



October 27, 2016

<p>SUBJECT</p> <p>UPDATE ON EDUCARE CALIFORNIA AT SILICON VALLEY</p> <p>Strategic Priority Area 1. Children and Families: Support children prenatal through age 5 and their families by providing culturally and linguistically effective resources, knowledge, and opportunities for them to develop the skills needed to achieve their optimal potential in school and life.</p> <p>Goal 1.2. Early Learning: Children birth through age 5 benefit from high-quality early education, early intervention, family engagement, and support that prepares all children to reach their optimal potential in school and life.</p> <p>Strategic Priority Area 2. System and Network: Provide leadership to the First 5 movement and the development of a support system serving children prenatal through age 5, their families, and communities that results in sustainable and collective impact.</p> <p>Goal 2.2. Resource Exchange and Stewardship: Strategically fund and co-fund, align resources, facilitate the exchange of information and best practices, and seek new opportunities to maximize positive impact for children prenatal through age 5 and their families.</p>	<p><input type="checkbox"/> Action</p> <p><input checked="" type="checkbox"/> Information</p>
--	---

SUMMARY OF THE ISSUE

The vision of First 5 California (F5CA) is for the state's children to receive the best possible start in life and thrive. To achieve this vision, F5CA has long invested in programs and strategies to prevent the school readiness gap by addressing the early childhood gap that presents itself as early as 18 months of age for many children of color, children living in poverty, and dual language learners (DLL). Research shows that, without effective early intervention, this gap continues to widen and leads to an opportunity gap for children who are most at risk.

At the July 2016 Commission Meeting, F5CA staff outlined strategies consistent with the F5CA Strategic Plan and First 5 funding, partnerships, and advocacy for preparing California's most vulnerable children for success in school.

In this Item, F5CA staff will update the Commission on one of the broadly targeted intervention strategies F5CA invests in as a member of a public-private partnership to establish Educare programs in California. Educare is a nationally recognized evidence-based model proven to mitigate the achievement gap for the most vulnerable children before they start school, which also provides significant professional development opportunities for early learning teachers far beyond the Educare locations.

The Commission also will hear a presentation from Lisa Kaufman, Executive Director, and Jolene Smith, Board Chair of Educare California at Silicon Valley, the first Educare site in California.

RECOMMENDATION

This is an information-only item. F5CA staff is not requesting action at this time.

BACKGROUND OF KEY ISSUES

The Educare Model and Educare Learning Network

Educare provides the comprehensive early learning services that early brain science shows are necessary in order to narrow the achievement gap for at-risk children beginning at birth. Educare is a state-of-the-art, evidence-based, full-day and full-year program for at-risk children prenatal through age 5 and their families that has been implemented across the country. The Educare Learning Network consists of 21 operating Educare schools in diverse communities across 14 states. The Network is supported by public-private partnerships, including the Ounce of Prevention Fund and the Buffet Early Childhood Fund, along with other national and local philanthropic organizations and public-private groups.¹

Educare programs are designed to meet the needs of low-income, working families who are recipients of a mix of federal Early Head Start and Head Start programs, and state infant/toddler and preschool services. Informed by research, the Educare Quality Early Learning Model (Educare model) has a central focus on meaningful teacher-child interactions, positioning highly skilled, highly qualified adults as the cornerstone of its programs. All classrooms have high adult-to-child ratios led by highly qualified lead teachers, assistant teachers, and aides, who receive ongoing support and mentoring from on-site coaches. In addition, the Educare model integrates comprehensive family supports, which includes employing family support staff to address each family's comprehensive needs.

¹ Retrieved September 26, 2016, from: <http://www.educareschools.org>

The Educare model represents four main tenets creating:

- A program based on early brain science research and early education best practices that ensure children most at risk are ready to thrive in school and beyond
- A place of early learning for children birth through age 5 and a community center for families that showcases the importance of investing in early childhood education and comprehensive family supports
- A public-private partnership of public agencies, private businesses, and philanthropy committed to narrowing the achievement gap for children within their local community
- A platform to use its exemplar comprehensive, high-quality model to drive broader policy and systems change locally, statewide, and nationally

While the program within the Educare site's walls focuses on providing its children with comprehensive, high-quality early learning and support services, the Educare approach employs the twin goal of translating its best practices beyond the site walls out into the larger community to:

- Serve other local families not enrolled in the program through shared community resources
- Help build a more skilled local early childhood workforce
- Serve as a catalyst for advocating for high-quality early childhood education (ECE)

Educare as a Broadly Targeted Intervention Strategy

Since the passage of Proposition 10 in 1999, First 5 counties, partners, and the state Commission have adopted numerous strategies and funded many services that research indicates are the most successful approaches to address health disparities and the school readiness gap for all Californian children. The foundation of Proposition 10's investments to address the opportunity gap has been research-driven strategies. This includes broadly targeted intervention services and supports to address issues related to poverty such as subsidized child care, health services, income, and housing assistance. Educare is one such strategy that F5CA funds directly.

Educare is built on a foundation of the latest research in child development, early education, and evaluation. Research suggests the more time children spend in high-quality programs, the more they benefit in positive developmental outcomes, particularly for DLLs. For those children starting in Educare programs as infants, findings point to the absence of a later achievement gap.²

² Yazejian, N., Bryant, D., Freel, K., Burchinal, M. & the Educare Learning Network (ELN) Investigative Team. (2015). High-quality early education: Age of entry and time in care differences in student outcomes for English-only and dual language learners. *Early Childhood Research Quarterly*, 23–39. Retrieved October 18, 2016, from: <http://fpg.unc.edu/resources/high-quality-early-education-age-entry-and-time-care-differences-student-outcomes-english->

Data from Educare programs in twelve sites across the nation show promising results in preparing at-risk children from birth to age 5 for later academic achievement. Low-income children, including children with limited English proficiency, who enroll in Educare as infants or toddlers, enter kindergarten with the same skills as their middle-income peers.³

Integral to the Educare model is a focus on intensive family engagement—fostering strong parent-child relationships, family well-being, and ongoing learning and development for both parents and children. The Educare philosophy is to build mutually respectful, goal-oriented relationships between staff and families to assess children’s developmental progress and engage them in learning beyond the classroom. Intensive family engagement at Educare sites also can include supports, such as family resource centers and medical, dental, and behavioral health services, for Educare families and the larger community.

Educare’s Influence on First 5 California’s Program Design

Prior to a direct F5CA investment, Educare’s best practices have been incorporated into F5CA’s most significant ECE investments over the last two decades, serving as a foundation for the design of F5CA’s Child Signature Program (CSP). The original program was built off of the research-based best practices of the Educare model, focusing on core program features informed by evidence to enhance quality, to build on a multi-leveled approach, to emphasize continuous improvement informed by data and feedback, and to use evaluation to inform future investments.

The Educare approach continues to inform the evolution of F5CA’s efforts to build high-quality systems of care through quality rating and improvement systems (QRIS), including its influence on the state’s implementation of the federal Race to the Top-Early Learning Challenge (RTT-ELC) grant, development of California’s Quality Continuum Framework Rating Matrix, and design of F5CA’s most significant systems investment to date, First 5 IMPACT (Improve and Maximize Programs so All Children Thrive).

These systems-building endeavors strive to improve early learning quality and child outcomes, and to model and support positive adult-child interactions⁴. This approach stems from Educare’s research-based best practices to improve program quality through employing highly skilled teachers, high adult-to-child ratios, small class sizes, age-appropriate curricula and stimulating materials, safe physical settings, language-rich environments, warm and responsive interactions between staff and children, and high and consistent levels of child participation.^{5,6}

³ See Attachment A: *Educare Implementation Study Findings*. (2012). Frank Porter Graham Child Development Institute, University of North Carolina at Chapel Hill.

⁴ ECE Consensus Letter for Researchers | nieer.org. (n.d.). Retrieved October 18, 2016, from <http://nieer.org/publications/ece-consensus-letter-researchers>.

⁵ *A Science-Based Framework for Early Childhood Policy: Using Evidence to Improve Outcome in Learning, Behavior, and Health for Vulnerable Children*. Center on the Developing Child, Harvard University. National Forum on Early Childhood Program Evaluation; National Scientific Council on the Developing Child. Retrieved October 18, 2016, from http://developingchild.harvard.edu/wp-content/uploads/2016/02/Policy_Framework.pdf.

⁶ See Attachment B: *Features of quality in early care and education: Recent, rigorous evidence on what matters most for children*. Bridges, M., Dagsys, N., Ly, J., & Fuller, B. (2012). University of California, Berkeley and UCLA Center for Healthier Children, Families, and Communities.

First 5 California's Investment in Educare

In 2010, the Commission voted to invest \$6 million in the Educare model through a public-private partnership comprised of local government health and education agencies, private businesses, and philanthropy. Funding was approved to support the design, operation, and evaluation of the first California Educare centers in Santa Clara and Los Angeles counties. In January 2014, the Commission approved an extension of these funds through Fiscal Year (FY) 2016–2017.

Following the extension of F5CA's funding commitment, Educare California at Silicon Valley (ECSV) opened its doors and began serving Santa Clara County-area children and families in the 2015–16 school year. F5CA has committed \$3.1 million to ECSV over a two-year period (FY 2015–16 through FY 2016–2017). The remaining F5CA funds are targeted for Educare of Los Angeles in Long Beach, which is scheduled to open in the 2017–18 school year.

In making this investment, the original intent of the Commission was for F5CA funds to enhance the quality and funding levels of the community's existing federal and state early learning programs to reach the Educare model's higher level of quality services, and to increase ECSV's capacity to ensure their program is coordinated, aligned, and integrated with state and national quality early learning efforts. These efforts include CSP, Comprehensive Approaches to Raising Educational Standards (CARES) Plus, First 5 IMPACT, the RTT-ELC and the California QRIS Consortium, as well as local efforts. F5CA funds supplement and leverage public-private partnership funds with Early Head Start, Head Start, Title 5 early learning programs, local First 5 dollars, local educational agencies and philanthropic dollars.

Educare California at Silicon Valley

Under the leadership and administration of First 5 Santa Clara, ECSV began serving its first cohort of children and families in the 2015–16 school year following multiple years of partnership building, planning, and construction. This public-private venture is the first of its kind in the state, which includes the following local operating partners: First 5 Santa Clara, the Governance Board of ECSV, the East Side Union High School District (ESUHSD), the Franklin-McKinley School District, the Franklin-McKinley Children's Initiative (FMCI), and Santa Clara County Office of Education (SCCOE).

The center is co-located with Santee Elementary School in San Jose, California and operates in partnership with the SCCOE Early/Head Start and California State Preschool Programs, and the ESUHSD Child Development Program. The children who attend ECSV come from the Santee community located in the FMCI area. In addition to serving 168 children in comprehensive, high-quality infant, toddler, and preschool programs, the center serves the larger community by supporting local families through its family resource center, and is creating a regional hub for professional development and research through its Professional Development Institute.⁷

⁷ Retrieved September 26, 2016, from: <http://educaresv.org>.

The intent of F5CA's funding through its agreement with First 5 Santa Clara is to supplement the high-quality elements in the classroom to meet the Educare Core Features program requirements such as supporting the costs of high-quality staff, including family support specialists and mentor-coaches, and their ongoing professional development; lower student-teacher ratios; smaller classroom sizes; and extending operation to a full-day, full-year program. As independent evaluation is a pillar of all F5CA investments, the funds also are used to conduct the program evaluation through a Local Evaluation Partner as required by the Educare Learning Network to ensure successful implementation of the national Educare Implementation Study. F5CA funds also pay for the supervising portion of ECSV's Executive Director position.

Educare of Los Angeles in Long Beach

F5CA also has committed funds to a second landmark Educare site in California — Educare of Los Angeles in Long Beach — which is currently in the planning, fundraising, and construction phase of its facilities on the Barton Elementary School campus in the Long Beach Unified School District. The official opening of the center and enrollment of children and families is anticipated for the 2017–18 school year.

SUMMARY OF PREVIOUS COMMISSION DISCUSSION AND ACTION

The Commission heard information items on the achievement gap at the April 2016 Commission Meeting presented by California Department of Education's Chief Deputy Superintendent of Public Instruction, Glen Price, and at the July 2016 Commission Meeting presented by F5CA staff, Erin Gabel and Sarah Neville-Morgan.

Prior to 2016, the Commission has considered numerous related presentations weighing F5CA investment in research-based approaches to prevent the achievement gap through broadly targeted intervention strategies. Such investments include, but are not limited to, inception and continuation of CSP and CARES Plus beginning in 2000, and its decision to fund Educare models in California with \$6 million in one-time funds in April 2010, and extend that funding in January 2014.

Over the past two decades, F5CA's ECE investments have been inspired by and built upon elements of the Educare model as a research-based, comprehensive, high-quality ECE program, and as an integral part of a local community, expanding positive impacts beyond the children served in its classrooms to families and ECE professionals across the state and region, and driving local and state policy change towards greater investment in comprehensive ECE and family support systems.

ATTACHMENTS

- A. *Educare Implementation Study Findings—August 2012*
- B. *Features of Quality in Early Care and Education: Recent, Rigorous Evidence on What Matters Most for Children*



Educare Implementation Study Findings—August 2012

The Study: Since 2005, the Frank Porter Graham Child Development Institute (FPG) at the University of North Carolina at Chapel Hill has led the Educare Learning Network implementation study of the Educare model. In the 2010–11 school year, 12 Educare Schools from across the country participated in the study, which now includes more than 1,800 students. This brief reports key results from four school years—fall 2007 to spring 2011.

The Challenge: Young children from low-income, distressed environments start school far behind their more advantaged peers. This achievement gap persists to high school and is linked to social and economic problems later in life, including illiteracy, teen pregnancy, high dropout rates and unemployment. These at-risk children typically have smaller vocabularies, are less likely to know their letters and numbers and consistently score below their higher-income peers in early learning and math.¹

Why Educare? Educare is a state-of-the-art school open full-day and full-year serving at-risk children from birth to five years old. Educare Schools provide high-quality instruction and stimulating learning environments to help students arrive at kindergarten ready to learn at the level of the average 5 year old in the US.

Is it Working? Yes. Data from 12 Educare Schools (Central Maine, Chicago, Denver, Kansas City, Miami, Milwaukee, Oklahoma City, Omaha at Indian Hill, Omaha at Kellom, Seattle, Tulsa at Hawthorne, and Tulsa at Kendall-Whittier) are demonstrating results in preparing at-risk children from birth to five for later academic achievement. Evaluation data show that more years of Educare attendance are associated with better school readiness and vocabulary skills.

School Readiness

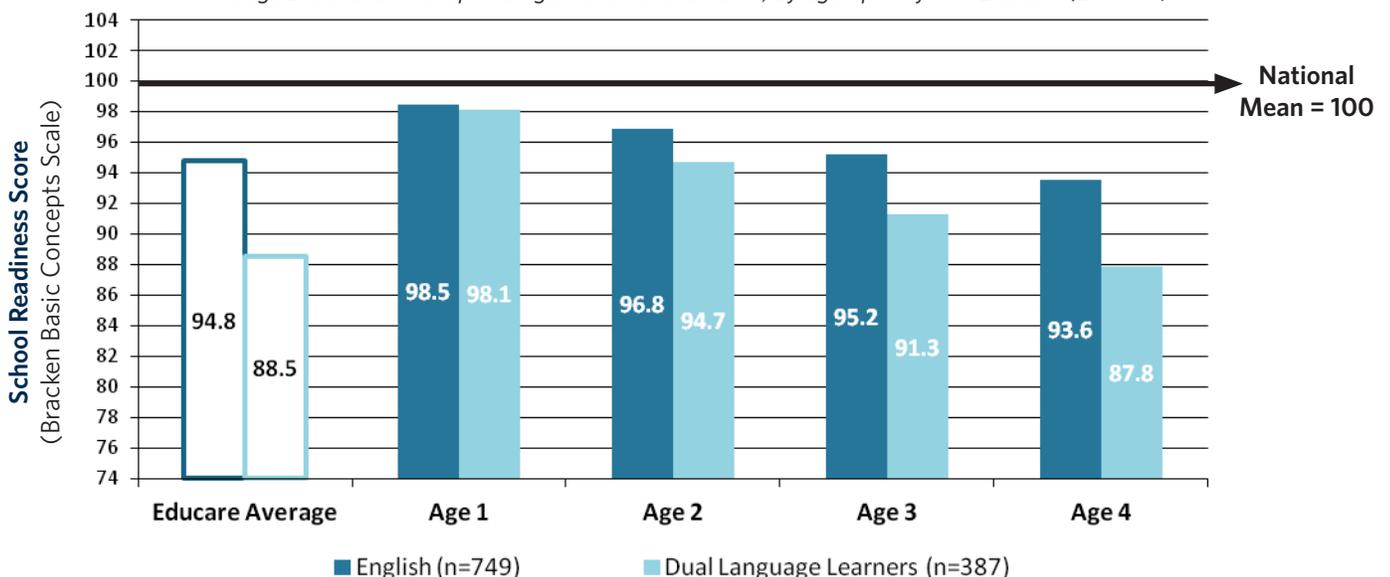
Why It's Important: Comprehension of concepts like colors, letters, shapes, sequence and numbers are important skills for classroom success. Children from high-risk populations, like those served by Educare Schools, typically score well below the national average and are usually developmentally several months behind their more advantaged peers.²

How Do We Measure School Readiness? The Bracken Basic Concepts Scale is a developmentally sensitive and standardized measure that evaluates children's comprehension of concepts like sequence, letters and colors that are essential to early communication development and school readiness.³ It is administered in the spring before children leave Educare for elementary school.

- Children who begin the Educare program early in life score better on a school readiness assessment when they leave Educare for kindergarten compared to late-entering children. Children from both English- and Spanish-speaking homes who enter Educare before age 2 score over 98—near the national average (100) and exceeding the typical scores of at-risk children.
- The significant advantage of entering Educare early in life is seen even after controlling for risk factors such as maternal education, race and teen parent status.⁴ Educare graduates are ready to become active and engaged kindergartners.

School Readiness: Children who spend more years in Educare emerge better prepared for kindergarten

Average Bracken scores of kindergarten-bound children, by age of entry into Educare (2007–11)



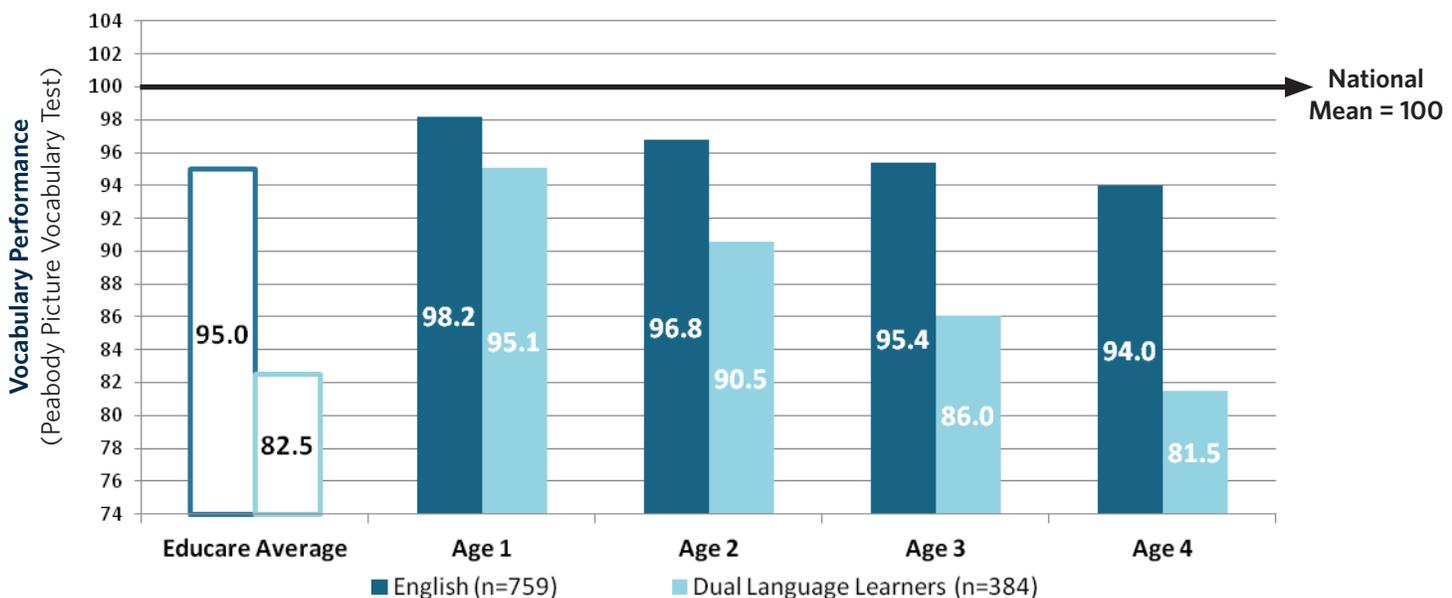
Vocabulary

Why It's Important: Communication, early literacy and vocabulary skills consistently predict later academic success. Research shows that 1st grade reading ability is a strong predictor of 11th grade reading comprehension, vocabulary and general knowledge.⁵ Low-income children typically enter kindergarten with vocabulary levels and pre-literacy skills well below those of their middle-class peers—in the low-average range or below. This achievement gap is extremely difficult to close in elementary and high school. But, if at-risk children can enter kindergarten with a vocabulary that approaches that of the average American child, their chances of becoming good readers, succeeding in elementary school, graduating from high school and staying on a successful life trajectory will have been improved.

How Do We Measure Vocabulary Skills? The Peabody Picture Vocabulary Test (PPVT) is a widely used and standardized measure of young children's vocabulary and is administered at age 3 and every spring thereafter.⁶ The PPVT is a good predictor of reading success in elementary school.

- **Kindergarten-bound Educare children score better on measures of vocabulary than most low-income children in other large studies of early achievement.⁷ Educare children average 95.**
- **As with the school readiness measure, Educare children's vocabulary scores when they leave for kindergarten are higher the earlier they enrolled in Educare. Kindergarten-bound children who entered before age 2 average 98.2 on this measure—near the national mean (100) for all children. The significant advantage of entering early is seen even after controlling for risk factors such as maternal education, race and teen parent status.⁸ Educare children are primed to be successful kindergartners.**

Vocabulary: Children who spend more years in Educare emerge better prepared for kindergarten
Average PPVT scores of kindergarten-bound children, by age of entry into Educare (2007-11)



Social and Emotional Skills

Why It's Important: Preschoolers' social, emotional and attention skills are associated with school success.⁹ Kindergarten teachers note that problems with social skills, inability to follow directions and difficulty doing independent and group work are possible causes of children's difficult transitions into kindergarten.¹⁰ At Educare, children develop the skills to become active, engaged and successful students.

How Do We Measure Social and Emotional Skills? The Devereux Early Childhood Assessment (DECA) is a nationally normed assessment that measures behavior on three scales of initiative, attachment and self-control in preschool children ages two to five.¹¹ The DECA is administered in the fall and spring of each year.

Main Findings: Educare children enter kindergarten exhibiting average or above average social-emotional skills. These social and emotional skills help Educare children negotiate the transition to kindergarten and its new demands, new teachers and new peers—setting them up for school success.¹²

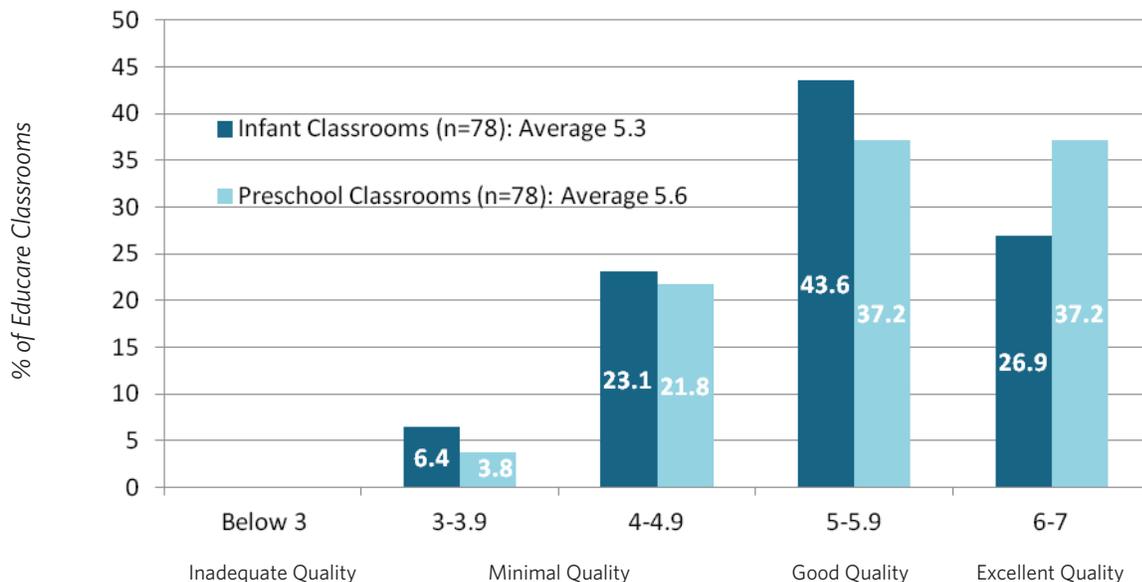
Classroom Quality

Why It's Important: Educare's high-quality classrooms are integral to children's success. Classroom quality—specifically, the interactions between staff and children and among children themselves, in addition to the adequacy and use of materials and aspects of the physical space—predicts child outcomes. We know from a large body of research that good quality classroom environments are associated with enhanced child outcomes in the areas of language, vocabulary, early math and social skills.¹³ Educare teachers and program leaders use scores on observations of classroom quality to inform continuous improvement of individual classrooms and of Educare Schools as a whole.

How Do We Measure Classroom Quality? The Infant/Toddler Environment Rating Scale (ITERS-R) and the Early Childhood Environment Rating Scale (ECERS-R) are observational measures widely used by researchers and government agencies to assess the quality of child care and early education settings.^{14,15} A high score indicates higher classroom quality in terms of the activities, staff-child interactions, equipment, space and materials. Educare also uses the Classroom Assessment Scoring System (CLASS) to measure three domains of quality: emotional support, classroom organization and instructional support.¹⁶ Used by Head Start programs across the country, CLASS scores are predictive of gains in students' language, reading and math skills. On all of these quality measures, scores range from 1-7 with 5 generally being the benchmark for quality.

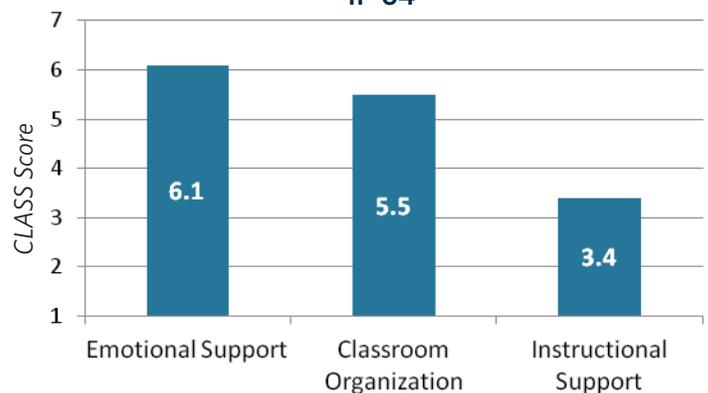
- Across the 12 Educare Schools, **70% of infant/toddler classrooms scored a 5 or above on the ITERS-R with an average quality rating of 5.3**—much higher than classrooms observed in a recent national study of infant/toddler care settings.¹⁷
- **Scores on the ECERS-R for preschool classrooms also reach the good quality benchmark with an average of 5.6 across the 12 Schools**, with 74% of classrooms rating a score of 5 or above. Other national studies of preschool classroom quality have found classroom scores ranging from 3.5 to 4.8—putting Educare preschool classrooms well above this range.¹⁸ All scores below are from the 2010-11 school year.

Classroom Quality Scores: ITERS-R and ECERS-R



- **Educare CLASS scores are also high on emotional support and classroom organization, confirming that Educare's preschool classrooms are warm, organized and nurturing environments that promote learning for students.** Research has found that children acquire academic skills only when CLASS instructional support is 3.25 or above.¹⁹ Educare's mean score exceeds that threshold and is also higher than averages in other large-scale studies of early childhood programs.²⁰

Preschool Classroom Quality Average Scores: CLASS
n=64



Still to Come...

The Educare Learning Network and FPG will continue to analyze implementation study data in ways that best inform both practitioners and policymakers. Children in the implementation study are followed longitudinally through their time at Educare. As the Network expands and diversifies, we will continue to conduct these and more extensive analyses of child, family and classroom characteristics. We believe this ongoing research will continue to demonstrate that early enrollment and quality teaching and learning environments are key elements of the Educare story.

We are also conducting a randomized control study of the Educare model at five Schools, with 225 children and families participating. We believe the results of the study could further bolster the case for investments in high-quality early learning programs for vulnerable young children. **For more information** about FPG or the Educare studies, go to <http://eln.fpg.unc.edu/>

ENDNOTES

1. Heckman, J. (2008). *Schools, Skills, and Synapses*. Cambridge, MA: National Bureau of Economic Research; Duncan, G. J., & Magnuson, K. (2011). The nature and impact of early achievement skills, attention skills, and behavior problems. In G. Duncan & R. Murnane (Eds.), *Wither opportunity? Rising inequality and the uncertain life chances of low-income children* (pp. 47-70). New York, NY: Russell Sage Foundation
2. Isaacs, J.B. (2012, March). *Starting School at a Disadvantage: The School Readiness of Poor Children*. Washington DC: Brookings Institution.
3. Bracken, B.A. (1998, 1984). *Bracken Basic Concept Scale – Revised*. San Antonio, TX: The Psychological Corporation, Harcourt Brace & Company.
4. These are adjusted means taking into account Educare site, child gender, child race/ethnicity, IEP status, mother's education, single parent, and teen parent status. The effect of age of entry is $p = .0005$ for English and $p < .0001$ for DLL.
5. Cunningham, A.E. & Stanovich, K.E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology*, 33 (6), 934-945.
6. Dunn, L.M. & Dunn, D.M. (2007). *Peabody Picture Vocabulary Test – IV*. Circle Pines, MN: American Guidance Service.
7. Zill, N. & West, J. (2001). *Entering kindergarten: A portrait of American children when they begin school*. Washington, D.C.: National Center for Education Statistics, U.S. Department of Education.
8. These are adjusted means taking into account Educare site, child gender, child race/ethnicity, IEP status, mother's education, single parent, and teen parent status. The effect of age of entry is $p = .001$ for English and $p < .0001$ for DLL.
9. Thompson, R. A., & Raikes, H. A. (2007). The social and emotional foundations of school readiness. In D.F. Perry, R.K. Kaufman, & J. Knitzer (Eds.) *Social and emotional health in early childhood: Building bridges between services and systems* (pp. 13-36). Baltimore: Brookes.
10. Rimm-Kaufman, S.E., Pianta, R.C. & Cox, M.J. (2000). Teachers' judgments of the problems in the transition to kindergarten. *Early Childhood Research Quarterly*, 15(2), 147-166.
11. LeBuffle, P.A. & Naglieri, J.A. (1999). *The Devereux Early Childhood Assessment*. Lewisville, NC: Kaplan Press Publishing.
12. The Educare Follow-Up Study (2011). Chicago, IL: Ounce of Prevention Fund.
13. Lamb, M. (1998). Nonparental child care: Context, quality, and correlates. In I. E. Sigel & K. A. Renninger (Volume Eds.), *Handbook of child psychology*. (Vol. 4)(pp. 950 - 1016). Child Psychology in Practice. NY: Wiley; Peisner-Feinberg, E. S., et al. (2001). The relation of preschool child-care quality to children's cognitive and social developmental trajectories through second grade. *Child Development*, 72(5), 1534-1553; Vandell, D. (2004). Early child care: The known and the unknown. *Merrill-Palmer Quarterly*, 50, 387-414
14. Harms, T., Cryer, D. & Clifford, R. (2003) *Infant/Toddler Environment Rating Scale – Revised Edition*. New York: Teachers College Press.
15. Harms, T., Clifford, R. & Cryer, D. (2005) *Early Childhood Environment Rating Scale – Revised Edition*. New York: Teachers College Press.
16. Pianta, R., La Paro, K., & Hamre, B. (2008). *Classroom Assessment Scoring System – PreK*. Baltimore, MD: Brookes.
17. ITERS scores from The Early Childhood Longitudinal Study-Birth Cohort demonstrated that only 24% of classrooms were high quality. Mulligan and Flanagan (2006). *Age 2: Findings from the 2-Year-Old Follow-Up of the ECLS-B* (NCES 2006-043).
18. Comparable studies of early childhood programs including NCEDL-PreK, QUINCE and FACES (Head Start) demonstrate quality ratings of 3.8, 3.5, and 4.8, respectively. November 2008. And: Head Start Family and Child Experiences Survey (FACES) 2003 Research Brief: A Whole-Child Perspective on Program Performance. Average ECERS-R Score was 4.9 in 1997 and 4.8 in 2000. Administration of Children and Families. May 2003.
19. Burchinal, M., Vandergrift, N., Pianta, R., & Mashburn, A. (2010). Threshold analysis of association between child care quality and child outcomes for low-income children in pre-kindergarten programs. *Early Childhood Research Quarterly*, 25 (2):166-176.
20. Pianta, R., Howes, C., Burchinal, M., Bryant, D., Clifford, R. M., Early, D. M., & Barbarin, O. (2005). Features of pre-kindergarten programs, classrooms, and teachers: Prediction of observed classroom quality and teacher-child interactions. *Applied Developmental Science*, 9(3), 144-159

Suggested Citation: Yazejian, N., & Bryant, D. M. (2012). *Educare Implementation Study Findings—August 2012*. Chapel Hill: Frank Porter Graham Child Development Institute, UNC-CH.



Features of Quality in Early Care and Education: Recent, Rigorous Evidence on What Matters Most for Children

The state First 5 Children and Families Commission has redoubled its efforts to increase the quality of early care and education (ECE) programs, seeking to raise developmental outcomes for children. This requires investment in the elements of classroom and teacher quality that yield consistent gains in early cognitive and social-emotional development.

One promising, national model—Educare—has been developed around twelve articulated features of preschool or ECE quality. As requested by First 5 California, the UCLA/Berkeley team reviewed recent, empirical work that focuses on these features. The Educare model is built upon: (1) high teacher qualifications with intensive professional development; (2) small class size and high staff-to-child ratios; (3) continuity of care; (4) reflective supervision and practice; (5) enriched focus on language and literacy; (6) enhanced focus on early mathematics; (7) integration of the arts; (8) a strong emphasis on social-emotional development; (9) research-based strategies used for continuous improvement; (10) starting early, and emphasizing prenatal services; (11) family support services; and (12) an interdisciplinary approach.

As we examined the empirical literature, three additional features of effective preschool programs surfaced and are included in the review: strong teacher-child relationships, instructional organization, and dual-language learner curricula. Finally, we link some of these 15 quality features to the reforms that other nations are making to improve the institutional structure of their ECE programs. The international examples point to long-term reform models that we could emulate to facilitate school readiness for all children.

This executive summary highlights the quality features among the 15 that most consistently benefit young children's development, noting where evidence is strong and where it remains weak or nonexistent. We only include recent, rigorous studies of ECE quality effects that take into account prior family background and possibly confounding factors that would lead to false inferences. We build from earlier reviews of the ECE quality literature (e.g., Burchinal et al., 2011; Fuller et al, 2007; Shonkoff & Phillips, 2000; Zigler et al., 2011), and provide the advantage of carefully studying specific features of quality, rather than trying to gauge the aggregate effects of all 15 bundled together.

The features reviewed fall into three broad categories: teacher-related features, classroom and curricular features, and center-related features. Overall, we find that high-quality ECE programs include strong teacher-child relationships, solid teacher training and professional development, and compelling instructional organization with engaging curricula. These features of quality are supported through several center features, including using research-based strategies for continuous improvement, starting early and emphasizing prenatal services, and providing family support services. Below, we briefly review the evidence for each feature.

Teacher-Related Features

Teacher qualifications and training. Teacher qualifications are generally considered an important aspect of quality in early childhood education programs, although the research evidence for education and training is nuanced. While higher levels of teacher education are generally associated with better quality care, the highest degree obtained—such as a Bachelor's degree (B.A.)—has no consistent effect on either classroom quality

Margaret Bridges, Natasha Dagys, Jennifer Ly, and Bruce Fuller
University of California, Berkeley with UCLA Center for Healthier Children, Families, and Communities

UCLA



UC BERKELEY
IHD INSTITUTE OF
HUMAN
DEVELOPMENT
RESEARCH • EDUCATION • PRACTICE

Key Findings

The highest-quality programs include:

- strong teacher-child relationships
- solid teacher training and professional development
- compelling instructional organization with engaging curricula
- use of research-based strategies for continuous improvement
- starting early with an emphasis on prenatal services
- extensive family support services

Effect Sizes

In judging the features, we examine “effect sizes,” which are simple calculations of the magnitude of a preschool feature’s benefits for children. Effect sizes allow us to compare the magnitude of a variety of benefits, in spite of their being measured in different ways or using different scales. For example, the benefits on cognitive growth for young children who attend a quality preschool can rise to 0.35 of a standard deviation—considered a small effect. Moderate effect sizes are those between .5 and .79 of a standard deviation; .8 of a standard deviation and greater is considered a large effect size.

or child outcomes (Early et al., 2007). For example, Early and colleagues (2007) analyzed seven longitudinal studies and found that, in most cases, results were non-significant, and in some cases they were contradictory (e.g., in some studies having a B.A. led to higher classroom quality, but in others, it led to lower classroom quality). One recent study conducted in California found significant effects for having an Associate degree (A.A.) or a B.A., but this study was not rigorously peer-reviewed and must be interpreted with caution (Vogel et al., 2010). Further research is needed to compare the relative benefits of having an A.A. or a B.A. on children’s outcomes.

In contrast, there is consistent evidence that specialized training and professional development increases both teacher competency and child outcomes (ES = 0.45 and 0.55, respectively; Fukkink & Lont, 2007), providing support for the inclusion of professional development as a feature of quality ECE

Specialized training and professional development increases both teacher competency and child outcomes.

programs. Our research team, analyzing national data on teacher training levels, is finding that completing a Child Development Associate credential (C.D.A.) and specialized training in child development is predictive of classroom practices that more intensively focus on early literacy skills and math concepts, and are associated with boosts in child outcomes (Fuller et al., 2012).

Small class size and high staff-to-child ratios. Staffing ratios refer to the number of children assigned to one caregiver, whereas class size refers to the total number of children in



the classroom. Small class size and high staff-to-child ratios provide increased opportunities for teachers and staff members to interact with children in more focused ways, which in turn have implications for children’s outcomes (Turnbull et al., 2009). Studies using rigorous experimental and quasi-experimental designs have found high staffing ratios and small class size are significantly related to increased

teacher-child interactions, more effective caregiving practices, and a host of positive developmental outcomes in infants and toddlers (Karoly et al., 2005). Effects are strongest for the quality of infant care, with studies demonstrating small effect sizes ($r = .21 - .40$). In one experimental study, results indicated that teachers were more sensitive to children and respectful of their autonomy, and expressed less negative regard and more positive affect when teacher-child ratios were 1:3 compared to 1:5. In addition, children appeared happier and more satisfied (de Schipper et al., 2006). Overall, the empirical literature suggests that maintaining small class size and high staff-to-child ratios hold small but significant benefits for teacher practices, which in turn support children's positive outcomes.

The quality of teacher-child relationships. The quality of teacher-child relationships is generally conceptualized and assessed along three dimensions, including closeness, conflict, and dependency (Birch & Ladd, 1997; Pianta, 1992). These specific dimensions of relationship quality, and the overall quality, are significant predictors of children's outcomes, including social competency, academic adjustment, and behavior problems (e.g., Birch & Ladd, 1997; Hamre & Pianta, 2001; Howes et al., 2000). Research indicates that having a strong relationship with the teacher is the foundation upon which children most readily learn (Hamre & Pianta, 2001; Pianta, 1992). Although effect sizes vary across studies, a strong teacher-child relationship is found to have effect sizes ranging from .1 to .6 on children's outcomes. Overall, the literature provides strong empirical support that high-quality teacher-child relationships, defined by high levels of warmth and low levels of conflict and dependency, hold significant implications for children's outcomes.

Continuity of care. Continuity of care occurs when a child remains with the same primary caregiver and/or team of caregivers for an extended period of time. The emphasis on continuity of care is based on attachment theory, which posits that children who share secure attachments to their caregivers develop greater social, cognitive, and emotional competencies (Jacobson & Wille, 1986; Howes & Smith, 1995; LaFreniere & Sroufe, 1985; Park & Waters, 1989; Pastor, 1981). Continuity of care is also recommended because of its potential effect on teacher practices and teacher-child relationship quality.

However, compelling research in this domain is limited, and indicates inconsistent associations among continuity of care, high-quality teacher practices, and children's outcomes. Studies that have found significant effects are limited by small sample sizes and the failure to control for confounding variables, such as other caregivers in the classroom. Rigorous

studies using large samples of children are needed to establish an empirical basis for the long-term benefits of continuity of care practices. High levels of teacher turnover may disrupt relationships for young children, but overall, the empirical



data does not provide strong support for implementing a continuity of care model.

Reflective supervision and practice. This involves high-quality supervision and mentorship between an experienced teacher and a less experienced teacher. Reflective supervision is believed to encourage teachers to think about the motives that underlie an individual child's behaviors, to promote greater sensitivity in interactions with the child (Gilkerson, 2004). The use of reflective supervision in ECE settings is largely based on anecdotal reports and best practice recommendations, and children's outcomes are typically not included (Heffron, 2005).

Although some studies have demonstrated that teachers who engage in reflective supervision are more responsive and sensitive in their caregiving, these studies are limited by small, select samples of teachers and variation on the model of reflective supervision used. Furthermore, the strength of these effects over time remains unclear. Overall, rigorous experimental research using larger, more representative samples of teachers and children is needed to determine the long-term benefits of specific models of reflective supervision on teacher practices and children's outcomes.

Classroom and Curricular Features

Instructional organization. A key indicator of quality is instructional organization—how children's activities are organized and structured. In their 2008 review of more than 240 pre-kindergarten classrooms across 6 states, Burchinal and colleagues found that in addition to sensitive and stimulating interactions with teachers, instructional organization also predicted children's language, pre-academic, and social



development (ES = 2.09).

These research findings powerfully demonstrate that literacy skills are best enhanced by specific teaching practices, and further

increased by high-quality instruction

that is offered multiple times per week in strong doses (e.g., several strategies used within one teaching session).

skills through the end of the kindergarten year (Burchinal, et al., 2008). Instructional organization involves well-established routines and structure, characterized by creative and challenging learning tasks, many of which include rich oral language, phonemic awareness, and pre-reading instruction. Children whose teachers organized class time in this way, around these types of activities—particularly in regards to language and literacy—had higher cognitive gains. Sound interventions that bolster teachers’ effective instructional organization using My Teaching Partner (Hamre & Pianta, 2005; Pianta, 2010) and the Texas Early Education Model (TEEM; Landry et al., 2009) have demonstrated this: effect sizes on children’s outcomes range from .16 to .84—particularly for pre-literacy skills.

Enriched focus on language and literacy. Given the importance of reading for academic achievement, promoting early literacy skills is an important part of high-quality ECE (Bassok, 2010; National Early Literacy Panel, 2008). Meta-analyses indicate that six specific early literacy skills consistently predict later literacy: alphabet knowledge, phonological awareness, rapid naming of letters and digits, rapid naming of objects and colors, writing, and phonological memory (National Early Literacy Panel, 2008). Moreover, the most effective practices to teach these skills include: code-focused instruction (ES = 0.20 to 0.82), a specific literacy-focused curriculum (ES = 1.29),

Effective curricula for dual-language learners. Given the linguistic diversity of children in California, it is imperative that ECE programs incorporate practices that have been shown to be effective with dual-language learners (DLLs). Studies with preschool children have found that transitional and bilingual programs lead to better outcomes for DLLs both in English (ES = 0.23 to 0.28; Barnett et al., 2007) and in their home language (ES = 0.61; Barnett et al., 2007; Duran et al., 2010). Early literacy interventions are effective with Spanish-speaking DLLs, particularly when the intervention is first conducted in Spanish and then transitions to English (ES= 0.40 to 0.94;

Farver et al., 2009).

Given the potential difficulties of imple-

menting a transitional or bilingual classroom, having an early literacy intervention that transitions children from Spanish to English is a viable alternative for improving children’s language outcomes. However, it should be noted that most research has been conducted with Spanish-speaking DLLs; there is not enough rigorous research to determine whether these findings extend to DLLs who speak other languages.

Having a strong relationship with the teacher is the foundation upon which children most readily learn.



and shared reading (ES = 0.50 to 0.57). The impact of these practices on children’s literacy is stronger when they are implemented with the very young—children under age 3—and when curriculum implementation is supported by professional

Enhanced focus on early mathematics. In contrast to the emphasis on early literacy, early mathematics has received relatively little attention in ECE contexts. Although most states have specific early learning standards for math (Committee on Early Childhood Mathematics, 2009), preschool children are exposed to math-related activities only about 6% of the time. Research on curricula and interventions for preschool mathematics is limited, but several studies have shown dramatic effects of curricula (i.e., Pre-K Mathematics or Building Blocks) that teach skills, such as counting, patterns, measurement, and logical reasoning through small-group and supplemental home activities (ES = 0.74 to 1.07; Klein et al., 2008; Clements & Sarama, 2008). These interventions

also include intensive professional development for teachers to support their leading children’s math activities. While it is not clear how much of the effects are driven by the professional development and home components, there is

clear evidence that these math curricula, when implemented with fidelity, significantly improve children’s mathematics skills and knowledge.

Integrating the arts. The arts, including music, drama, dance, storytelling, and visual arts, are thought to be important for child development. It is rare to find a preschool classroom



that does not incorporate music or art in some way; it is believed that the arts support brain development (e.g., Hyde et al., 2009) and academic and social skills (e.g., deVries, 2004; Phillips et al., 2010). However, it is difficult to separate the potential direct effects of inclusion of the arts from the effectiveness of the arts as an instructional tool that facilitates learning in other areas. Little research has been conducted on this topic. The existing studies generally lack the experimental rigor to justify specific conclusions and recommendations, although there appears to be mild support for specific effects of music instruction on emergent literacy and mathematics (Bolduc, 2008; Harris, 2007, 2008).

Strong emphasis on social-emotional development. Social-emotional competence is considered to be an important aspect of school readiness, and there is strong research support for the use of early screening measures and inclusion of social-emotional curricula (Bagdi & Vacca, 2005). Studies have shown that children’s difficulties in classroom behaviors, play, and social interactions at the beginning of the school year predict problems with behavior, emotion regulation,

and learning at the end of the school year (Fantuzzo et al., 2005). And, children with behavioral or social-emotional

Children whose teachers organize class time around well-established routines and structure, with creative and challenging learning tasks, have higher cognitive gains.

difficulties at age 1-3 are much more likely to have behavioral, social-emotional, or psychiatric problems during kindergarten and first grade (OR = 2.14 to 3.74; Briggs-Gowan & Carter, 2008). Specific social-emotional learning curricula that focus on identifying feelings, self-control, appropriate

behaviors, and problem solving have shown moderate to large effects on positive child outcomes (ES = 0.24 to 0.48 and 0.39 to 1.65 for the PATHS and Incredible Years programs, respectively; Domitrovich et al., 2007; Webster-Stratton et al., 2008). In addition, there is some evidence that programs that teach families strategies to support their children’s social-emotional skills have small but significant positive effects on parenting and child outcomes (ES = 0.22 to 0.24; Layzer et al., 2001).

Center-Related Features

Using research-based strategies for continuous improvement. Advocates of moving toward “best practices” recommend the use of research-based strategies for continuous improvement—using the evidence base to drive the initial decision-making process about what to implement in the ECE site (NAEYC, 2005), as well as using assessment to fuel continuous improvement of program features. Ideally, the staff is actively engaged in professional development and learning to support continuous improvement in the program. Recommended practice suggests using a data collection system to ensure that this is the case—to monitor children’s progress and continuously make course corrections to optimize quality. In the past decade, Quality Rating Systems (QRS) and Quality Rating Improvement Systems (QRIS) have emerged as mechanisms for identifying and promoting higher quality care (Buettner & Andrews, 2009). Even though evaluations have been largely descriptive, they have shown that rating levels reflect significant differences in program quality (see Bryant, 2001; Norris et al., 2003), and have been linked to children’s outcomes. For example, children in high QRS programs in Missouri demonstrated significant gains compared to children in low QRS programs, with effect sizes ranging from .45 to .78 (Thornburg et al., 2009). In this way, using research-based strategies for continuous improvement creates a dynamic, active learning environment for the staff as well as the children.

Starting early and emphasizing prenatal services. There is strong research evidence on the influence of early life experiences on children’s development and outcomes; this is reflected in early intervention research—most notably on prenatal care and early enrollment in ECE (Shonkoff & Phillips, 2000). Research indicates that prenatal care, which includes home visits, leads to better outcomes in mothers and children both postnatally and at a 12-year



follow-up (ES = 0.10 to 0.18 for maternal outcomes, Olds et al., 2010; ES = 0.18 to 0.25 for child outcomes, Kitzman et al., 2010). Home visiting programs may be a particularly effective way of reaching women who are more likely than others to receive inadequate care, such as Latina and African-American women (Luecken et al., 2009; Ruwe et al., 2010).

Research on ECE suggests that the greatest benefits are seen when children start preschool around age 2 or 3, although effects depend on the quality of the preschool attended (Loeb et al., 2007; Vogel et al., 2010). Combining prenatal care and home visits, with preschool care beginning around age 2, may be an effective strategy for optimal outcomes. Evidence, however, is mixed on the relative benefits of part- versus full-day programs for 3- and 4-year-olds (Loeb et al., 2007; Fuller et al., 2012).

Family support services. ECE centers that provide targeted family support services have shown significant effects for improving parenting practices and children's outcomes. Layzer and colleagues' (2001) comprehensive meta-analysis on the effects of 260 family support programs indicated that family support services provided with preschool services exhibited the largest effects (average ES = .39). Few studies have rigorously examined the long-term effects of family support on children's outcomes, with the exception of Reynolds (2005). Reynolds used confirmatory program evaluation methods, which use a priori theory and quantitative analysis to assess program effects. His team examined the long-term effectiveness of the Child Parent Center (CPC), a center-based early intervention program that provided comprehensive education and support services to children from low-income families in preschool through third grade. Results indicated family support accounted for significant proportions of the indirect effect of CPC participation on high school completion rates and court-reported juvenile arrests by age 18 (26% and 22%, respectively). Collectively, these results suggest family support services, when provided in conjunction with ECE interventions, produce small, but meaningful effects on parenting practices and children's long-term outcomes.

Centers that provide targeted family support services have shown significant effects for improving parenting practices and children's outcomes.

An interdisciplinary approach. Best practices recommend that ECE programs use a team approach in service delivery (Beam & Ford, 1996). Interdisciplinary approaches – while defined in different ways – encourage team members to collaboratively develop an intervention plan to meet the needs of an individual child, and team members subsequently carry out recommendations within their given discipline (Bell et al., 2009). Despite a strong theoretical basis for using collaborative team approaches in ECE settings, there is a dearth of empirical evidence assessing the effects of interdisciplinary practices, particularly for children's outcomes. The literature is largely anecdotal (e.g., Jackson et al., 2009), with practitioners reporting more effective practices when collaborating directly with other team members within and across disciplines. Rigorous studies using large samples of children are needed to establish an empirical basis for implementing this approach.

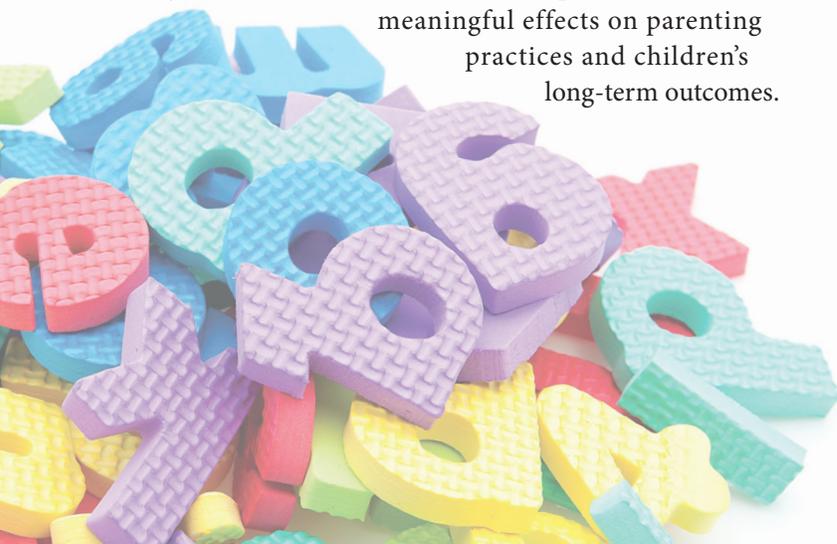


Beyond Preschool: Efforts in Other Countries

By raising preschool quality, we can elevate children's early learning trajectories. This is but one piece to the puzzle of enriching children's everyday environs, at home and in their neighborhoods. Other nations are far ahead, providing easy access to parents for economic and early-childhood supports. Table 1 sketches three efforts – each about a decade old – that consolidate family and children's services into single locations, rooted in neighborhoods.

Toronto, Canada. Municipal leaders and the philanthropic community decided in 2001 to advance stronger economic supports for young families, following a birth, consolidating early-childhood programs, including child care and kindergarten. This included lengthening paid family leave for up to 12 months following the birth of a child (Corter et al., 2002). The early-childhood model is cross-generational: parents are encouraged to spend more time at home with their infant, as well as advance their own postsecondary education (Corter et al., 2007). At the same time, quality preschools are expanding.

Britain. The national administration under Tony Blair announced in 1998 plans to cut the child poverty rate in half (Waldfogel, 2010). This goal has been met – despite Europe's severe recession – through a balance of direct economic support (via tax credits) and consolidation of



child health and early development programs within Parent Centres. Sure Start centers – spread across 524 low-income neighborhoods – begin with prenatal care, then offer a sequence of easy-to-access child health and preschool services (Katz & Valentine, 2009). Home visitors offer ideas on educational activities for toddlers and preschoolers, with special attention paid to disabled youngsters and poor immigrant communities (Craig et al., 2007).

Australia. Faced with widespread, but preventable, childhood disease in poor, urban, and rural areas, the Australian government announced their new Head Start initiative in 2000. It offers direct economic supports via tax policy and nudging major employers to support young families. Integrated one-stop centers offer prenatal care, child nutrition, and early-development programs, including quality preschool (Commission for Children and Young People, 2004).

Back in California, First 5 and allied county agencies have incrementally tried to consolidate program entry points, harmonize family-eligibility rules, and increase the overall quality of early care and education. Progress has been slow, yet increasing the quality of ECE remains a priority, as constituencies fight for their particular programs. Governor Jerry Brown recently proposed to consolidate a variety of early-childhood programs, while cutting support for young families overall. As Sacramento is rethinking the split between

The greatest benefits are seen when children start preschool around age 2 or 3, although effects depend on the quality of the preschool.

state and local responsibilities, perhaps counties could assume greater control, and offer a single door through which all parents enter for a greater breadth of services (e.g. social services, housing, health care enrollment, etc.). This would require legislating more similar eligibility rules and fiscal flexibility from Sacramento and Washington. The time is right to use this compelling research evidence and learn from other nations how to build a unified, simple-to-enter neighborhood organization that benefits young children and families.

Summary

Rigorous research provides evidence of how a range of teacher-related, classroom and curricular, and center-related features benefit young children in preschool. In particular, high-quality ECE programs include strong teacher-child relationships, solid teacher training and professional development, and compelling instructional organization with engaging curricula. These features of quality are supported through several center-related features, including the use of research-based strategies for continuous improvement, starting early and emphasizing prenatal services, and extensive family support services. Targeting limited resources on these features, using the models within each that are substantiated with rigorous examination and evidence, and implementing them with fidelity, offers the greatest promise to improving the lives of young children.

Table 1. Efforts in Other Countries

Location	Scope	Evidence of Benefits
Toronto's <i>First Duty</i>	An effort to expand financial support to families, begun in 2001. Extended paid family leave up to 12 months following a birth; expanded child tax credit; consolidated early childhood programs under one roof via neighborhood Parent Centres (Corter et al., 2002).	Initial gains for children's early language development have been detected, along with strong positive results for social-emotional growth (Corter et al., 2007).
Britain's <i>Sure Start</i>	Part of Britain's broad assault on family poverty, begun in 1998. Expanded child tax credits; consolidated parenting and preschool programs in 524 neighborhood centers; targeted on home-visiting, child health, and preschool centers (Katz & Valentine, 2009).	Cross-generational effects found: gains in home practices exercised by mothers, and uneven yet discernible advances in young children's outcomes. Britain's count of children in poverty has fallen from 3.4 to 1.8 million, despite economic recession (Waldfoegel, 2010).
Australia's <i>Head Start</i>	A broad effort to improve maternal and child health, and early development, begun in 2000. Aiming to eliminate vaccine-preventable childhood disease; expanded access to prenatal care and preschool programs (Commission for Children and Young People, 2004).	Gains in child health outcomes, while early developmental effects are yet to be evidenced (Commission for Children and Young People, 2004).

We would like to acknowledge the generous support of First 5 California on this project. In addition, we thank Kelly Law for her able assistance.

References

- Bagdi, A., & Vacca, J. (2005). Supporting early childhood social-emotional well being: The building blocks for early learning and school success. *Early Childhood Education Journal*, 33, 145-150.
- Bamett, W. S., Yarosz, D. J., Thomas, J., Jung, K., & Blanco, D. (2007). Two-way and monolingual English immersion in preschool education: An experimental comparison. *Early Childhood Research Quarterly*, 22, 277-293.
- Bassok, D. (2010). Do Black and Hispanic children benefit more from preschool? Understanding differences in preschool effects across racial groups. *Child Development*, 81, 1828-1845.
- Beam, G. C., & Ford, V. L. (1996). Project TIE (Teams in Early Intervention) outreach: An outreach project to train statewide, regional, local teams of early intervention personnel and parents. Albuquerque, NM: New Mexico University Health Sciences Center. (ERIC Document Reproduction Service No. ED 368 133).
- Bell, A., Corfield, J., Davies, J., & Richardson, N. (2009). Collaborative transdisciplinary intervention in early years – putting theory into practice. *Child Care, Health, and Development*, 36, 142-148.
- Birch, S.H., & Ladd, G.W. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology*, 35, 61-79.
- Bolduc, J. (2008). The effects of music instruction on emergent literacy capacities among preschool children: A literature review. *Early Childhood Research & Practice*, 10, 1-5.
- Boocock, S. (1995). Early childhood programs in other nations: Goals and outcomes. *The Future of Children*, 5(3), 94-114. Retrieved from <http://www.jstor.org/stable/1602369>
- Briggs-Gowan, M. J., & Carter, A. S. (2008). Social-emotional screening status in early childhood predicts elementary school outcomes. *Pediatrics*, 121, 957-962.
- Bryant, D. (2001). *Validating North Carolina's 5-Star child care licensing system*. Chapel Hill, NC: Frank Porter Graham Child Development Center.
- Buettner, C. K., & Andrews, D. W. (2009). United States child care policy and systems of care: The emerging role of Quality Rating and Improvement Systems. *International Journal of Child Care and Education Policy*, 3, 43-50.
- Burchinal, M., Howes, C., Pianta, R., Bryant, D., Early, D., Clifford, R., & Barbarin, O. (2008). Predicting child outcomes at the end of kindergarten from the quality of pre-kindergarten teacher-child interactions and instruction. *Applied Developmental Science*, 12, 140-153.
- Burchinal, M., Kainz, K., & Cai, Y. (2011). How well do our measures of quality predict child outcomes? A meta-analysis and coordinated analysis of data from large-scale studies of early childhood settings. In M. Zaslow, I. Martinez-Beck, K. Tout, & T. Halle (Eds.), *Quality measurement in early childhood settings* (pp. 11-31). Baltimore, MD: Brooks.
- Clements, D. H., & Sarama, J. (2008). Experimental evaluation of the effects of a research-based preschool mathematics curriculum. *American Educational Research Journal*, 45, 443-494.
- Commission for Children and Young People. (2004). *A head start for Australia: An early years framework*. Retrieved from: http://www.cycpcqld.gov.au/pdf/publications/reports/earlyYears2004/early-years_summary.pdf
- Committee on Early Childhood Mathematics (2009). *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.
- Cortez, C., Bertrand, J., Griffin, T., Endler, M., Pelletier, J., & McKay, D. (2002). Toronto first duty starting gate report. *Implementing Integrated Foundations for Early Childhood*, Retrieved from www.toronto.ca/firstduty/sg_report.pdf
- Cortez, C., Bertrand, J., Pelletier, J., Griffin, T., McKay, D., Patel, S., & Ioannone, P. (2007). Toronto first duty phase 1 final report. *Evidence-Based Understanding of Integrated Foundations for Early Childhood*, Retrieved from www.toronto.ca/firstduty/tfd_phase1_finalreport.pdf
- Craig, G., Adamson, S., Ali, N., Ali, S., Dadze-Arthur, A., Elliot, C., McNamee, S., & Murtuja, B. (2007). Sure start and black and minority ethnic populations. *Evidence and Research*, Retrieved from <http://www.ness.bbk.ac.uk/implementation/documents/1530.pdf>
- De Schipper, E. J., Riksen-Walraven, J. M., Geurts, S. A. E. (2006). Effects of child-caregiver ratio on the interactions between caregivers and children in child-care centers: An experimental study. *Child Development*, 77, 861-874.
- DeVries, P. (2004). The extramusical effects of music lessons on preschoolers. *Australian Journal of Early Childhood*, 29, 7-10.
- Domitrovich, C. E., Cortes, R. C., & Greenberg, M. T. (2007). Improving young children's social and emotional competence: A randomized trial of the preschool "PATHS" curriculum. *The Journal of Primary Prevention*, 28, 67-91.
- Duran, L. K., Roseth, C. J., & Hoffman, P. (2010). An experimental study comparing English-only and transitional bilingual education on Spanish-speaking preschoolers' early literacy development. *Early Childhood Research Quarterly*, 25, 207-217.
- Early, D. M., Maxwell, K. L., Burchinal, M., Alva, S., Bender, R. H., Bryant, D., & Zill, N. (2007). Teachers' education, classroom quality, and young children's academic skills: Results from seven studies of preschool programs. *Child Development*, 78, 558-580.
- Fantuzzo, J. W., Bulotsky-Shearer, R., Fusco, R. A., & McWayne, C. (2005). An investigation of preschool classroom behavioral adjustment problems and social-emotional school readiness competencies. *Early Childhood Research Quarterly*, 20, 259-275.
- Farver, J. A. M., Lonigan, C. J., & Epps, S. (2009). Effective early literacy skill development for young Spanish-speaking English language learners: An experimental study of two methods. *Child Development*, 80, 703-719.
- Fukkink, R. G., & Lont, T. A. E. (2007). Does training matter? A meta-analysis and review of experimental studies of caregiver training. *Early Childhood Research Quarterly*, 22, 294-311.
- Fuller, B., Bein, E., Bridges, M., Kim, A., Kim, Y., & Rabe-Hesketh, S. (2012). Do academic preschools yield stronger benefits? Language intensity, dosage, formalization, and developmental effects. Manuscript submitted for publication (copy on file with author).
- Fuller, B. C. & Bridges, M., and Pai, S. (2007). *Standardized Childhood: The Political and Cultural Struggle over Early Education*. Palo Alto, CA: Stanford University Press.
- Fuller, B., Gasko, J.W., Anguiano, R. (n.d.) *Lifting pre-K quality: Caring and effective teachers*. UC Berkeley Institute of Human Development.
- Gilkerson, L. (2008). Irving B. Harris Distinguished Lecture: Reflective supervision in infant-family programs: Adding clinical process to nonclinical settings. *Infant Mental Health Journal*, 25, 424-439.
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72 (2), 625-38.
- Hamre, B. K., & Pianta, R. C. (2005). Can instructional and emotional support in the first grade classroom make a difference for children at risk of school failure? *Child Development*, 76, 949-967.
- Harris, M. (2007). Differences in mathematics scores between students who receive traditional Montessori instruction and students who receive music enriched Montessori instruction. *Journal for Learning through the Arts*, 3(1). Retrieved from <http://escholarship.org/uc/item/07h05f866>
- Harris, M. (2008). The effects of music instruction on learning in the Montessori classroom. *Montessori Life*, 20, 24-31.
- Heffron, MC (2005). Reflective supervision in infant, toddler and preschool work. In K. M. Finello (Ed.), *The handbook of training and practice in infant and preschool mental health*, (pp. 114-136). San Francisco, CA: Jossey-Bass.
- Howes, C. (2000). Social-emotional classroom climate in child care, child-teacher relationships and children's second grade peer relations. *Social Development*, 9, 191-204.
- Howes, C. & Smith, E. W. (1995). Relations among child care quality, teacher behavior, children's play activities, emotional security, and cognitive activity in child care. *Early Childhood Research Quarterly*, 10, 381-404.
- Hyde, K. L., Lerch, J., Norton, A., Forgeard, M., Winner, E., Evans, A. C., & Schlaug, G. (2009). Musical training shapes structural brain development. *The Journal of Neuroscience*, 29, 3019-3025.
- Jackson, S., Pretti-Frontczak, K., Harjusola-Webb, S., Grisham-Brown, J., & Romani, J. M. (2009). Response to intervention: Implications for early childhood professionals. *Language, Speech, and Hearing Services in School*, 40, 424-434.
- Jacobson, J. L., & Wille, D. E. (1986). The influence of attachment pattern on developmental changes in peer interaction from the toddler to the preschool period. *Child Development*, 57, 338-347.
- Karoly, L. A., Kilburn, M. R., & Cannon, J. S. (2005) *Early Childhood Interventions: Proven Results, Future Promise*. Santa Monica, CA: RAND Corporation, 2005. Retrieved from: <http://www.rand.org/pubs/monographs/MG341>
- Katz, I., & Valentine, K. (2009). Lessons from the UK sure start programme. *Social Policy Research Centre*. Retrieved from http://www.sprc.unsw.edu.au/media/File/Report2_09_Lessons_from_Sure_Start.pdf
- Kitzman, H. J., Olds, D. L., Cole, R. E., Hanks, C. A., Anson, E. A., Arcoletto, K. J., Luckey, D. W., Knudtson, M. D., Henderson, C. R., & Holmberg, J. R. (2010). Enduring effects of prenatal and infancy home visiting by nurses on children. *Archives of Pediatric and Adolescent Medicine*, 164, 412-418.
- Klein, A., Starkey, P., Clements, D., Sarama, J., & Iyer, R. (2008). Effects of a pre-kindergarten mathematics intervention: A randomized experiment. *Journal of Research on Educational Effectiveness*, 1, 155-178.
- LaFreniere, P. J., & Sroufe, L. A. (1985). Profiles of peer competence in preschool: Interrelations among measures, influence of social ecology and relation to attachment history. *Developmental Psychology*, 21, 56-69.
- Landry, S. H., Anthony, J. L., Swank, P. R., & Monseque-Bailey, P. (2009). Effectiveness of comprehensive professional development for teachers of at-risk preschoolers. *Journal of Educational Psychology*, 101, 448-465.
- Layzer, J. I., Goodson, B. D., Bernstein, L., Price, C. (2001). *National Evaluation of Family Support Programs. Volume A: The Meta-analysis. Final Report*. Cambridge, MA: Abt Associates Inc.
- Loeb, S., Bridges, M., Bassok, D., Fuller, B., & Rumberger, R. W. (2007). How much is too much? The influence of preschool centers on children's social and cognitive development. *Economics of Education Review*, 26, 52-66.
- Lueken, L. J., Purdom, C. L., & Howe, R. (2009). Prenatal care initiation in low-income Hispanic women: Risk and protective factors. *American Journal of Health Behaviors*, 33, 264-275.
- Missouri Quality Rating System. Retrieved December 16, 2011, from <https://www.openinitiative.org/content.aspx?file=QRS.txt>
- National Association for the Education of Young Children (NAEYC). (2005). *Introduction to the NAEYC early childhood program standards and accreditation criteria*. Washington, DC: NAEYC.
- National Early Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Washington, DC: National Institute for Literacy. Available at <http://www.nifl.gov/earlychildhood/NELP/NELPreport.html>
- Norris, D. J., Dunn, L., & Eckert, L. (2003). *Reaching for the Stars: Center validation study final report*. Norman, OK: Early Childhood Collaborative of Oklahoma.
- Olds, D. L., Kitzman, H. J., Cole, R. E., Hanks, C. A., Arcoletto, K. J., Anson, E. A., & Stevenson, A. J. (2010). Enduring effects of prenatal and infancy home visiting by nurses on maternal life course and government spending. *Archives of Pediatric and Adolescent Medicine*, 164, 419-424.
- Park, K., & Waters, E. (1989). Security of attachment and preschool friendships. *Child Development*, 60, 1076-1081.
- Pastor, D. (1981). The quality of infant-mother attachment and its relationship to toddlers' initial sociability with peers. *Developmental Psychology*, 21, 56-69.
- Pianta, R. (2010). Quality and impacts of pre-K: Observing and improving teacher-child interactions. Presentation at the Texas Early Learning Institute Conference, May 4, Austin.
- Pianta, R.C. (1992). *Beyond the parent: The role of other adults in children's lives: New directions for child development*. San Francisco: Jossey-Bass.
- Pianta, R. C., & Steinberg, M. S. (1992). Teacher-child relationships and the process of adjusting to school. *New Directions for Child Development*, 57, 61-80.
- Phillips, R. D., Gorton, R. L., Pinciotti, P., & Sachdev, A. (2010). Promising findings on preschoolers' emergent literacy and school readiness in arts-integrated early childhood settings. *Early Childhood Education Journal*, 38, 111-122.
- Pope, B. G., Denny, J. H., Homer, K., & Ricci, K. (2006). *What is working? What is not working? Report on the qualitative study of the Tennessee Report Card and Star-Quality Program and Support System*. Knoxville, TN: The University of Tennessee College of Social Work, Office of Research and Public Service.
- Reynolds, A. J. (2005). Confirmatory program evaluation: Applications to early childhood interventions. *Teachers College Record*, 107, 2401-2425.
- Ruwe, M., Capitman, J., Bengiamin, M., & Soto, T. (2010). A systematic review and meta-analysis of racial disparities in prenatal care in California: How much? Does insurance matter? *Social Work in Public Health*, 25, 550-571.
- Shonkoff, J. P., Phillips, D. A. (Eds.). (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development*. National Academy Press, Washington, DC.
- Thornburg, K. R., Mayfield, W. A., Hawks, J. S., Fuger, K. L. (2009). *The Missouri quality rating system school readiness study*. Columbia, MO: Center for Family Policy & Research.
- Tout, K., Zaslow, M., Halle, T., & Forry, N. *Issues for the Next Decade of Quality Rating and Improvement Systems*. (2009). Washington, DC: Child Trends.
- Tout, K., Starr, R., Isner, T., Cleveland, J., Albertson-Junkans, L., Soli, M., & Quinn, K. (2011). *Evaluation of Parent Aware: Minnesota's Quality Rating and Improvement System Pilot. Final Evaluation Report*. Minneapolis, MN: Child Trends.
- Turnbull, K. P., Anthony, A. B., Justice, L., & Bowles, R. (2009). Preschoolers' exposure to language stimulation in Classrooms Serving At-Risk Children: The Contribution of Group Size and Activity Context. *Early Education and Development*, 20, 53-79.
- Vogel, C. A., Love, J. M., Atkins-Bulmettt, S., Aikens, N., Xue, Y., Fallin, K., & Hall, K. (2010). *Classroom quality and implications for program improvement in the Los Angeles Universal Preschool Program*. Paper presented at the AERA Annual Conference, May 2010.
- Vogel, C. A., Xue, Y., Moiduddin, E. M., Kisker, E. E., & Carlson, B. L. (2010). *Early Head Start children in grade: Long-term follow-up of the Early Head Start Research and Evaluation Study sample*. OPRE Report # 2011-8. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Waldfoegel, J. (2010). *Tackling child poverty & improving child well-being: Lessons from Britain. First Focus Foundation for Child Development*.
- Webster-Stratton, C., Reid, M. J., & Stoolmiller, M. (2008). Preventing conduct problems and improving school readiness: Evaluation of the Incredible Years teacher and child training programs in high-risk schools. *Journal of Child Psychology and Psychiatry*, 49, 471-488.
- Zellman, G. L., Perlman, M., Le, V., & Setodji, C.M. (2008). *Assessing the validity of the Qualistar Early Learning quality rating and improvement system as a tool for improving child care quality*. (MG-65-QEL). Santa Monica, CA: RAND Corporation.
- Zigler, E., Gilliam, W. S., & Barnett, W. S. (Eds.). (2011). *The pre-K debates: Current controversies and issues*. Baltimore, MD: Brookes.