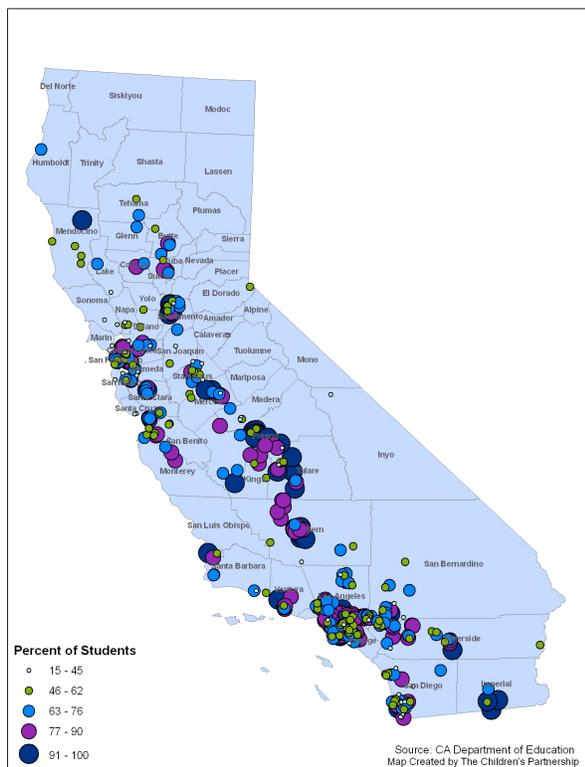
Ethnically Diverse Student Population
When broken down by race and ethnicity, 63 percent of the students in these targeted schools are Latino, 12 percent are Caucasian, 8 percent are African-American, 4 percent are Asian, and the remainder are Filipino, American Indian, and Pacific Islander.

A Wide Spectrum of Needs
The teachers and administrators at these schools face a variety of educational challenges. Approximately 31 percent of students attending these schools are English-language learners, approximately five percent are in migrant education programs, and about ten percent are students with disabilities. Almost nine percent of the students are in gifted or talented education programs.

Digital Disparities at Home
Students attending these schools are among the demographic groups least likely to have a computer or broadband. Recent research conducted by the Public Policy Institute of California (PPIC) in partnership with the California Emerging Technology Fund and ZeroDivide about technology adoption in California found that less than half of Latinos (48 percent) have home computers, compared to about eight in ten Caucasians (86 percent), Asians (84 percent), and blacks (79 percent). Just four in ten Latinos have Internet access, and only one third have a broadband connection in the home, compared to majorities of other racial and ethnic groups.[9]

Challenges Parents Face

Many parents of students attending School2Home-targeted schools work multiple jobs with long hours, have tight family budgets, and possess limited English proficiency. These challenges not only make it difficult to acquire a computer and the skills to use it, they can also prevent parents from being as involved in their child's education as they would like.

While about half of all parents in California use the Internet to access their child's school's website and three in ten parents receive their child's homework assignments through the Internet or e-mail, clear divisions exist among demographic groups.[10] Thirty-four percent of Caucasians report receiving their children's homework electronically, while only 20 percent of Latino parents do. Similarly, parents with annual household incomes of $80,000 or higher are nearly three times as likely as parents with household annual incomes under $40,000 to use the Internet or e-mail for obtaining a child's homework or to visit the website of their child's school.

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Survey of Californians Finds Significant Disparities in Parents' Use of Technology to Engage with Schools

"Do you ever visit the website of your child's school?"

	Parents	Income			Race/Ethnicity	
		Under $40,000	$40,000 to $80,000	$80,000 or More	Latino	White
Yes	56%	30%	63%	84%	41%	74%
No	44%	70%	37%	16%	59%	26%

"Do you ever receive this child's homework assignments via the Internet or e-mail?

	Parents	Income			Race/Ethnicity	
		Under $40,000	$40,000 to $80,000	$80,000 or More	Latino	White
Yes	28%	15%	30%	41%	20%	34%
No	72%	85%	70%	59%	80%	66%

Source: *Californians and Information Technology* survey conducted by the Public Policy Institute of California (PPIC) in partnership with the California Emerging Technology Fund (CETF) and ZeroDivide.

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Program Goals

School2Home is a bold statewide initiative to provide digital tools and technology-integrated education to thousands of students attending one of the California's underperforming middle schools and to engage parents in the learning process. Leaders from the private, public, non-profit, and philanthropic sectors are designing the School2Home program to achieve several important goals:[*]

- Increase *digital literacy* and *educational performance* among targeted middle school students;

- Improve the 21st Century Skills of these students so they can contribute to a more competitive workforce; and

- Strengthen *parent involvement* in their children's education through the use of home-based digital technologies. This, in turn, is expected to *expand the adoption of broadband* technology and help close the Digital Divide in California.

School2Home thus addresses the state's educational achievement gap, the digital opportunities gap, and the school technology gap. (See Appendix I for more information about these urgent and related state challenges.) These interrelated gaps, as well as the broad outline of the School2Home strategy, were identified in Governor Schwarzenegger's California Broadband Task Force report.

The School2Home Vision

School2Home envisions a future where California's middle school students are using technology effectively in their classrooms and at home to learn the skills they need to meet the challenges of our ever-flattening world. Schools are equipped with a robust technology infrastructure, including online assessments and web-enhanced curricula. Each student and teacher has 24/7 access to online content, and teachers use online forums to share methods and ideas, lesson plans, and standards-based online materials. The needs of students with disabilities are being addressed through technology innovations.

Parents have easy online access to their child's homework assignments and performance records and can use e-mail to contact their child's teacher. In these and other ways, parents are involved in their child's education. Previously underperforming schools improve their performance on both national and state standards by leveraging School2Home investments.

The School2Home vision is bold, ambitious, and comprehensive. A Leadership Group comprised of leaders from California's private, public, non-profit and philanthropic sectors determines the extent to which the program's goals, targets, and approach are realized. The Leadership Group is developing the specifics of the School2Home program, as well as its implementation timetable, within the context of available financial resources and the capacity of School2Home partners.

Although the operational program details of Scool2Home are under development, major program components and best practices have been identified.

Program Components

The School2Home program will be one of the first statewide endeavors, and potentially the largest in the United States, to provide students with digital tools for use in school and at home. The Leadership Group is working on seven program components of the School2Home Initiative. Overviews of these components, as well as best practices from other school districts and community-based organizations, are provided below.

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[*]Note: Specific goals and metrics for each of these broad goals will be developed for School2Home as part of the program design and evaluation process.

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Technology Bundles:
Providing Digital Tools for Students, Parents, and Educators

School2Home will provide eligible middle school students with a computer or computing device and a high-speed Internet connection. Appropriate educational software and tech support will also be included in the technology bundle.

Providing students with a computing device they can use at home is a key program objective. For many families, the computer and Internet connection they obtain through School2Home will be their first. With around-the-clock access to educational resources, students can extend their learning, and parents can more easily connect with their child's teacher and become partners in the learning process. Teachers also benefit by being able to communicate with students and parents through e-mail and instant messaging.

A number of approaches have been used around the country to provide students and parents with a flexible, affordable educational device and access to rich educational, standards-based content and applications. In school 1-to-1 laptop programs, schools or school partners typically develop a set of criteria the program's technology bundles must meet. With these requirements in hand, the school or district issues a Request for Proposals to secure the bundles at the best possible price. Some community-based programs work with local businesses to obtain used or refurbished computers while others work with vendors to establish a computer-purchasing program with special discounts and financing terms for eligible families.

School2Home will consider a wide array of issues when developing the program's technology bundle offerings. (See Sidebar on Technology Bundles.) An overarching objective is to develop a cost-effective, educational technology bundle or several bundle options that can be used in all targeted schools.

School2Home Technology Bundles: Key Considerations

❐ *Durability*. Can it withstand normal student wear and tear?

❐ *Affordability*. What will the device cost a family over the life of the bundle?

❐ *Accessibility*. Is it accessible for children with disabilities?

❐ *Applications*. Which applications must each student have?

❐ *Broadband*. How can broadband be provided to families who do not have it?

❐ *Tech Support*. How can technology support be offered, both in schools and at home?

❐ *Financing*. How will costs be covered? Do families lease the device?

❐ *Virtual Location*. Where will applications and content reside?

❐ *Safety*. What precautions should be taken to reduce theft and to ensure online safety and security?

❐ *Weight*. Can students easily carry the device to and from school?

❐ *Ownership*. Does the school own the device or does the family?

The School Program:
Learning In and Out of School for the 21st Century

Programs that only provide students and schools with computers have proven to be largely unsuccessful at improving school outcomes for youth. These technology programs may improve student/computer ratios and increase home computer ownership and broadband penetration, but without an underlying foundation that integrates digital tools into improved learning strategies and instruction, they do not lead to significant learning benefits.[11] Thus, School2Home will include a model school program to help underperforming schools maximize the use of digital tools and applications to develop relevant, connected learning environments. The program will recognize that schools vary in their level of technology adoption.

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A key goal of the school program is to motivate participating school leaders and teachers to integrate technology into the classroom to create a more engaging, relevant, meaningful, and personalized student learning environment. As the model school program is developed, it will draw on research, case studies and best practices from 1-to-1 laptop programs that have been implemented around the country. (See Sidebar on Laptop Program Best Practices.) As well, the school program will build on, and knit together, the many assets and resources California's educators have established to better integrate technology into the state's schools.

Knowledge of core content is necessary but no longer sufficient for success in a competitive world. Even if all students master core academic subjects, they are still woefully under-prepared to succeed in postsecondary institutions or workplaces, which increasingly value people who can use their knowledge to communicate, collaborate, analyze, create, innovate and solve problems. Used comprehensively, technology helps students develop 21st Century Skills.

—State Education Technology Directors Association (SEDTA), in its 2007 report
Maximizing the Impact: The Pivotal Role of Technology in a 21st Century Education System

It should be noted that School2Home will not operate the school program. Rather, School2Home will develop incentives for schools to provide technologically rich learning environments and will provide strategies for technical assistance to help ensure schools' success.

Effective school laptop programs share a common characteristic: school leaders, especially principals, are highly engaged in the project and are willing to help teachers learn to integrate technology into the teaching and learning process. Laptop programs are successful only if teachers are comfortable with technology and willing to make it an integral part of their classrooms. This requires a strong professional development component.

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Given the importance of school leadership to the ultimate success of the program, School2Home will give priority to schools that demonstrate their commitment and willingness to achieve technology integration. The school component of the program will be designed with enough flexibility for schools to adapt the program to their unique needs while maintaining standards for participation that optimize the program's chances for success and allow for effective evaluation.

The Home Program:
Learning Digital Skills for Parents

School2Home will build on the potential of technology to forge school-to-home connections and equip parents and guardians with tools to strengthen their child's education. The School2Home technology bundle will give parents who have not been connected to the Internet the chance to do so. The program will help parents acquire the digital literacy skills they need to safely guide their children's online activities and to use educational applications with their child.

As well, the School2Home program will help parents learn how to use digital tools to connect with teachers and to obtain up-to-date information about their children's school progress. Finally, School2Home will offer parents the chance to learn marketable technology skills that can help them secure a higher paying job.

Decades of research show that when parents and teachers work together, children of all backgrounds and income levels do better, both socially and academically. Students whose parents are involved in their schools are more likely to:

- Earn higher grades and score better on standardized tests;

- Attend school more regularly;

- Improve their social skills;

- Behave better at school; and

- Continue their education past high school.[12]

**Best Practices:
Parent Programs Focused on
Schools and Education**

❐ *Technology*. Families are provided a free or low-priced computer and training before receiving the technology bundle.

❐ *Software*. Computers are loaded with carefully selected educational software.

❐ *E-mail Connections*. Parents, teachers, and administrators are provided e-mail accounts and "rules of the road" to set appropriate expectations.

❐ *Training Programs*. Trusted training instructors who understand parent needs offer training programs in the appropriate languages and literacy levels and in convenient and comfortable settings.

❐ *Training Content*. Training content covers basic digital literacy and online safety, as well as how to use the Internet for e-mail and to access a school's website and online educational resources. Instructors and mentors help parents understand how schools function, including grading and testing systems, school policies, and parent involvement opportunities.

❐ *Skills Training*. Parents can sign up for additional training to improve job readiness and other skills.

❐ *Help Desks*. The training center offers support to parents through an easy-to-reach help desk.

❐ *Eligibility*. Community-based programs typically target low-income families, while school-centered programs target parents with children in specific grades.

Research has also found that high-performing schools have a high level of involvement with families and the greater community. These schools recognize, respect, and address families' needs as well as socioeconomic and cultural differences.[13]

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However, it is simply not possible for all parents to be physically present at school. Many parents work multiple jobs, usually with little flexibility. Too, many parents face language, education, and cultural barriers that cause them to feel ill-prepared to help their child with schoolwork. Although more and more parents now use the Internet to connect with their child's teachers, ongoing digital disparities preclude many parents from using this option. The School2Home parent program will enlist parents as partners in their child's education through the use of technology.

The parent program will build on best practices of community-based computer and technology training programs that have been successful. (See Sidebar on parent programs.) The parent program development will also profit from the experience of organizations that strive to involve parents in schools. These organizations have demonstrated their ability to improve educational outcomes of young people through parental involvement.[14] While the needs of parents in underserved middle schools are largely the same as all parents, the ways to effectively meet these needs differ.[15] Thus, School2Home will use parent training methods that are well suited to hard-to-reach parents.

California is fortunate to have a number of organizations with demonstrated track records of providing technology and parent training programs to underserved communities. Many of these organizations, when utilizing standardized curriculum, instructor training and resource materials, will allow School2Home to offer localized training while maximizing economies of scale.

Sustainability:
Funding to Ensure Long-Term Success

California's constrained state budget poses a unique challenge for School2Home. As new state funds are not available, the School2Home Leadership Group must develop a sustainable business model that leverages existing resources and involves multiple funding sources. These may include private-sector donations, philanthropy, participants' contributions, government grants, and in-kind services. To the maximum extent possible, School2Home will

encourage schools to leverage existing programs and resources, such as federal technology assistance and parent engagement programs, to avoid duplicative efforts.

The costs of School2Home will depend on the final program design and its comprehensiveness. Each program component — the technology bundle, the school program, and the home program for parents — has an associated cost. As well, the program's implementing entity and evaluation strategies will need support. Early cost estimates fall within the range of $300 to $600 per student, depending on prices negotiated for the technology bundles — the largest out-of-pocket expense. The cost of the school program will vary depending on the extent to which existing resources (professional development and curricula) can be leveraged. The financial requirements for the parent program and the implementing organization represent a small portion of total program costs. Under any circumstance, the annual financial requirements of School2Home depend on the pace at which schools join the program.

It is difficult to develop cost-comparison data from existing projects due to the wide variation in program goals, size, type of technology, and school settings. In addition, technology prices continue to fall; therefore, the prices of yesterday's bundles are not an accurate predictor of the costs School2Home will face. The cost of parent training programs around the country also varies considerably due to differing project objectives and number and length of training sessions.

School laptop programs in California and around the country have used a variety of funding sources to support their programs. Often, the schools themselves provide support for their laptop programs, generally as part of a "repurposing" of existing budgets. For example, dollars for textbooks are used to purchase online courseware or e-books. Likewise, computer lab funding or federal educational technology funding, such as the Enhancing Education Through Technology (EETT) dollars, may be used to support technology acquisitions and professional development.

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Some schools have set up leasing programs where parents pay only a portion of the technology bundle costs. Sliding fee schedules are applied to ensure no student is left out. At the end of a set period of time, parents are often given the chance to purchase the laptop for a nominal cost. This can help offset laptop and Internet costs and, some experts say, create a greater sense of "buy-in" from families. As well, a lease-to-buy program allows schools to continually refresh technology investments. However, some of the cost-savings of this approach are offset by greater administrative expenses, especially in schools with a high percentage of low-income families.

Larger and statewide laptop initiatives often have funding from state government. In Texas, the legislature passed a law directing the state education department to consolidate its myriad Enhancing Education Through Technology (EETT) grant dollars into one large pool of funding for laptop programs in targeted middle schools. In Maine, home of the largest laptop program deployment to date, former Governor Angus King began the extensive (and later controversial) program with tobacco settlement money. Pennsylvania has been investing in a large-scale classroom laptop program for high schools called Classrooms for the Future with state education dollars. Like other state programs, they are also leveraging federal teacher training funds.

Community-based technology and parent training programs often rely on funding from grants and foundations to cover the costs of training. As noted earlier, they frequently work with local businesses to acquire used or refurbished computers. In California, after-school programs have monies from Proposition 49 for family digital literacy training programs. Some California cities, including Riverside and San Francisco, have established digital inclusion programs that seek to help underserved neighborhoods and families obtain affordable computers and access to the Internet. These efforts include the distribution of high-quality refurbished computers.

Maximizing scale economies is critical to the success of the School2Home business model. For example, the program can negotiate bulk purchases and discounted prices from technology vendors. It can also leverage cost-sharing plans with participant families. Given the size of the endeavor, School2Home can drive market innovation and lower the price of technology bundles. And while the cost of the school and home components of the program will vary by school and community, all schools and community partner organizations can benefit from the centralized support and technical assistance School2Home will provide.

A long-term approach to funding School2Home will be developed by its Leadership Group. This long-term strategy will require identifying the policy changes needed to ensure ongoing operations and build public support.

Implementation:
Launching, Marketing, and Program Rollout

School2Home is targeting over 500 middle schools in California that have not met the national requirements of No Child Left Behind for two consecutive years. However, the project will need to be phased in. School2Home will initially target one grade level. The phased implementation plan will include processes and recommendations for:

- Establishing the appropriate grade level to target;

- Identifying the number of schools for Phase One and the number for each subsequent year;

- Securing technology bundles;

- Certifying parent-training partners;

- Producing effective marketing programs to target parents;

- Establishing an entity to manage the School2Home program; and

- Creating effective communications and marketing strategies to reach parents and other key stakeholders.

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Consistency of implementation among participating schools is a key issue. In order to gauge the effects of School2Home, participating schools must adhere to a set of prescribed criteria, including extending educational resources to the home. Implementation guidelines will be mindful of the need to balance the consistency needed to assure meaningful evaluations with sensitivity to the unique challenges facing each school.

Evaluation:
Measuring Outcomes and Metrics

The School2Home program has set forth a vision for using technology to improve middle school students' digital literacy, 21st Century Skills, and overall educational outcomes. The extent to which this vision is realized will be discovered through a rigorous evaluation strategy. The School2Home evaluation strategy will be designed to provide needed short-term improvements as well as data on the program's long-term impacts on participating students, parents, teachers, and schools.

Evaluation efforts from other programs will help inform the School2Home evaluation strategy. Common characteristics and best practices of these evaluation programs include:

- They are quasi-experimental and use experimental and control groups that control for location and student body composition. Well conceived theoretical frameworks guide their research methods.

- They examine the implementation process as well as outcome data. This not only helps contextualize results, it also enables researchers to learn more about the challenges facing teachers and school administrators. This kind of information can also be used as a management tool to continually improve the program.

- Data collection involves a mix of qualitative and quantitative data sources comprising interviews, observations, surveys, and test scores. Evidence from multiple sources enables researchers to verify the robustness of their findings.

School2Home Governance:
Ensuring a Broad-Based, Public-Private Partnership

A robust, inclusive, public-private partnership is crucial to the success of School2Home. Leaders from the private, public, non-profit, and philanthropic sectors are not only setting the vision but are designing School2Home, and will be key to its ongoing operations. Through a strong governing board, key investors and stakeholders will oversee School2Home's governance, financing, management and evaluation, or outcomes.

The comprehensive nature of School2Home — with its focus on school, home, student, teacher, and parent — will require an implementing entity that understands these worlds and has the skills and abilities to connect them. As well, the implementing entity must leverage, and not recreate, the many programs whose missions align with that of School2Home. While it is not a public program, School2Home's policies and governance must be open and transparent to ensure strict accountability and to accommodate public scrutiny.

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WHAT SCHOOL2HOME CAN EXPECT TO ACCOMPLISH: EVIDENCE OF POTENTIAL IMPACT

The School2Home vision is based on the premise that home computers can be powerful conduits of educational opportunity for students and parents. To realize this vision, School2Home is building on best practices of school-based 1-to-1 laptop programs, which are designed to improve student educational outcomes, enhance teaching and learning, strengthen economic development, and advance digital equity. School2Home is likewise benefiting from best practices found in community-based programs that are operated largely outside the school environment and focus primarily on digital equity goals and training programs for the entire family.

Research has found evidence that both models are successful and suggests optimum impacts can be achieved by addressing both the school and home environments and grounding both efforts in local institutions that have a deep understanding of the unique needs of the students and parents in their communities.

Findings From School 1-to-1 Laptop Programs

Numerous school 1-to-1-laptop programs have been examined through rigorous evaluation programs. While each program has different goals and strategies, they all center on providing each student and teacher with a laptop that can be used around the clock to access educational resources. Other program components typically include: online instructional resources; online tools to assess student progress in core curricula; and professional development for teachers to help integrate technology into classroom learning. Large-scale studies have been conducted on the statewide laptop programs in Maine and in Texas — both of which targeted middle schools.

Maine's Middle School Laptop Program: 2007
The Maine Laptop Program has been in operation since the fall of 2002 and a variety of evaluation programs have been conducted. The program provides 7th- and 8th-grade students and their teachers with laptop computers and

provides schools and teachers with technical assistance and professional development to help integrate these tools into the classroom. About 100,000 Maine middle school students have been involved in the program.

Evaluations found important student gains, including: (1) increased class attendance; (2) reduced number of detentions; (3) improved writing scores; and (4) greater depth of student research. Together, these factors can contribute to greater educational outcomes. While student scores on the state's educational assessments have not produced appreciable results, evaluators note the following:

- First, it takes time for program effects to become measurable – often five to eight years.

- Second, methods of implementation can impact results, and the timing and manner in which the program is introduced varied considerably by school.

- Third, and most importantly, most existing standardized tests are ill-equipped to measure the 21st Century learning that occurs in technology-intensive classrooms. Maine's assessments, at best, measure gateway skills and basic knowledge.[16]

Texas Technology Immersion Pilot: 2007
This evaluation examined 22 experimental and 22 control schools in the first year and 21 experimental schools and 21 control schools in the second year. All schools met eligibility requirements for Title II, Part D funds (high-need children from families with incomes below poverty line, schools identified for improvement, or schools with substantial need for technology).

Researchers conducted site visits to observe students in 6th- and 7th-grade classrooms. As well, annual teacher surveys and student surveys were administered. School and student demographics and achievement data, as well as student disciplinary actions, were obtained from school records. However, researchers note that the program is a four-year effort and results should be viewed as preliminary.

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In both evaluation years, researchers found that middle school immersion produced schools with stronger principal leadership in technology, greater teacher collaboration and collective support for technology innovation, and stronger parent and community support for technology. Additionally, teachers in immersion schools were more technically proficient and used technology more often for their own professional productivity. Students used technology more often in core subject classrooms, and teachers adopted more integration-oriented and learner-centered ideologies.

Student outcomes in experimental schools also included significant gains in technology proficiency, and the use of technology for learning, greater interaction among peers in small group learning, and fewer disciplinary problems. However, no significant effect was observed on reading or math scores, though researchers noted second-year achievement trends generally favored technology immersion schools. [17] As in Maine, evaluators noted the difficulty of measuring 21st Century Skills and variations in program implementation.

Lemon Grove School District:
A California Case Study on Effective Technology Integration

The Lemon Grove School District in Southern California's San Diego County is a pioneer in using technology to provide an engaging and relevant learning environment and to extend learning beyond school hours. It provides middle school students with a computer tablet and a high-speed Internet connection at home, free of charge. Lemon Grove's comprehensive approach has helped underperforming schools and students reach grade-level proficiency more quickly. Student achievement, especially for students who are below or far below average achievement levels, has increased. As well, students are more engaged and motivated, and communication between teachers, students and parents has improved.

Key Features of the Lemon Grove 1-to-1 program include:

❐ *Technology Bundle.* Every student receives a small computer tablet, an E-Pad, and a filtered, high-speed Internet connection in the home that provides 24/7 access to the school's learning network. This standardized bundle minimizes the amount of time teachers spend on technical support. And with digital textbooks and links to video and other technology, the E-pad replaces the weight of multiple books with a single digital learning tool.

❐ *School Portal.* Lemon Grove's school portal contains educational content and applications. Students not only do their assignments and take tests on their tablets, they post information to the school's website. Teachers have access to a wide range of instructional and assessment resources.

❐ *Customized Learning Environment.* Using the results of online assessments, the district has been able to develop a new middle school success model that offers differentiated instruction based on the individual needs of students. Technology is facilitating the transition from teacher-centered instruction to a student-centered model.

❐ *School-to-Home Communication*. Students and parents can view grades, attendance records, and check assignments from home using the school's web portal. Teachers can access important resources at home, allowing them to grade assignments and tests, prepare lesson plans, and communicate with parents. The ability to maximize time out of school is key to accelerating learning.

❐ *Leadership.* School and District leaders are visible supporters and help promote and maintain a shared vision for the project.

❐ *Professional Development*. Teachers helped develop the project and are provided with ongoing professional development and opportunities for ongoing sharing. The school network has enabled communities of learners to develop, where teachers, principals, and district leaders can collaborate, both online and offline.

❐ *Financing.* The school provided funding for the program, including some of its federal funding. Classrooms for the Future, a local foundation, also provided funding.

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Evaluations of smaller-scale projects have found comparable results. Notably, the Pleasanton Unified School District in California, which implemented a comprehensive evaluation plan, found that students who participated in the 1-to-1 laptop programs received significantly higher test scores and higher grades in writing, English-language arts, and mathematics and achieved better overall Grade Point Averages (GPAs).[18]

In sum, the foremost conclusion drawn from available research is that 1-to-1 school laptop programs provide numerous positive outcomes for students, teachers, and the larger community, including a higher degree of student engagement, more self-directed student learning, and positive student and teacher attitudes toward technology following implementation.[19]

Findings from Community-Based Youth Inclusion Programs

In contrast to 1-to-1 laptop programs, the wide variation in community-based youth technology programs makes it more difficult to measure and compare impacts across programs. Differences in programs' target participants, technology, training, and goals as well as a general lack of sustained funding reduce the rigor and availability of comparable research. In many cases, the goal of this type of program is focused largely on extending tools to the home and engaging participants with the use of those tools. Less focus is placed on the educational outcomes of student participants.

Despite this, a couple of evaluations of community-based programs have found promising student outcomes. Findings from evaluations conducted by the Boston Digital Bridge Foundation and Computers for Youth provide encouraging evidence of the benefits community-based programs can achieve.

- *Educational Gains*. When surveyed, parents reported that their children's schoolwork improved significantly through involvement in the program. Youth participants reported that home computing had a positive impact on their learning in language arts and mathematics, and that having a computer made them feel more self-confident. An evaluation of middle school students' math skills found a significant correlation between home computing and higher math test scores. [20]

- *Community Connections*. Evaluations have also found that participants — both students and adults — reported feeling more engaged with their communities as a result of their involvement in a community-based technology program.

- *Computer Skills*. Predictably, parents have also noted improvements in their child's and their own computer skills and proficiency.

School2Home's evaluation strategy will thus add to these evaluation findings, thereby informing its future deployments, guiding investments in other states and countries, and offering valuable additions to the research literature.

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CALL TO ACTION

School2Home seeks to dramatically improve the educational outcomes of students attending California's underperforming middle schools and their parents.

With its focus on 21st Century Skills, School2Home will help prepare youth to think creatively, adapt to changing circumstances and technologies, and develop the solutions to tomorrow's problems.

With its focus on home technology bundles and parent engagement, School2Home also addresses the remaining digital disparities that exist in the state.

The School2Home Initiative represents an investment in individual and community opportunity that will help secure the state's economic competitiveness for years to come. School2Home will operate independently for five years, at which time it is expected the program will be sustained through public policy solutions.

Clearly, the School2Home Initiative is an ambitious and bold undertaking — one that can only be successful with the commitment of the state's private, public, non-profit, and philanthropic sectors. By working together, we can help prepare California's young people to compete and succeed — locally, nationally, and globally.

School2Home will help California remain a world leader in innovation by investing in its young people today.

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APPENDIX I:
CALIFORNIA FACES THREE URGENT AND INTERRELATED CHALLENGES

Digital Opportunity Gap

Computer and Internet use in California continues to rise, but disparities by race/ethnicity and income persist, according to a 2008 Public Policy Institute of California survey:

- California households with annual incomes under $40,000 are significantly less likely to have technology access. Just half own home computers, and only 40 percent have home Internet access. Internet access rises to 76 percent in households with incomes between $40,000 to $79,999, and in households with incomes above $80,000, 90 percent have Internet access.

- Only thirty-three percent of families in the lowest income bracket have *broadband* Internet, compared to 64 percent in the middle-income bracket and 85 percent in the highest.

- Less than half of Latinos (48 percent) have a computer at home, compared to 86 percent of Caucasians, 84 percent of Asians, and 79 percent of blacks; and

- Four in ten Latinos have Internet access, and only a third (34 percent) have broadband, compared to majorities for other racial and ethnic groups.

Source: Mark Baldassare, et al., *Californians and Information Technology,* Public Policy Institute of California, June 2008, available at <http://www.ppic.org/main/publication.asp?i=831>.

Educational Achievement Gap

California's educational achievement gap closely parallels its digital opportunity gap. The state's Latino and African American youth and youth who live in low-income households score lower on reading assessments and are at greater risk of dropping out of school than their peers.

- Low-income 7th graders read at the level of higher income 3rd graders.

- African American and Latino 17-year-olds read at the same level as white 13-year-olds.

- Low-income students drop out of school at six times the rate of their high-income peers.

Source: *The High Cost of High School Dropouts: What the Nation Pays for Inadequate High Schools*, Alliance for Excellent Education, October 2007 (www.all4ed.org/files/HighCost.pdf).

Technology Gap in California Schools

In a recent national report card, the state of California's educational technology was graded in three different areas: technology access, use, and capacity. As shown below, California received an overall grade of D+, a low grade shared by two other states (Delaware and Hawaii), followed by Rhode Island, Oregon, and Nevada with D grades, and Washington, DC with a D-. Its grades as compared to the national average were as follows:

	California	National Average
Access to technology	F	C
Use of technology	D+	B-
Capacity to use technology	B-	C
Overall grade	D+	C+

Source: State Technology Report 2008: California, *Technology Counts 2008: STEM: The Push to Improve Science, Technology, Engineering and Mathematics*, *Education Week*, 27 Mar. 2008 (http://www.edweek.org/ew/articles/2008/03/27/30dsr.h27.html).

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