



East San Jose Early Math Initiative Grail Family Services

Preparing Children to Succeed in the 21st Century August 2018 White Paper

The fastest growing careers today, from software and systems engineers to nurse practitioners, require strong mathematical skills. Yet recent studies indicate that the future American workforce may be vastly ill-prepared. According to The Annie E. Casey Foundation, Kids Count Data Center, 67% of eighth-graders in the U.S. are NOT proficient in math. The figure is higher for children of color (87% for African Americans, and 80% for Latinos). Local figures reflect the national average. In Santa Clara County, nearly 69% of eighth-graders are NOT performing at proficiency level in math (*The Santa Clara County Children's Agenda, 2018 Data Book*).

Math skills start developing in preschool and success in math in eighth grade is the most powerful predictor of success in high school. Students who struggle with math in eighth and ninth grade are less likely to graduate from high school (*EdSource, May 2009*). The lack of a high school diploma is associated with myriad negative employment and life outcomes. Dropouts are more likely to live in poverty and to receive government assistance (*Laird, Kienzl, DeBell, & Chapman, 2007*). They are also more likely to become involved in crime (Lochner & Moretti, 2004). Additionally, dropout status has been linked with poor health, including mental health (*Alliance for Excellent Education, 2013*).

Giving young children the opportunity to get a head start in developing proficiency in math skills is one of the most important things we can do to ensure their future success.

Grail Family Services Early Math Initiative seeks to create this head start by providing parents with knowledge, tools and resources to support their children's early math learning at home.

GFS recognizes that families are their children's first teachers, and that we need to enlist families as partners in developing solutions to increase children's foundational math skills to be better prepared for school, and ultimately, for the job market. The Early Math Initiative is founded on the belief that families have the determination and internal capacity to be agents of change.

We know that creating social change takes time and is not accomplished easily. Our Early Math Initiative focuses on examining the issue of math disparities, creating the same level of understanding among all stakeholders, and working collaboratively to create solutions. This document is to be used as a starting point for discussion.

The Need

Nearly half of the children attending schools in Alum Rock Union School District (ARUSD), did not attend a pre-school or Head Start program. An overwhelming majority of these children are of Latino descent, and their academic performance is representative of a crisis affecting Latinos across the country. Nationally, average math scores for Latino students are lower than those of other groups, except for African Americans. In 2013, the average fourth grade NAEP (National Assessment of Educational Progress) math scores for Latino students were

27 points below Asians and 19 points below Whites (*National Center for Education Statistics, 2013*). These statistics are sobering and speak to the need to act now. Efforts must begin at an early age, *before* children start school. For these statistics to change, the involvement of parents, family members, and the community at large is critical.

Research indicates that math skills are as much an indicator of academic success as literacy skills, if not more so. Children with stronger math proficiency in elementary school are more likely to graduate from high school and attend college (*Duncan, et. al., 2007*). Other experts have also concluded that early math skills predict success. This underscores the need to support the early math skills of our children.

Family engagement is another key indicator of academic success. In fact, more than five decades of research confirm that engaging families in their children's education early in their lives improves school readiness, produces higher gains in reading and math achievement, and increases graduation rates (*Henderson & Mapp, 2002*). This is why parents are a critical component of the Early Math Initiative.

Framework

Families in East San Jose have made it clear that they want the best for their children's future. In a community study conducted in 2013 by Stanford University's John W. Gardner Center for Youth and Their Communities, more than 80% of parents said they wanted to be better able to understand and support their children's learning needs, but that they didn't know how. These hard-working families are eager to do what it takes to help their children succeed. The Early Math Initiative builds on our belief that a collaborative effort among parents, families and the community can create the structure and support to help every child succeed.

The Early Math Initiative aligns with [Santa Clara County's Children's Agenda](#) by supporting two of their thirteen indicators: Kindergarten Readiness and Middle School Math Proficiency.

Why do we need to start early?

Children are born with innate math abilities such as a primitive "number sense" that allows them to visually compare arrays of objects and be able to tell which grouping has more (*Ginsburg, Lee, & Boyd, 2008*). But if a child's abilities are not nurtured and developed in their early years, they will lag behind their peers when they enter school, and may never catch up. This is especially true for disadvantaged children. Those least prepared are disproportionately children of color and from low-income families (*Schoenfeld & Stipek, 2011*). This means that providing children in our community with rich opportunities to engage in math from an early age is of the utmost importance.

Why do we need to involve parents?

One important factor to consider when enlisting parents to support their children's early math learning is the parent's attitude toward math. Studies have found that parents who report more positive attitudes toward math also report engaging in more math activities with their children (*LeFevre, Polyzoi, Skwarchuk, Fast & Sowinski, 2010*). Conversely, when parents have a negative attitude toward math, or math anxiety, it negatively affects children's math learning (*Maloney, Ramirez, Gunderson, Levine & Beilock, 2015*). Providing parents with engaging and productive ways to engage their children in mathematical thinking, however, has been shown to increase math learning in children of math-anxious parents (*Berkowitz, et. al., 2015*). One of the main components of the Initiative, "My First Math Kit™" addresses this need. My First Math Kit offers parents highly engaging, simple, out-of-the box activities they can use with their children, making it easy for even math-anxious parents to support their children in math-learning activities at home.

Components of the Initiative

The Early Math Initiative will provide parents with knowledge, tools and resources to support their children's early math learning at home. In the next five years we will implement the following strategies:

1. **Awareness and Messaging Campaign.** Our goal is to promote awareness of the importance of early math and what parents can do to support their children at home. This strategy will involve dissemination of key concepts and strategies through our Building Blocks of Parenting™ App. Dissemination efforts will include:
 - a. *A messaging campaign launched through Valley Transportation Authority (VTA). Our BBP will be posted in buses in English and Spanish.*
 - b. *A partnership with FIRST 5 Santa Clara County that will disseminate the messages through their Family Resource Centers.*
 - c. *A partnership with the Si Se Puede Collective (SSPC). The SSPC will promote early math messages with community families.*
 - d. *A partnership with Univision. Univision will promote the early math messages through their programming.*
 - e. *A partnership with Santa Clara County Office of Education (SCCOE). SCCOE will promote the messages throughout their 22 school districts.*

2. **Direct Service Programming.** We will deliver direct services to our community in the form of the following:
 - a. *Incorporation of early math into all GFS programs, including our State-funded Preschool.*
 - b. *Yes We Can...Read, Plus (YWCR+) Initiative.* We will continue implementing our YWCR+ Initiative. YWCR+ is a comprehensive literacy and math program that matches trained volunteers to serve as Mentors for Kindergarten and 1st grade students at San Antonio and Dorsa Elementary Schools for weekly mentoring sessions focused on improving foundational reading and math skills.
 - c. *My First Math Kit™.* During the 2018-2019 school year, we will be introducing the My First Math Kit to children and families in our State-funded Preschool. My First Math Kit is composed of 6 weekly early math activities for parents and their preschool age children that they can do at home. Each kit comes with an activity sheet with instructions for the weekly activity and tools and materials to complete the activity. Kits will be rotated on a weekly basis, with different contents related to the math concept for the week. In addition to sending the Math Kit home for parents and children to do math activities during the week, preschool teachers will be implementing the Math Kit activities during class at the beginning of the week. Weekly activities are based on five key math concepts that align with the California Preschool Learning Foundations and state of the art early math research. These key concepts are:
 - i. **Number Sense:** understanding numbers and quantities, counting
 - ii. **Algebra and Functions:** understanding classification and patterns
 - iii. **Measurement:** comparing and ordering objects, understanding measurement
 - iv. **Geometry:** identify common shapes, understand how objects are related in space
 - v. **Mathematical Reasoning:** solving problems that arise in their environment

3. **Professional Development Workshops for teachers.** After the initial implementation of the Early Math Kit at our State-funded Preschool, we will be developing a professional development training for teachers. This training will be based on the use of the Math Kit and will incorporate lessons learned from process and an outcome evaluations conducted during the 2018-2019 school year.

4. **What can you do?**
 - a. Be informed and spread the word about the importance of early math.
 - b. Download the BBP App and try the strategies with your children.
 - c. Talk to family members and friends about how to support children with math.
 - d. Support children with math.
 - e. Hold elected officials accountable for supporting programs that promote children's early learning.

Partners

The following is a partial list of organizations, groups and individuals who have been approached informally and have expressed interest in the further development and implementation of this initiative.

Amigos de Guadalupe
California Young World
DREME Network, Stanford University
FIRST 5 Santa Clara County
GoKids, Inc.
Santa Clara County
Santa Clara County Office of Education Head Start
School of Arts & Culture
Somos Mayfair
Univision
Valley Transportation Authority

If you are interested in getting involved, supporting this initiative, or learning more information about this effort, please contact Veronica Goei, Executive Director of Grail Family Services at vgoei@gfsfamilyservices.org.

Citations

- Alliance for Excellent Education. *Well and Well-Off: Decreasing Medicaid and Health-Care Costs by Increasing Educational Attainment* (2013). <http://all4ed.org/wp-content/uploads/2013/08/WellWellOff.pdf>.
- Berkowitz, T., Schaeffer, M., Maloney, E., Peterson, L., Gregor, C., Levine S.C., & Beilock, S. (2015). Math at home adds up to achievement in school. *Science*, 350, 156-198.
- Duncan G.J., Dowsett C.J., Claessens A., Magnuson K., Huston A.C., Klebanov P., Pagani L.S., Feinstein L., Engel M., Brooks-Gunn J., Sexton H., Duckworth K., Japel C. (2007). School readiness and later achievement. *Developmental Psychology*, 43(6):1428-46.
- Ed Source, (May 2009). *Algebra Policy in California – Great Expectations and Serious Challenges*. www.edsources.org.
- Ginsburg, H., Lee, J. S., Boyd, J. S. (2008). Mathematics Education for Young Children: What It Is and How to Promote It. *Social Policy Report*, 22 (11). Retrieved from <http://eric.ed.gov/?id=ED521700>.
- Henderson, A.T., & Mapp, K. L. (2002). A new wave of evidence: The impact of school, family and community connections on student learning. Austin, TX: Southwest Education Development Laboratory.
- Laird, J., DeBell, M., Kienzl, G., and Chapman, C. (2007). Dropout Rates in the United States: 2005 (NCES 2007- 059). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved [date] from <http://nces.ed.gov/pubsearch>.
- Lochner, L., and Moretti, E. (2004). The Effect of Education on Crime: Evidence from Prison Inmates, Arrests, and Self-Reports. *American Economic Review*, 94 (1): 155-189.
- LeFevre, J.A., Polyzoi, e., Skwarchuk, S.L., Fast L., & Sowinski, C. (2010). Do home numeracy and literacy practices of Greek and Canadian parents predict the numeracy skills of kindergarten children? *International Journal of Early Years Education*, 18, 55-70.
- Maloney, E.A., Ramirez, G., Gunderson, E.A., Levine S.C., & Beilock, S.L. (2015). Intergenerational effects of low math achievement and high math anxiety. *Psychological Science*, 26, 1400-1488.
- National Center for Education Statistics (2013). The Nation’s Report Card: A First Look: 2013 Mathematics and Reading (NCES 2014-451). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.
- The Annie E. Casey Foundation, Kids Count Data Center, 2018, <https://datacenter.kidscount.org>.
- The Santa Clara County Children’s Agenda, 2018 Data Book. Kids in Common, <http://www.kidsincommon.org/storage/3283/Data-Book-2018.pdf>.
- Schoenfeld, A. H., & Stipek, D. (2011). Math matters: Children’s mathematical journeys start early. Report of a conference held November 7 & 8. Berkeley, CA.