early childhood partnerships

Pre-K *Counts* in Pennsylvania for Youngsters' Early School Success:

Authentic Outcomes for an Innovative Prevention and Promotion Initiative

Research Results of SPECS for Pre–K Counts: An Independent Authentic Program Evaluation Research Initiative (2005-2009)

2009 FINAL RESEARCH REPORT

""The benefits of Pre-K Counts to at-risk children are clear. Children…are better prepared for kindergarten…both academically and with important non-academic skills such as dispositions for learning, interpersonal interactions…and self-control".

Carol Barone-Martin,
Executive Director, Early Childhood Education, Pittsburgh Public Schools.

"The Scranton School District had a very positive experience with Pre-K Counts…we provided literacy coaches who worked with the staff at the childcare and preschool centers. The benefits were tremendous".

Anne Salerno,
Chapter 1 Administrator, Scranton School District

"…The most significant [impact] was the ability to increase the number of instructional coaches who greatly influenced the classroom teachers' instructional practices. Our staff enjoyed working with the SPECS staff. Their professionalism, support and ability to work with us and our prek model was greatly appreciated".

Debra W. Reuvenny,
Director, Early Childhood Program, Harrisburg School District

"…we witnessed measurable improvements across all classrooms. In my opinion, the part of this program that truly made it stand out above all others was the coach – staff mentoring component…the positive impact of this program has had a lasting impression on our region".

Elaine Errico,
Director, Success By Six, United Way of Lackawanna County

"PKC created the foundation for our initial outreach and the building of a comprehensive partnership known as PEAK – Pottstown Early Action for Kindergarten Readiness. Thanks to PKC community child care providers in Pottstown are unified and functioning as one entity rather than competing…".
Jeffrey R. Sparagana,
Ed.D., Director of Education and Human Resources, Pottstown School District

"Dr. Bagnato's SPECS Team's focused, high quality evaluation research has helped us in many important respects. First, it documents the impact and outcomes of our high-profile public-private Pre-K Counts partnerships. Second, kudos to Dr. Bagnato for finding a way to communicate our positive results in a digestible manner that can reach lay stakeholders including civic and elected leaders, and business leaders and help them to understand the impact in terms and language that works for them".
Harriet Dichter,
Deputy Secretary, Office of Child Development and Early Learning,
Departments of Education Public Welfare, Commonwealth of Pennsylvania.

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2009 FINAL RESEARCH REPORT

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Table of Contents

Preface

The SPECS team has been privileged to work with remarkable people across Pennsylvania's PKC programs. The school-community partnerships have shown creativity. Teachers, administrators, and parents have inspired us with their consent, devotion and willingness to participate in the program and the research. Children showed a joy and eagerness to learn. Business, corporate, foundation, and government leaders have our respect for their vision and their drive for high quality early care and education programs. Most of all, we are humbled to work, then and now, with individual school and community leaders in both urban and rural settings who have shown unwavering ingenuity, persistence, and commitment to their unique visions for PKC in their own communities. PKC and the quality of the SPECS research would have been impossible without the unique talents of these partners:

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WHAT IS THE RESEARCH BASE ON THE EFFICACY OF EARLY CHILDHOOD INTERVENTION FOR YOUNG CHILDREN AT DEVELOPMENTAL RISK

CHAPTER 1

FAST FACTS

- 30 years of early childhood intervention (ECI) research has already documented the clear effectiveness of high quality ECI for young children, especially for those who are at developmental risk and with developmental delays/disabilities/disorders.

- Practice-based evidence, rather than evidence-based practice is necessary to truly enable parents and professionals in community-based ECI programs to implement effective and beneficial programs and interventions for children and families.

- Community-based programs most often want answers to the questions of "does it work; for whom; and under what conditions"

Research Synopsis

Early childhood educators and researchers have long understood the importance of providing young children with quality early childhood education (National Institute of Child Health and Human Development, NICHD, 1998; Ramey & Ramey, 1998). A comprehensive review of the research on early childhood care and education convened by the National Academy of Sciences Board on Children, Youth and Families concluded that there is compelling evidence linking childcare quality to positive child development outcomes. Their review demonstrates that measures of quality were consistently associated with children's observed behavior, cognitive assessment scores, and early progress in school (Smolensky & Gootman, 2003). Specifically, children in high quality day care programs performed better on tests of language and cognitive skills (Barnett, Hustealt, Robin, & Schulman, 2005; Barnett, Lamy & Jung, 2005; Bryant & Maxwell, 2003; Burchinal, Roberts, Riggins, Zeisel, Neebe & Bryant, 2000; NICHD, 1998; State Funded Pre-Kindergarten, 2003). In addition, studies show that the quality of children's child care before they enter school continues to affect their development at least through kindergarten and perhaps through third grade (Peisner-Feinberg, Burchinal, Clifford, Yazwjian, Culkin, Zelazo, Howes, Byler, Kagan & Rustici, 1999).

Identifying factors related to high quality has been the subject of various early childhood research studies (NICHD, 1998; Peisner-Feinberg, et al., 1999). The NICHD study found that lower staff ratios, and higher levels of care-givers education and training are associated with higher scores of child development (NICHD Early Childhood Care and Research Study, 1998). Finally, the emotional climate of child care classrooms, as well as individual children's relationships with their teachers, are important predictors of children's outcomes (Peisner-Feinberg, et al., 1999).

High quality early care and education has been shown to benefit children from low-income families in particular, resulting in improved academic and developmental outcomes (Adams, Tout & Zaslow, 2007; Schweinhart, Montie, Xiang, Barnett, Belfield & Nores, 2005). Results of over the past thirty years on early childhood intervention research suggest that young children at developmental risk from impoverished environments face progressive declines in their patterns of developmental, behavioral, and learning with school failure (Barnett, 1995; Bryant & Maxwell, 1997; Campbell & Ramey, 1995; Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Farran, 2000; Marcon, 1999; Ramey, Campbell, Burchinal, Bryant, Wasik, Skinner & Gardner, 1999; Schweinhart & Weikart, 1997). A more recent analysis revealed that children who attended a center or school-based preschool program performed better on assessments of reading and math, and were less likely to be retained in kindergarten and the effects were largest for disadvantaged groups (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Other studies have also found larger effects of quality of early education over time for children who were initially at greater developmental risk, such as: children of mothers with less education (Adams, et al., 2007; Peisner-Feinberg, Burchinal, Clifford, Culkin, Howes, Kagan & Hazejian, 2001; Yoshikawa, 1995) and children with lower initial cognitive development scores (NICHD & Duncan, 2003).

Unfortunately, child care programs have many social and economic issues which negatively impact the quality of care delivered to young children (Bryant & Maxwell, 1997; Fujiura & Yamaka, 2000). Issues such as children in poverty, welfare reform, increased community violence and the increased number of children with mental health, physical health and other special needs within early childhood settings limits the ability of programs to provide high quality care to all young children (Bryant & Maxwell,1997; Fujiura & Yamaka, 2000). Hence, despite increased awareness of the importance of high quality

care, there appears to be considerable variability across child care programs. Quality standards such as staff/child ratios, classroom size and staff training vary from state to state (NICHD, 1998). These variations appear to occur more frequently with child care programs serving younger children. Programs serving older children are more likely to meet common standards of child care (NICHD, 1998).

Quality and Professional Development Mentoring

High quality early childhood education has been defined as "that which is most likely to support children's positive development" (Helburn, 1995, p.1). There are two ways to judge the quality of an early childhood program: (1) measuring structural components and (2) measuring process quality. Structural components such as child-staff ratios, class sizes, and caregiver education are important determinants of quality of care (National Institute of Child Health and Human Development, NICHD, 2002; Phillips, Mekos, Scarr, McCartney, & Abbott-Shim, 2001). Process quality "refers to the kinds of experiences that children have with caregivers and other children, opportunities for cognitive, linguistic, and social stimulation, and opportunities to use interesting and varied materials" (Smolensky & Gootman, 2003, p. 105). The emotional climate of child-care classrooms and teacher-child relationships are also important predictors of child outcomes (Peisner-Feinberg, et al., 1999; Peisner-Feinberg et al., 2001). These two types of indicators tend to be correlated. The NICHD Study of Early Child Care found that situations with better structural quality (as previously described) tend to be better in terms of process (NICHD, 1999).

Professional development and training is one mechanism used to increase quality. As early as 1979, researchers concluded that training was a key predictor of quality in child care centers (Ruopp, Travers, Glanz, & Coelen, 1979). A more recent study by Burchinal and colleagues (2002) found that the highest level of training and workshop attendance were significant predictors of global classroom quality. Tout and colleagues (2006) found strong links between teacher professional development and quality of programs. States have recognized professional development as significant to sustainability of change in quality and have incorporated this into broad quality goals for their programs (i.e., PA Keystone STARS). Raising the effectiveness of early childhood education likely will require a broad range of professional development activities and supports targeted toward teachers' interactions with children.

State and community initiatives throughout the country are aimed at providing greater access to high-quality child care and preschool services. Pennsylvania is one of 33 states that has state-funded preschool programs. In general, program-based early care and education settings, such as Head Start and state funded prekindergarten, have quality standards as a condition of funding, but studies suggest that quality varies widely across these programs (Adams, et al., 2007; Barnett, et al., 2005).

Importance of Interagency Partnerships

Improving the quality of early care and education requires reforms that extend beyond a single classroom or program to community partnerships and linkages (Buysse, Wesley, Skinner, 1999). Researchers and scholars in all interdisciplinary fields that emphasize early childhood education advocate for system changes that enable agencies, schools, and public and private organizations to pool human and financial resources and to form innovative partnerships for integrated services. Such partnerships are viewed as the most effective and efficient vehicle to augment their capacity and to integrate their resources to serve all infants and young children, including those at developmental risk or with developmental disabilities and their families across the early childhood period (0-8 years).

Some of the most promising of these collaborative ventures in community settings has occurred within

the federal Head Start Program and in the school-linked healthcare services and mental health services movement as well as in various states' integrated technical assistance networks focusing on young children (Bagnato, 1999; Melaville & Blank, 1997; Ramey, et al.,1999; Takanishi & DeLeon, 1994). Each of these programmatic efforts addressed the specialized needs of children with developmental disabilities or chronic medical and mental health problems.

Despite these few model development efforts, the benefits of the few field-validated University-Hospital-Community partnerships have not been universally realized in the regular early childhood education system. Advocates stress the need for broader initiatives for all young children and families and the professionals who support them (Hurd, Lerner, & Barton, 1999). Three areas of need are most prominent: (1) continuing professional development training and ongoing consultation for early childhood teachers, caregivers and administrators; (2) ongoing consultation regarding "best practices" in early care and education; and (3) the integration of consultation and services to facilitate the management of young children with challenging behaviors and special medical and educational needs in regular early childhood settings.

Quality Early Learning and School Readiness

The national debate about preventing school failure for young children at developmental risk has renewed interest in the quality, cost, efficacy, and outcomes of early care and education programs in the United States (Bryant & Maxwell, 1997; Christian, Morrison, & Bryant, 1998; Clifford, Peisner-Feinberg, Culking, Howes, & Kagan, 1998; Gil & Reynolds, 1999; NICHD, 2005). The accumulated research results of thirty years of studies in early childhood intervention indicate clearly that young children at developmental risk from impoverished circumstances face progressive declines in their patterns of developmental, behavioral, and learning skills and an early and continuing future of school failure in the absence of structured early care and education experiences which can enhance developmental and early school success (Barnett, 1998; Campbell, et al., 2002; Farran, 2000; Marcon, 1999; Ramey, Pungello, Sparling & Miller-Johnson, 2002; Schweinhart & Weikart, 1997).

Unfortunately, much of the debate about the value of early childhood intervention programs for children of poverty surrounds not the issue of quality intervention, itself, but rather the cost of quality (Clifford, et.al., 1998). It is clear, but not universally accepted, that comprehensive early care and education programs are necessary in order to prevent school failure for children at developmental risk, but the cost of such intensive programs exceeds the typical cost of daycare.

Much interest and debate surrounds the issue of accountability and its assessment in early childhood intervention programs (Bagnato, Neisworth, & Munson, 1997; Meisels, Bickel, Nicholson, Xue, & Atkins-Burnett, 2001). Advocates in the fields of early childhood and early intervention abstain from the tendency to extend downward both the academic standards and traditional testing methods that are characteristic of school-age practices. It is urgent for the field to conduct research on both assessment and early care and education practices that are developmentally-appropriate and rigorous in documenting child progress and the acquisition of precursor skills for early school success.

Finally, the early childhood fields must present evidence-based research on those elements of early care and education practice that best promote positive child outcomes, especially for children at developmental risk and with developmental delays/disabilities (Head Start Bureau, 2000). Two areas of focus are important to the current study: the impact of ongoing, onsite consultation and mentoring on program quality improvements, and the implementation of "best practice" standards to establish and maintain program quality.

Research on Effective Early Childhood Intervention for Children at Developmental Risk

Ramey and Ramey (1998) summarized the major experimental studies in the fields of early childhood education and early intervention since the early 1970's that have resulted in measurable beneficial outcomes for children at developmental risk. From their analysis, they extracted seven common elements of effective intervention programs that have been associated with initial and long-term positive outcomes for children and families. The seven core features are: (1) longitudinal interventions starting in infancy and monitored through functional benchmarks; (2) intensive, comprehensive, and individualized programs and supports; (3) integral parent program participation; (4) high program quality and frequent monitoring; (5) direct child interventions; (6) community-directed programs and integrated services; and (7) follow-through of child and family supports and program evaluation into the primary grades.

Advantages of Alternative Research Designs and Methods in Community ECI Research

There is an increased emphasis on accountability of social intervention programs in systems reform efforts. However, little agreement on methodologies exists to conduct community-based research on "natural experiments." Traditionalists argue for randomized experimental/control group designs as the "gold standard" (NAS/IOM, 2001). Conventional experimental designs have high internal validity/low external validity and have yielded few feasible interventions in community settings (Future of Children, 1999). Community-based researchers argue for flexible designs, evaluation methodologies, and statistical techniques to accommodate fluid changes in non-laboratory conditions (Bruner, 1999; McCall, 2004; Schorr, 1999; Yoshikawa et al., 2002). Alternative methods have been criticized for their lack of internal validity and insufficient rigor to draw conclusions about efficacy. In reality, conventional designs answer the "Can it work" question under controlled conditions. Alternative designs answer the "Does it work; for whom; and in what setting" question—the issues of most interest and applied concern for community-based programs. Alternative designs use collaboration known as "participatory action research" methods to match research designs and methods with community needs. This critical partnership process engages the community as research partners to "own" the evaluation as their legacy. Research through alternative designs has several advantages: avoids the ethical dilemma of exclusion of vulnerable children for research purposes; documents the specific features of programs that best predict outcome; uses natural caregivers as the best informed assessors of child status and progress in everyday routines; and employs multivariate and multiple regression techniques to analyze expected research outcomes (i.e., HLM, Path Analysis, and Constructed Comparison Group).

Bruner (1999) summarizes the results of a research conference of the National Center for Service Integration on *"Funding What Works: Exploring the Role of Research on Effective Programs and Practices in Government Decision-making"*. The major take-home point from the conference was that there is a consensus on the features of effective practice that produce positive impacts and make for effective interventions and programs. However, how the field conducts research in natural settings is fundamentally different than how we conduct research in laboratory contexts.

…ours is not a black and white world, and we are seeking more than an answer to the question "Did a program work or not? We need to know whom it worked for, in what respect, and within what context. We also need to know how much it worked and how significant that is. We have to make quantitative and qualitative judgments on whether the type of impact we are making in the lives of children and families is sufficient to warrant the investment made, compared with other places we might be making an

investment. The determination of what constitutes a significant impact extends beyond a determination of statistically significant measured effects and requires an assessment of the value of the short- and long-term measured effects and their relationship to program cost. (pp. 40-41)

In the same conference, Schorr (1999) discussed the role of evidence in improving outcomes for children and stresses the same points regarding the significant limitations of the experimental-control group "gold standard" for social science research and the distinct advantages of more flexible but powerful methodologies:

"As long as research is considered credible only if it meets traditional conventions that come out of the biomedical sciences, I think we will be poorly served…Promising social programs often are complex efforts with multiple components that require constant mid-course correction, that active involvement of committed human beings, and flexible adaptation to local needs and strengths to lessons learned, and to changing circumstances…we have to conclude that the biomedical research methodologies that provide "gold standard" proof in other contexts cannot provide sufficient evaluative evidence about many of our most promising interventions, with their many interactive and evolving components." (pp. 1-3)

"Take-Home" Points

- Ramey and Ramey (1998) published a seminal research analysis and position paper which outlined the common factors in successful and effective early childhood intervention research efforts in the US over the past 30 years. These factors included:

1. Earlier and longer program participation
2. Parent engagement
3. Direct child teaching and interventions
4. Individualized care and teaching
5. High program quality
6. Creative, comprehensive, interagency program sup ports and community-based leadership: Create a system from the "unsystem"
7. Preschool-school partnerships and continuing supports through the early grades

Pre-K Counts made efforts to replicate these factors as objectives in their funding proposal requirements to the grantees through the following features:

- School District-Community Early Childhood Program Partnerships
- Integration of the Pre-K "System": Head Start, Early Intervention, and Child Care
- Collaborative School-Community Leadership
- Keystone Stars Program Quality Standards
- Ongoing Mentoring to Improve Quality of Teaching and Care
- Creative Parent Participation Options
- Collaborative Agreements with Human Service Agencies
- Use of the Pennsylvania Early Learning Standards (PAELS) as Curricular Benchmarks for Early School Success
- Ongoing Formative Program Evaluation and Feed back to Focus Instruction and Communication

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WHAT IS PRE-K COUNTS IN PENNSYLVANIA?

CHAPTER 2

"When school districts and community-based early learning programs work together to provide quality early learning opportunities, everyone benefits" (OCDEL, 2007-2008).

Research shows that quality early education can improve a child's opportunity for success in school. The Pennsylvania Department of Education through its various funding sources and private foundations created an initiative to support the commitment and respond to the need to promote quality early education in Pennsylvania.

Pre-K Counts has been a unique public-private partnership among philanthropies and state government departments through the Office of Child Development and Early Learning (OCDEL), Commonwealth of Pennsylvania, begun in 2004.

Pre-K Counts (PKC) sought to establish a consortium of business, corporate, foundation, school, and community leaders to stimulate the development of an early care and education network which would expand quality options; infuse education into child care routines; set standards for quality, professional development, and early learning; and serve as a catalyst to create and unify a "system" for prevention and care for all young children.

In essence, PKC is the first phase of an emerging early care and education system which is inclusive and strives to **prevent early learning difficulties** in young children and **to promote their early school success**. PKC is an innovative prevention and promotion initiative.

Pre-K Counts was designed to build and strengthen pre-kindergarten partnerships, bringing together the school district, Head Start, child care, early intervention, and other community agencies. All partners, strived to, develop joint ventures to provide quality preschool options to Pennsylvania families with a priority in at-risk communities.

Primary Missions of PKC

The three primary objectives of Pre-K Counts (Partnership for Quality Pre-Kindergarten, 2005) were:

1. To increase Pennsylvania's capacity for quality pre-kindergarten by serving additional children in high-risk communities. Partnership funds will give selected districts the capacity to leverage new public funds for pre-k through the Accountability Block Grant and Head Start State Supplemental program as well as other community-based early care and education programs;

2. To support communities' work to establish and maintain partnerships that connect district run pre-k programs, quality child care, Head Start and early intervention;

3. To develop a statewide leadership network, comprised of key school district, child care, Head Start and early intervention representatives who will further efforts to establish and sustain high quality early childhood education throughout Pennsylvania.

In order to meet these objectives, the Pre-K Counts initiative established key markers as a framework of quality and excellence in early education, to help guide and support the partnerships. This framework of quality markers (Partnership for Quality Pre-Kindergarten, 2005) includes:

- The Pennsylvania Early Learning Standards which focuses on developmentally appropriate expectations for children prior to entering kindergarten;
- The pre-k framework issued for the Accountability Block Grant which sets an additional context for effective high-quality programs;
- Keystone STARS Performance Standards providing guidance for child care providers by creating a tiered-level of quality standards;
- The Head Start Performance Standards which is a nationally-recognized comprehensive model for pre-kindergarten programs.

Partnerships in PKC

The Pre-K Counts established partnerships, while utilizing the framework of quality described above, were built on a number of core expectations (Partnership for Quality Pre-Kindergarten, 2005) including:

Working Partnerships	…partners must have shared values for high quality programs and create a seamless system of community-based care for young children
Parental Involvement	…parents are involved in all aspects of pre-k programs. Creating a partnership with families that begins the foundation for future school success and achievement. Appropriate training should be offered.
Quality Program Design	…regardless of where pre-k services are delivered, they are designed to stimulate child development and school achievement.
Leadership Network	…consisting of senior representatives from the participating school districts and their partners as well as others.
Community Engagement and Leadership	…participants at many levels will become partners in community engagement advancing the pre-k message to key opinion leaders at the local and state level.
Sustainability	…be futuristic in their thinking. Strategic planning will include methods and strategies for sustaining funding, as well as expansion of funds.

One of the initial partners stated in a report, (Pittsburgh Public Schools, 2006/07) "Throughout this first year of implementation, the project has experienced its share of successes and challenges. As with all first-year projects, ours had plenty of starts and stalls that were greatly influenced by the planning and coordination process. However, our successes have outweighed our challenges". Some of those successes listed were: hosting monthly partner informational sharing meetings, relationship development between coaches and classroom staff, and goal attainment related to Keystone STARS and/or Early Learning Standards. Another statement made in this summary mentioned above by the same partner was, "This first year of implementation has focused upon the initial building of relationships with each of the partners and their staff. For our next year, we want to concentrate on deepening our level of support and heighten opportunities given to direct teaching staff" (Pittsburgh Public Schools, 2006/07).

As summarized in Early Childhood Policy Research (Mitchell, 2007), one of the main elements of Pre-K Counts is to develop sustainable "working partnerships" in communities to help improve and maintain the quality of local pre-kindergarten programs. Based on survey data collected from partners, many factors affect this element of partnership. Some of the stronger factors include:

- Leadership
- Benefits to members
- Respect, understanding, and trust
- Goals and objectives
- Investment in process and outcomes

Some equally important, yet reported as slightly weaker factors include:

- Adaptability
- Productivity
- Partnership decision making
- Resources

Evidence-based Features of the PKC Model

Ramey and Ramey (1998) published a seminal study and position paper which outlined the common factors in successful and effective early childhood intervention efforts in the US over the past 30 years. These factors included: earlier and longer program participation; parent engagement; direct child teaching and interventions; individualized care and teaching; high program quality standards; comprehensive program supports; community-based leadership; and preschool-school partnerships. Pre-K Counts applied these evidence-based factors as guides in their funding proposal requirements to the grantees:

- School District-Community Early Childhood Program Partnerships
- Integration of the Pre-K "System": Head Start, Early Intervention, and Child Care
- Collaborative School-Community Leadership
- Keystone Stars Program Quality Standards
- Ongoing Mentoring to Improve Quality of Teaching and Care
- Creative Parent Participation Options
- Collaborative Agreements with Human Service Agencies
- Use of the Pennsylvania Early Learning Standards (PA ELS) as Curricular Benchmarks for Early School Success
- Ongoing Formative Program Evaluation and Feed back to Focus Instruction and Communication

As Pre-K Counts builds to improve the quality of preschool programs in Pennsylvania, some areas are highlighted as "key" to this process. Things such as, teachers with early education credentials and expertise; smaller class size with an emphasis on more one-on-one time with teacher; and using a quality curriculum in the classroom. The commitment of the partners reflects greatly on the expected program outcomes of Pre-K Counts of having a greater investment in early childhood, establishing a distinct high-quality program, and engaging community agencies to not only support early education, but help sustain these working partnerships.

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HOW DO SPECS AUTHENTIC PROGRAM EVALUATION RESEARCH METHODS WORK IN PRE-K COUNTS?

CHAPTER 3

FAST FACTS

- SPECS represents a field-validated and evidence-based evaluation model in longitudinal studies over 15 years for conducting program evaluation research in community-based early childhood intervention classrooms, settings, and routines which is developmentally-appropriate for young children.

- SPECS uses an Authentic Assessment approach (Bagnato, 2002; 2007) which is required by national professional organizations for use in the field and is part of quality professional standards by the National Association for the Education of Young Children—NAEYC; and the Division for Early Childhood (DEC) of the Council for Exceptional Children.

- SPECS for Pre-K Counts relies upon an authentic assessment and program evaluation research model in which status and progress data are collected on the naturally-occurring competencies of young children in everyday classroom settings and routines by familiar and knowledgeable teachers and caregivers.

- SPECS methods have been field-validated over 15 years in large longitudinal research studies in Pennsylvania (Early Childhood Initiative, PEIOS) and other states.

- SPECS methods focus on early learning competencies that are curriculum-based, teachable, and linked to state and national outcome standards.

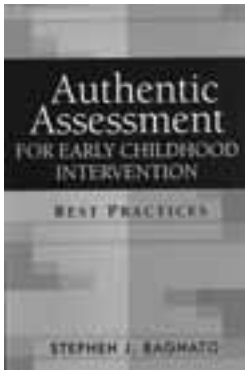
- SPECS links assessment and instruction through teacher feedback.

- SPECS uses ongoing data collection to document developmental progress curves for each child and for groups.

- SPECS uses a longitudinal, repeated measures, regression design to examine the interrelationship among mentoring, type of partnership model, program quality and instruction, time-in-intervention, and children's early school success.

After a competitive proposal process, Dr. Stephen J. Bagnato, Ed.D., and his SPECS Program Evaluation Research Team at the Early Childhood Partnerships program of Children's Hospital of Pittsburgh of UPMC and the University of Pittsburgh were chosen to conduct the independent evaluation for Pre-K Counts. Dr. Bagnato is Professor of Pediatrics and Psychology and Director of the Early Childhood Partnerships program (www.uclid.org and www.earlychildhoodpartnerships.org).

SPECS: Scaling Progress in Early Childhood Settings is a core program of the Early Childhood Partnerships program (www.earlychildhoodpartnerships.org) of the University of Pittsburgh and affiliated with Children's Hospital of Pittsburgh of UPMC, under the direction of Dr. Bagnato. **SPECS** represents a field-validated and evidence-based approach in longitudinal studies over 15 years for conducting program evaluation research in the natural settings of community-based early childhood intervention classrooms, settings, and routines. SPECS does not use traditional "tabletop testing" arrangements which are developmentally inappropriate for young children. Instead, SPECS uses an **Authentic Assessment and Program Evaluation Approach** (Bagnato, 2002a; 2002b; 2007) which has been field-validated for young children.



Authentic assessment is required by national professional organizations for use in the field and is part of quality professional standards by the National Association for the Education of Young Children—NAEYC; and the Division for Early Childhood (DEC) of the Council for Exceptional Children.

SPECS Evaluation Methodology

SPECS uses an authentic assessment approach to program evaluation research. The authentic assessment approach helps community programs demonstrate "how good they are at what they do." In this approach, only individuals such as teachers who know the child well, complete on-going assessments based on observations of the child's naturally-occurring skills in everyday settings. This approach has been validated by the SPECS research team in a study of the outcomes of the Heinz Pennsylvania Early Childhood Initiatives (Bagnato, 2002a; 2002b; Bagnato et al., 2002). Specific elements of the model were customized for PKC.

SPECS
Scaling Progress in Early Childhood Settings

SPECS for PKC Activities and Purposes

Within Pre-K Counts, SPECS methods consisted of the following activities:

- Participatory action research designed in collaboration with community partners
- Natural, standardized observations of ongoing child behavior in everyday settings and routines
- Reliance on informed caregivers (teachers, parents, team) to collect performance data on children
- Ongoing initial and booster trainings of teachers for reliable and valid assessments
- Ongoing monitoring of skill acquisition in natural activities (i.e., preschool, home, community) over suf ficient time periods, settings, and occasions
- Linkage of assessment and instruction through teacher feedback
- Feedback to teachers & parents for individualized early learning plans
- Alignment of program goals, curricular content, state and federal standards, & expected outcomes

- Adherence to professional standards of practice in early childhood
- Focus on individual changes in each child's develop mental profile
- Multivariate research designs which are ethical and do not exclude the most vulnerable and youngest children from interventions merely for research purposes
- Multivariate designs and statistical methods which analyze the specific program elements which are responsible for change and success
- Use of longitudinal, repeated measures, regression design to examine the interrelationship among mentoring, type of partnership model, program quality and instruction, time-in-intervention, and hildren's early school success

SPECS Research Objectives

Both formative and summative research objectives were identified for the evaluation of Pre-K Counts.

Process (Formative) Objectives

School district partnerships will:

- Learn and implement authentic assessment and program evaluation methodology characteristic of the SPECS Program Evaluation Research Model;
- Use SPECS feedback to guide planning and instruction activities;
- Coordinate ongoing, longitudinal collection of child and program data on all participating children.

Product (Summative) Objectives

The SPECS research team will work with school district partnerships to:

- Document child outcomes in acquiring early learning tskills necessary for early school success;
- Record specific enhancements in elements of program quality;
- Demonstrate percentages of accomplishment of early school success indicators by children outlined in the Pennsylvania Early Learning Standards;
- Analyze and determine the predictive relationship among program variables and child outcomes;
- Analyze and define differences among various program arrangements of grantees and to determine whether certain program types can better predict child progress.

Participants and Consents

The SPECS research team were funded to develop partnerships with twenty-one of the participating Pre-K Counts school districts. Each site designated a liaison to the SPECS team who coordinated the evaluation research efforts. Specifically, the liaison coordinated the assessment training, informed consent process, data collection, and feedback process with the research team.

All children enrolled in a Pre-K Counts funded classroom were mandated to participate in the study except in the case of parent refusal. Informed consent was obtained from each child's parent prior to entering the study. Approval from the University of Pittsburgh Institutional Review Board was granted prior to obtaining parent consent for participation.

Authentic Assessment Measures

Child Outcomes

The following measures were used by the teachers and staff to document child progress. These measures were chosen for their authenticity; their utility in providing reliable and valid specific outcome information in early childhood settings; and their content alignment with study goals and also the Pennsylvania Early Learning Standards.

- Basic School Skills Inventory-Third Edition (Hammill, Leigh, Pearson, & Maddox, 1998)
- Early Learning Index (Bagnato & Suen, 2005)

The Basic School Skills Inventory-3 (BSSI-3) is an authentic, norm-based curriculum-referenced measure of early learning competencies in children ages four through eight that are predictive of school success. The BSSI-3 is completed by teachers based on their observation, knowledge of children, and reviews of the children's work performance and portfolios. The scale samples pre-academic and academic skills in such areas as reading, math, spoken language, writing, classroom behavior, and daily living skills. The BSSI-3 was nationally normed on over 800 children. The assessment demonstrates adequate reliability and validity for evaluation purposes (.21-.99). **See Appendix B for an illustration of the scoring rubric for the BSSI-3.**

The Early Learning Index (ELI) was developed by the SPECS Research Team, specifically for 3 year old children. Items were developed using expert opinion by a panel and other developmental curricular pinpoints and content as indicators. Items were chosen according to the following criteria: curricular links; measurement gradations, and observable using natural methods and classroom environment. The ELI is designed to assess early academic and behavioral skills in children ages 36-47 months. The ELI contains items reflecting the following domains: Language, Pre-Reading, Pre-Mathematics, Social Behavior, and Daily Living Skills.

Validity and reliability analyses of the ELI were conducted on this Pennsylvania sample, and indicate that the assessment demonstrates adequate reliability and validity for evaluation purposes. Specifically, evidence of content validity (assurance that the assessment is measuring what it intends to measure) was demonstrated by strong relationships between the ELI subtests. Evidence of concurrent validity (demonstrated when two assessments measure the same construct) was reflected by a strong relationship between the ELI and BSSI-3 subtests. Finally, evidence of internal consistency (demonstrated when the items in a test measure the same construct) was examined by measuring the correlations between the ELI items. Adequate correlations were found between all of the items. Reliability analyses conducted on the sample demonstrate adequate evidence for evaluation purposes. All reliability coefficients were greater than .80, which is the minimal requirement for evidence of reliability. Normative tables were created for the ELI using the Pre-K Counts in Pennsylvania sample. Weighted norms were also developed for the ELI based on demographic variables (ethnicity, gender, geographic region, and age). See **Appendix A for the normative tables.**

Authentic Assessment (AA) Process

The AA measures on children were completed by teachers and caregivers after substantial training to ensure reliability. Assessments were completed in October and May of each year (Exhibit 3-1). One month after completion, the SPECS team provided individual letters on each child written in simple terms that parents and teachers, alike, would understand—**Child Voice Letters (see Appendix C for an example)**. These computer-generated letters contained functional information on the child's specific strong and weak skills in specific early learning domains which needed an extra focus in their daily learning plans and in teaching. These were distributed twice per year. In addition, at the end of each year, each PKC partnership director was given a summary **"SPECS Early Learning Record Card" (see Appendix C for an example)** which profiled how their children were progressing as a group. Both strategies were used to link the content of assessment to intervention and to state standards and expected outcomes.

Program Outcomes

The following measures **(samples included in Appendix B)** were used by the research team to assess program elements and outcomes:

- Keystone Stars Star Level, aligned with the Early Childhood Environment Rating Scale-Revised (ECERS-R, Harms, Clifford, & Cryer, 1998)

- Classroom Assessment Scoring System (CLASS; Pianta, La Paro; & Hamre, 2008) — Modified
- Pre-Kindergarten Program Partnership Rubric (SPECS Research Team, 2009)
- SPECS Mentoring Monitor (Bagnato & Macy, 2007)

The Early Childhood Environmental Rating Scale – Revised (ECERS-R; Harms and Clifford, 1998) has been used by the SPECS team in past projects and widely used both nationally and internationally to assess components of program quality. The SPECS team began using a shorter version of the ECERS-R (Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005). Examination of the psychometric properties of this shorter, "screening" version (ECERS-S) support it's effectiveness to measure important dimensions of classroom quality (Cassidy, et al., 2005). Of the original 43 ECERS-R items grouped into seven subscales, the ECERS-S was comprised of 17 items grouped into two subscales. While this shorter version requires less time to complete, it correlates with the full ECERS-R scale.

The ECERS-S evaluates the classroom in two general areas:

a) Activities/Materials (nine items): This includes books and pictures, and activities that take place within the classroom (i.e., fine motor, art, blocks, dramatic play, nature/science, and math/number);

b) Language/Interaction (seven items): This area includes language reasoning (reasoning skills, informal use of language), interactions (supervision, staff-child interaction, discipline, and child-child interaction), and program structure (group time).

Each ECERS-S item is scored on a scale from one (poor/inadequate) to seven (excellent). To calculate average subscale scores, the items in each subscale are summed and then divided by the total number of items scored. The total mean scale score is the sum of all items scored for the entire scale divided by the number of items scored.

Classroom Assessment Scoring System (CLASS; Pianta, 2008) was modified to measure specific teacher behaviors reflective of positive teacher-student interactions. The modified version includes two general areas:

a) Instructional Learning Formats (four items): This includes utilization of materials, teacher facilitation, and modalities;

b) Student Engagement (two items): This includes the quality and type of student engagement observed in the classroom (active vs. passive, and the relative maintenance of interest over the class time).

Each of the six modified CLASS items are rated on a scale from one (poor/inadequate) to seven (excellent). All six items are averaged to calculate the total CLASS score.

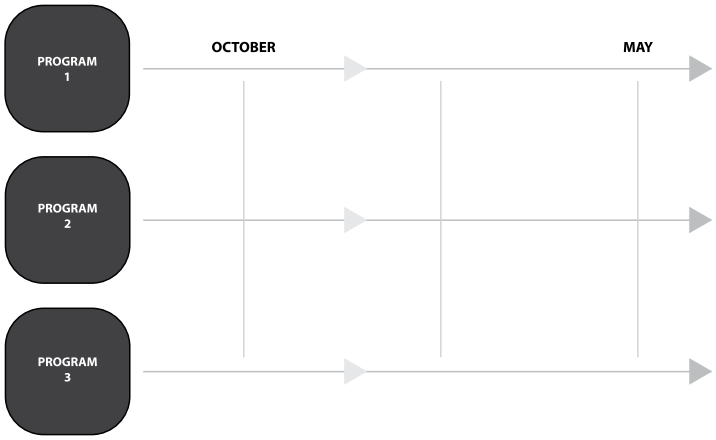
The Pre-Kindergarten Program Partnership Rubric (PPPR; SPECS, 2009) is a classification instrument designed to reach consensus about and to document the presence or absence of partnership features in each school district's proposal which match the requirements of the original PKC RFP. Based on available data, the SPECS research team developed a rubric to measure the extent to which each Pre-K Counts grantee program implemented the requirements and expectations of partnership, and the elements of the partnership. The rubric was created by examining the requirements of the initial request for proposal (RFP) of the Partnership for Quality Pre-Kindergarten (PKC). Specifically, rubric categories were defined by the core expectations of the partnerships, as outlined in the proposal: (1) Working Partnerships, (2) Parental Involvement, (3) Quality Program Design, (4) Leadership Network, (5) Community Engagement and Leadership, and (6) Sustainability. The SPECS research team evaluated each partnership by examining the quarterly reports completed by each grantee program, and then completing the rubric.

The SPECS Mentoring Monitor (Bagnato & Macy 2007) is an electronic instrument which allows coaches/mentors to record the frequency, intensity, content, and methods of consultation, coaching, and mentoring for early childhood professional development efforts. **Both the PPPR and Mentoring Monitor are included in Appendix B.**

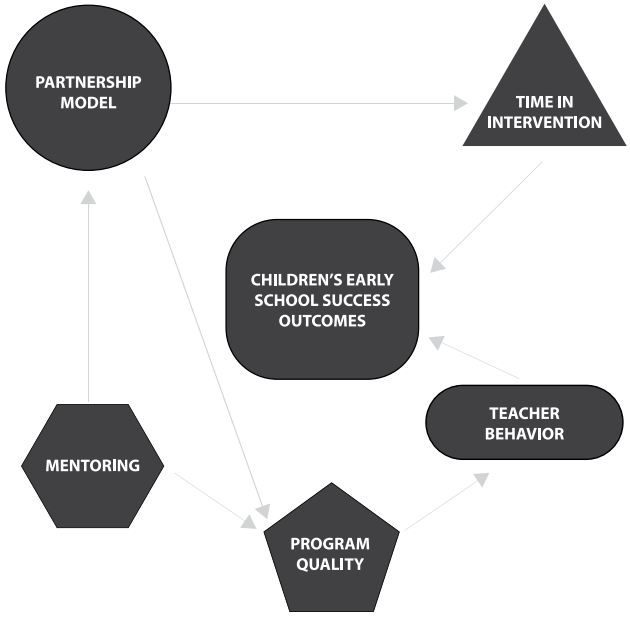
Research Design and Analysis Methods

The SPECS research team implemented a longitudinal, repeated measures regression design using each child as its own control over a three-year period of programming, social participation, and instructional engagement in each school district- community partnership. The evaluation model is displayed in Exhibit 3-1 below. The design documented ongoing child progress and program quality improvement over three years. Teacher training occurred in September of the first year. Each child was evaluated by the teachers and staff twice a year: October/November and March/April. A total of six sequential assessment time-points were possible for each child, so that a developmental growth or "early learning curve" could be defined over the three-year period. Program quality was evaluated at each site's entry into the program and exit from the program. In addition to documentation of child progress, the design also enabled the SPECS research team to compare child and program changes by partnership.

Exhibit 3-1:
SPECS Repeated Measure Evaluation Design for Pre-K Counts



The summative evaluation used multiple regression techniques (i.e., Hierarchical Linear Modeling) to document program variables that best predicted child outcomes. For child outcomes, regression techniques [*i.e., Control for Individual Variations in Development (CIVID)*, Bagnato, Suen, & Fevola, in press and Appendix A] were employed to document the extent to which children are outpacing their maturational expectations using the pre-intervention baselines of children of various ages compared to post-test outcomes for establishment of those levels.



Logic Model

The logic model for the research design is summarized in the figure. Four predictor variables were used to determine which factors and combinations seem related to child outcomes. Time in intervention, or dosage, was documented for each child to determine whether longer participation predicted better child outcomes. Partnership variables were analyzed in relationship to improvements in quality as well as to child outcomes. Mentoring elements were analyzed in relationship to quality improvements and child outcomes. Finally, program quality by Keystone Stars level was analyzed to determine the impact on child progress. A random selection study was implemented to analyze in greater detail the relationships among specific aspects of program and improvement,

and changes in teacher's instructional practices and their relationship to child progress and outcome at kindergarten transition.

Research Hypotheses

The SPECS research team developed the following research hypotheses to demonstrate impact and outcomes of Pre-K Counts in Pennsylvania.

1. Children participating in Pre-K Counts funded programs will demonstrate an actual pattern of progress in acquiring pre-requisite early learning competencies (language, pre-academic, and behavioral) that outpaces their maturational expectancies (baseline levels).
2. Significant and functional differences will be documented by the extent of partnership demonstrated by the Pre-K Counts grantees in both child and program quality outcomes.
3. The extent of partnership will predict child outcomes and program quality.
4. Improvements in program quality will show significant predictions with child outcome at transition to kindergarten.
5. For both children at-risk and with delays, those who participate and remained engaged in the Pre-K Counts programs for the longest periods of time ("dosage") will show the most significant progress.
6. Pre-K Counts children will demonstrate early school success, including those with delays and challenging behaviors.

Research Questions and Indicators

Several core mandates and research questions were posed by the participatory action research process with stakeholders. In this process, numerous **"functional indicators"** were established as tangible/observable benchmarks for success in PKC.

What Were the "Core" Mandates & Research Questions Posed by Stakeholders of SPECS for PKC?

- No exclusion of vulnerable preschoolers from PKC for research purposes—ethical design
- Is participation in Pre-K Counts associated with children's gains in important functional competencies to improve their early school success? (Did it work?)
- What programmatic elements of Pre-K Counts are associated with children's success? (Why did it work?)

What Were the Indicators for Children's Success in Pre-K Counts?

- Acquisition of essential early school success competencies in the PA Early Learning Standards (PAELS)
- Individual performances during instructional engagement in PKC outpace maturational expectancies
- Longer engagement in program results in better outcomes
- Higher quality programs produce better outcomes than lower quality programs
- PKC achievement indices match or exceed national research indices
- Attainment of educationally important "functional" benchmarks of measurable progress (e.g., reductions in grade retention and special education placements; movement from delay to non-delay classifications; increases in social skills with reductions in challenging social behaviors; >80% attain PAELS; exceeding national normative and reference indicators)
- Mentoring improves program quality
- Innovative school-community "partnership elements" had differential outcomes

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WHO ARE THE CHILDREN, FAMILIES, & PROGRAMS IN PRE-K COUNTS?

CHAPTER 4

FAST FACTS

- 21 PKC school-community partnerships across Pennsylvania
- 10,002 children, ages 3-6 years; average age= 4.3 years
- Ethnic representation: Caucasian, African-American, Hispanic, Asian, Native Hawaiian, Alaska Native, American Indian, and Multi-ethnic categories
- 1113 teachers in 489 classrooms across PA

A total of 21 school-community partnerships participated in the SPECS authentic program evaluation research of the Pre-K Counts in Pennsylvania. 10,002 children participated in the study over three years from 2005-2008 (see Exhibit 4-1).

Exhibit 4-1: Frequency and Percentage Distribution of Children by PKC Partnership

Pre-K Counts Partnership	Number of Children	% of Total
Bellefonte Area School District	73	0.7
Bethlehem Area School District	1026	10.3
Morris Borough; Bristol Borough; Bristol Twp	223	2.2
Derry Area School District	244	2.4
School District of the City of Erie	112	1.1
Greenville Area School District and Commodore Perry School District	146	1.5
Harmony School District	235	2.3
Harrisburg School District	1146	11.5
Huntingdon Area School District; Mount Union Area School District	307	3.1
McKeesport Area School District	125	1.2
New Kensington-Arnold School District	126	1.3
School District of Philadelphia	3491	34.9
Pittsburgh Public Schools	913	9.1
Pottstown School District	230	2.3
School District of Lancaster	80	0.8
Scranton School District	645	6.4
Southern Tioga School District	48	0.5
Tussey Mountain School District; Bedford Area School District	182	1.8
Tyrone Area School District	231	2.3
Wilkinsburg School District	119	1.2
Woodland Hills School District	252	2.5
Missing	48	0.5
Total	10002	100.0

Data collection for SPECS for PKC began in January 2006, and ended in May 2008; assessments were completed by teachers twice per year (e.g., October and May) after they became knowledgeable of and familiar to the children according to NAEYC and DEC professional standards which was after 1.5 to 2 months in the program. Only five partnerships were approved by OCDEL and entered the study in January 2006; 15 additional partnerships were approved and entered the study in September 2006; and one partnership entered the study in September 2007. With the exception of the School District of Lancaster, all partnership programs participated in the study until May 2008. Thus, the PKC cohort was a rolling" admission, a natural "experiment", in which PKC programs became part of the SPECS research only after their proposals were approved and funded by OCDEL and Pre-K Counts Management—an often lengthy process of proposal, suggestions for improvement, re-proposal, and then funding and implementation. Exhibit 4-2 shows the distribution of the partnerships' entry into the study.

Exhibit 4-2: Distribution of Partnerships' Entry into Pre-K Counts and SPECS Study

	Entry into PKC and SPECS Study		
Pre-K Counts Partnership	January 2006	September 2006	September 2007
Bellefonte Area School District		x	
Bethlehem Area School District		x	
Morris Borough; Bristol Borough; Bristol Twp	x		
Derry Area School District		x	
School District of the City of Erie		x	
Greenville Area School District and Commodore Perry School District		x	
Harmony School District		x	
Harrisburg School District		x	
Huntingdon Area School District; Mount Union Area School District	x		
McKeesport Area School District		x	
New Kensington-Arnold School District			x
School District of Philadelphia		x	
Pittsburgh Public Schools		x	
Pottstown School District	x		
School District of Lancaster	x		
Scranton School District		x	
Southern Tioga School District		x	
Tussey Mountain School District; Bedford Area School District		x	
Tyrone Area School District		x	
Wilkinsburg School District		x	
Woodland Hills School District		x	
Total	5	16	1

The percentage distributions for the demographic variables collected in the study are presented in Exhibits 4-3 and 4-4. Gender and ethnicity data were reported by the children's parent and/or guardian on the informed consent for the IRB.

Exhibit 4-3: Gender Distribution of Children Participating in Pre-K Counts

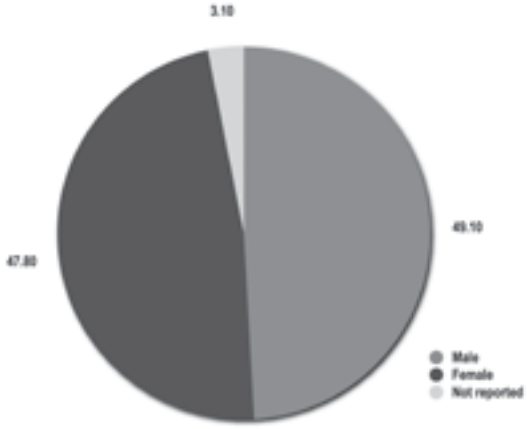
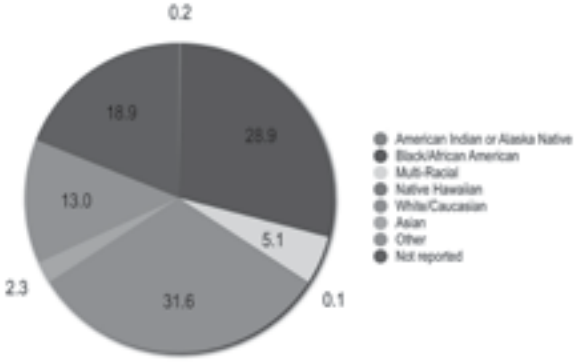
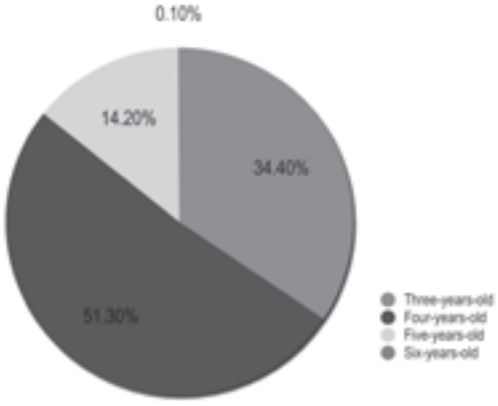


Exhibit 4-4: Ethnicity Distribution of Children Participating in Pre-K Counts.



At entry into Pre-K Counts, the average age of the children was 4.3 years, and ranged from 3 years to 6 years of age.. The percentage of the children's age at entry into Pre-K Counts is presented below.

Exhibit 4-5: Percentage Distribution of Children's Age at Entry into Pre-K Counts



The majority of children in the study received two-three assessments. By the end of the study, 20,884 assessments (including re-assessments of children) were conducted by the teachers. The average time (i.e., "dosage") children were engaged in the Pre-K Counts program's early learning instructional and play curricular activities was 9.8 months and ranged from 4 to 32 months (e.g., 6.4 for average assessment timeframe). The tables below display the frequency of assessments during Pre-K Counts and the percentage of children by their time in the program.

Exhibit 4-6: Frequency Distribution of Assessments during Pre-K Counts

Number of Assessments	Number of Children	Percentage of Total
One	1222	12.20%
Two	2570	25.70%
Three	5114	51.10%
Four	1065	10.60%
Five	27	0.30%
Six	4	0.01%
Total	10002	100%

Exhibit 4-7: Frequency Distribution of "Dosage" or Time-in-Intervention

Program Engagement: "Dosage"	Number of Children	Percentage of Total
4 to 9 months	7956	79.54%
10 to 15 months	1055	10.55%
16 to 21 months	954	9.54%
22 to 27 months	32	0.03%
28 months or more	5	0.01%
Total	10002	100%

The SPECS Research Team conducted initial and booster trainings on the authentic assessment measure for all of the participating school district teachers and aides to ensure reliability and validity of the data. Overtime, a total of 1113 teachers in 489 classrooms received training on how to conduct authentic assessments of children.

PKC Programs and Directors

The following specific school district-community partnerships and the directors and coordinators are represented in the public-private consortium of Pre-K Counts that encompasses the SPECS for PKC research:

Bellefonte Area School District
Elaine Cutler
Susan Seely

Bethlehem Area School District
Marilee Ostman
Tricia Carrasco

City of Erie School District
Patrick Conley
Kathryn Kwiatkowski
Colleen Maci

Derry Area School District
Donna Witherspoon

Greenville Area School District and Commodore Perry School District
Nancy Castor
Barbara Patton

Harmony Area School District
Scott E. King
Grace Damiano

Harrisburg School District Early Childhood Program
Debbie W. Reuvenny

Huntingdon Area School District and Mount Union School District
Mary Kay Justice

McKeesport Area School District
Patricia J. Scales
Cathy Lobaugh

Morrisville Borough, Bristol Borough, and Bristol Township School Districts
Janmarie Brooks

New Kensington-Arnold School District
Thomas J. Wilczek
Ruth Carson

Pittsburgh Public Schools
Carol Barone-Martin
Amber Straub

Pottstown School District
Jeff Sparagana
Mary Rieck

School District of Lancaster
Donna Wennerholt

School District of Philadelphia
David Silbermann

Scranton School District
Anne Salerno
Elaine Errico

Southern Tioga School District
Sam Rotella

Tussey Mountain School District
Kathy Lazor

Tyrone Area School District
Reneé Jamison
Melissa Russell

Wilkinsburg Borough School District
Karen Payne
Michelle Agatston and Marie Hayes

Woodland Hills School District
Roslynne Wilson
Cyndi McAleer,
Cathryn Lehman
Candace Hawthorne

DID CHILDREN BENEFIT FROM PARTICIPATION IN PRE-K COUNTS?

CHAPTER 5

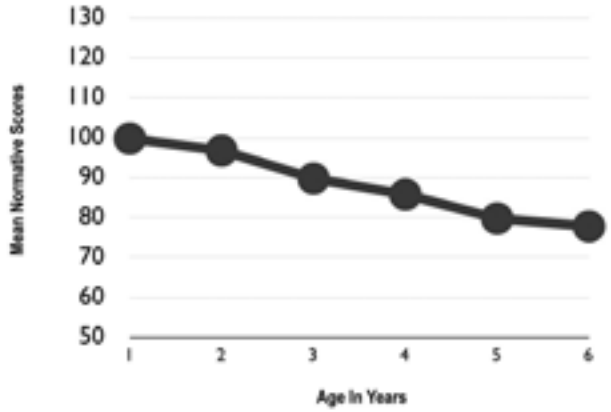
FAST FACTS

- Young high-risk children showed accelerated early learning progress.
- Young children with delays and challenging behaviors improved equally.
- Young children learned critical competencies for early school success and beat local historical and national norms and indicators.
- Vulnerable young children beat the odds and succeeded.
- PKC is an innovative and successful prevention and promotion initiative for all children.

What do we know about the early learning competencies of high-risk children who do not participate in preschool programs?

Research (Barnett, 1995; Bryant & Maxwell, 1997; Farran, 2000; Marcon, 1999; Schweinhart & Weikart, 1997) tells us that children of poverty experience progressive declines in their developmental rate when they are not afforded the benefits of quality early learning experiences which occur in preschool; this lack of critical early experience occurs at a particularly sensitive period in the growth of their brain-behavior interconnections. Even though the children begin life developing at typical rates, their developmental rate begins to decline when important language and social experiences and competencies are absent or meager; these experiences and skills are critical for children's maturational advancements at about 2-3 years of age. Because of these early deprivations, at the age for kindergarten and first grade, their deficits in early learning place them 1.5 years behind their more advantaged peers (Exhibit 5-1).

Exhibit 5-1: Research-based developmental declines for high-risk children not in preschool



OUTCOME: High-Risk Preschool Children Beat the Odds and Succeeded in PKC by Gaining Critical Early Learning Competencies

Did at-risk 3-year old children benefit from Pre-K Counts programs?

Specific Outcome Synopsis

- 1,986 three-year olds showed significant progress ($p<.001$) in all areas during their first year of PKC.
- All ethnic groups made gains, especially in spoken language, pre-reading, numbers, classroom behavior, and daily living skills.
- Three-year-old children who participated longer in PKC made the strongest gains ($p<.001$), especially for spoken language, numbers, and daily living skills.

How much did children who were at-risk or delayed in development and behavior benefit from Pre-K Counts?

Specific Outcome Synopsis

- At the beginning of PKC, 12% of children from all ethnic groups were classified as at-risk.
- At the end of PKC, only 6% of children were still at-risk.
- At the beginning of PKC, 21% of children from all ethnic groups were classified as developmentally delayed and qualifying for early intervention services from the county.
- At the end of PKC, only 8% of children were still delayed.
- **19% more children are performing in the typical range at the end of PKC.**
- **Greater than 2 of every 3 children** with developmental delays attained a low average to average level of performance after participating in PKC.
- Children with developmental delays and serious problems in social and self-control behaviors at entry showed significant gains ($p<.001$) in acquiring age-expected skills for kindergarten at exit.

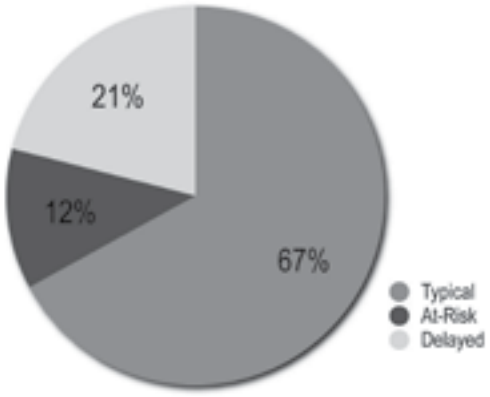
Declines in Overall Risk/Delay Status Toward Typical Performance

Participation in PKC programs is clearly related to a major "functional indicator" of success—significant decreases in overall risk/delay status and increases in typical, age-expected developmental performance. Regarding

declines in risk/delay status toward typical or expected functioning for age, exhibits 5-2 and 5-3 demonstrate the major outcomes that:

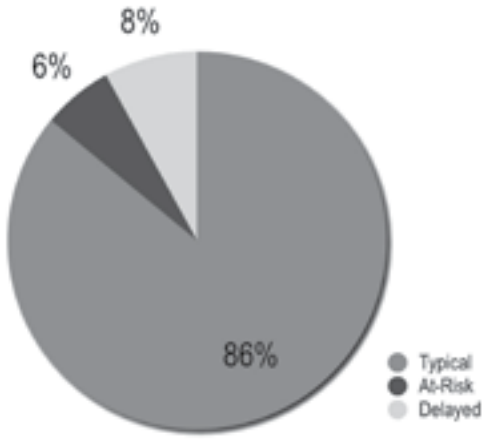
- 19% more children are performing in the typical range of performance after participating in PKC.
- Greater than 2 of every 3 children with developmental delays attained a low average to average level of performance after participating in PKC.
- These indices of reduced risk/delay and increased typical performance occurred after children participated in PKC over a 6 to 24 month period of programming.

Exhibit 5-2: Overall risk/delay status at entry into Pre-K Counts



Note. Typical overall scores ranged from 90 to 130; At-Risk overall scores ranged from 85 to 89; Delayed overall scores ranged from 48 to 84.

Exhibit 5-3: Overall risk/delay status at exit from Pre-K Counts (K-Transition)

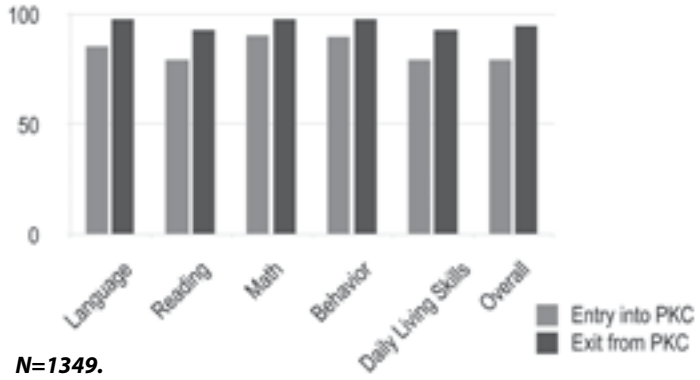


Note. Typical overall scores ranged from 90 to 130; At-Risk overall scores ranged from 85 to 89; Delayed overall scores ranged from 48 to 84.

Progress in Specific Early Learning Competencies for Children with Risks/Delays

A more specific analysis of the performance of PKC children is revealed by their acquisition of essential early learning competencies for 1349 children who have significant risks/delays. Overall progress in all early learning domains of development (e.g., spoken language, reading, math, classroom behavior, and daily living skills) is significant ($p<.001$) (Exhibit 5-4). The average gain in overall early learning competencies is 1 standard deviation or 15 standard score units (i.e., 80 to 95) for children with risk status or delays (Exhibit 5-5). As we indicate later, the typical median rate of gain in national longitudinal early childhood intervention research studies is only 6.8 standard score units or ½ of a standard deviation.

Exhibit 5-4: Progress pattern on early learning competencies for children with risks/delays



N=1349.

Exhibit 5-5: Progress data on early learning competencies for children with risks/delays

Domain	Entry into PKC-Score*	Exit From PKC-Score*
Language	86 (8)	98 (15)
Reading	80 (10)	93 (12)
Math	91 (6)	98 (8)
Behavior	90 (9)	98 (11)
Daily Living Skills	80 (8)	93 (12)
Overall	80 (7)	95 (12)

**BSSI-3 Mean Standard Score and Standard Deviation*

The comparable and accelerated developmental progress of at-risk children in PKC programs is evident by a comparison of the acquisition of specific individual

competencies (raw scores) with the national norm group's (e.g., BSSI-3) developmental trajectories in language, math, and classroom behavior from ages 3 through 5 (Exhibits 5-6 to 5-8). The developmental progress paths of at-risk PKC children in math show an accelerated slope, while the trajectory for spoken language skills and classroom behavior is the same as the national norm group; in math, the typical child at 3 is below average and shows a steep progress trajectory toward the acquisition of age-expected performance at 5 years of age.

Exhibit 5-6: Accelerated growth trajectory of math skills for at-risk 3-yr-olds vs. national norms

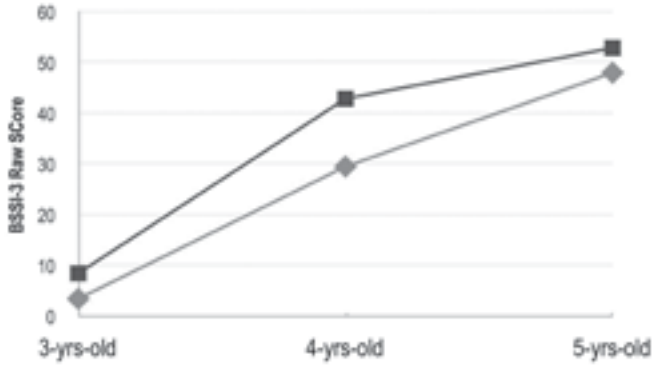


Exhibit 5-7: Growth trajectory of spoken language skills for at-risk 3-yr-olds vs. national norms

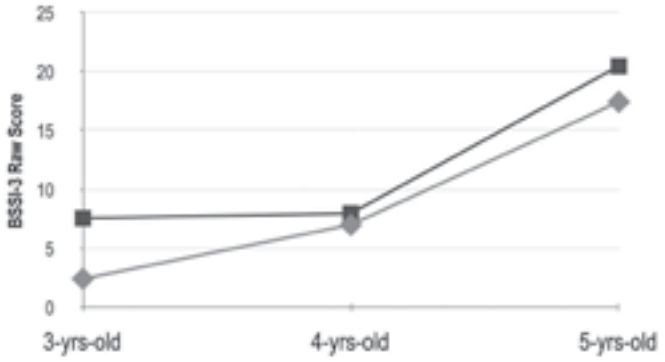
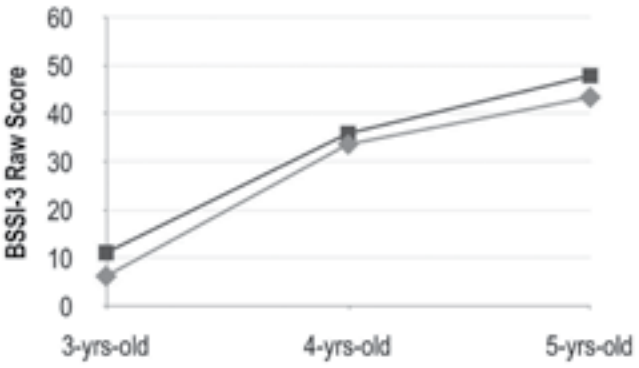


Exhibit 5-8: Growth trajectory of classroom behavior skills for at-risk 3-yr-olds vs. national norms



Progress in Early Learning Competencies for Children with Challenging Behaviors

For 506 PKC children with challenging behaviors based on their entry BSSI-3 cut-off scores, the developmental progress pattern shows similar accelerated growth. Overall, the developmental course for these children at entry into PKC appears to have been stunted by their serious social behavior problems given that the average 4 year old with serious behavior problems shows significantly delayed functional capabilities at a level comparable to only a typical 3 year old child (e.g., standard score is 77—1.5 standard deviations below the average). However, at exit from PKC, their overall developmental functioning is within the average range for their age as they prepare to enter kindergarten (e.g., standard score= 91) (Exhibits 5-9 and 5-10).

Exhibit 5-9: Progress pattern on early learning competencies for children with challenging behaviors

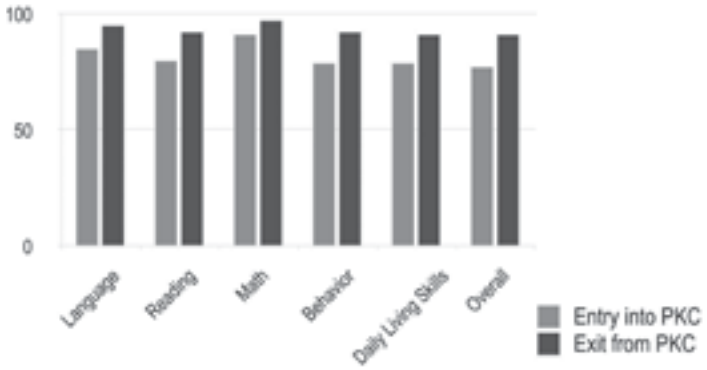


Exhibit 5-10: Progress data on early learning competencies for children with challenging behaviors.

Domain	Entry into PKC-Score*	Exit from PKC-Score*
Language	85 (12)	95 (15)
Reading	80 (13)	92 (14)
Math	91 (8)	97 (9)
Behavior	79 (6)	92 (11)
Daily Living Skills	79 (17)	91 (14)
Overall	77 (10)	91 (13)

**BSSI-3 Mean Standard Score and Standard Deviation*

Progress in Social Behavior Status and Competencies for Children with Delays/ RisksDelay Status Changes

At the start of PKC, 6.1% of 3-year-old children showed delays in social and self-control behaviors; at the end of PKC, only 1.9% of the 3-year-old children still showed delays in social behavior. At entry into PKC, 4.4% of 4-year-old children displayed delays in social and self-control behaviors; at the end of PKC, only 1.7% of those 4-year-old children still demonstrated problematic social behavior (Exhibits 5-11 and 5-12).

Exhibit 5-11: Decreases in social behavior problem status for 3-year-old children with delays

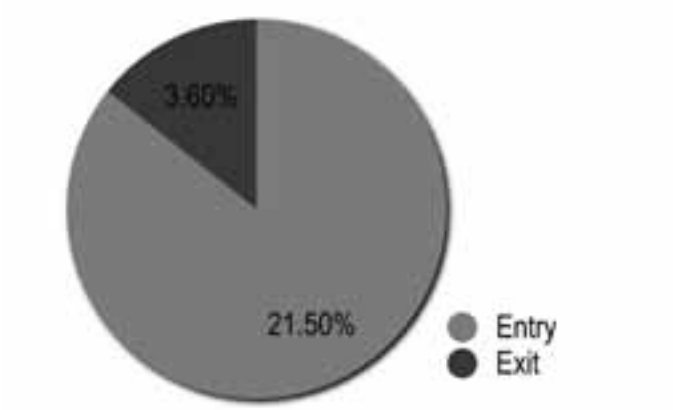
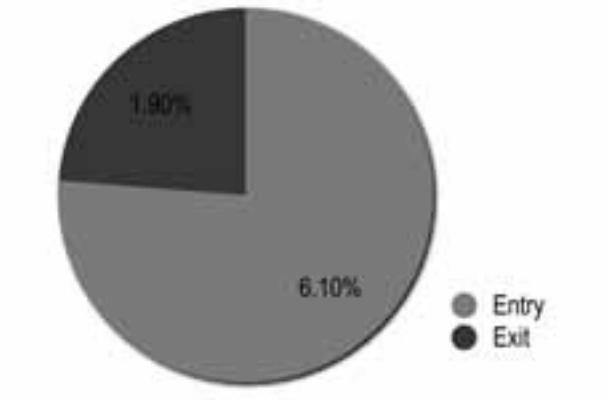


Exhibit 5-12: Decreases in social behavior status for 4-year-old children with delays



Risk Status Changes

At the start of PKC, 21.5% of 3-year-old children were at-risk for problematic social and self-control behaviors; at the end of PKC, only 3.6% of the 3-year-old children were still at-risk for problematic social behaviors. At entry in PKC, 7.1% of 4-year-old children were at-risk for problematic social and self-control behaviors; at the end of PKC, 3.6% of those 4-year-old children were still at-risk (Exhibits 5-13 and 5-14).

Exhibit 5-13: Decreases in social behavior problem status for at-risk 3-year-old children

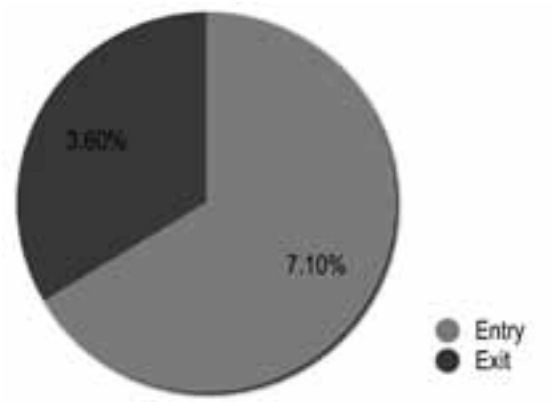
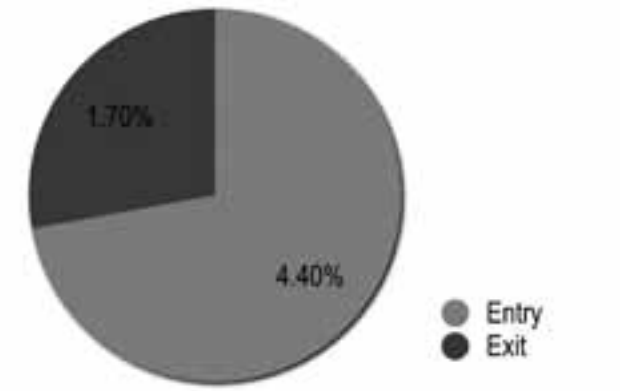


Exhibit 5-14: Decreases in social behavior problem status for at-risk 4-year-old children



Progress in Acquiring Specific Social and Self-Control Competencies

Children identified as at-risk or delayed when they were 3 years of age at entry into PKC showed accelerated growth in math, and the same growth rate in spoken language and classroom behavior, compared to the BSSI-3 normative sample. Children with developmental delays and serious problems in social and self-control behaviors at entry showed significant gains ($p<.001$) in acquiring age-expected skills for kindergarten at exit.

Overall, 3 and 4 year old children with risk or delay status in social behaviors made significant progress in acquiring critical early learning competencies during participation in PKC. Progress rates ranged from 1 to 1.5 standard deviations during participation in PKC! This accelerated rate of progress exceeds both maturational expectations and also the effect size of most early intervention outcomes studies (.46 to .75 or 6.8 to 8.8 standard scores units) (Exhibits 5-15 and 5-16).

Exhibit 5-15: Children's progress pattern in social behaviors competencies: At-risk/delay groups

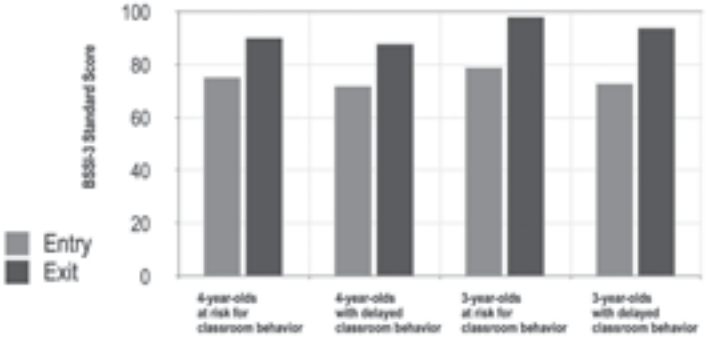


Exhibit 5-16: Children's progress data on social behavior competencies: At-risk/delay groups

Risk/Delay Status	Entry into PKC-Score*	Exit from PKC-Score*
4-year-old at-risk for classroom behavior	75 (5)	90 (12)
4-year-old with delayed classroom behavior	72 (4)	88 (12)
3-year-old at-risk for classroom behavior	79 (5)	98 (14)
3-year-old with delayed classroom behavior	73 (4)	94 (14)

**BSSI-3 Mean Standard Score and Standard Deviation*

How well did all preschool children benefit from PKC?

Specific Outcome Synopsis

- High-risk children showed significant gains ($p<.001$) in development and early learning skills in spoken language, reading, writing, math, classroom behavior, and daily living skills toward average (age-expected) and above average performance.
- Actual developmental progress rates after participation in PKC exceeded children's expected maturational rates before participation in PKC (n=4101).
- Developmental progress rates in some skill areas (spoken language, reading, and daily living skills) exceeded the statistical indices established in national early childhood intervention studies (6.8 standard score points).
- Preschoolers with longest PKC participation-until transition to kindergarten-showed the strongest gains in early learning skills.

Clearly, participation in PKC was beneficial for the average Pennsylvania child in PKC (mixture of typical, at-risk, and delayed groups). In many instances, individuals question the inclusion of children with mild developmental and behavioral delays or disorders in the same classroom with their typical peers, believing that the child with problems will impede the progress of children who have typical or advanced competencies. Contrary to this concern, the results of PKC demonstrate that all children benefited from participation in PKC programs. The average child in PKC shows significant developmental progress in all major early learning domains ($p<.001$). Further, the results of the statistical procedure, Control for Individual Variations in Development, CIVID, (see Appendix A) indicate that the average child in PKC shows actual developmental progress that exceeds their expected maturational expectations. Moreover, the average developmental gain during participation in PKC was 8 standard score units which exceeds the median of 6.8 units evident in national early childhood intervention outcome studies.

Exhibit 5-17: Progress pattern on early learning competencies for all PKC children

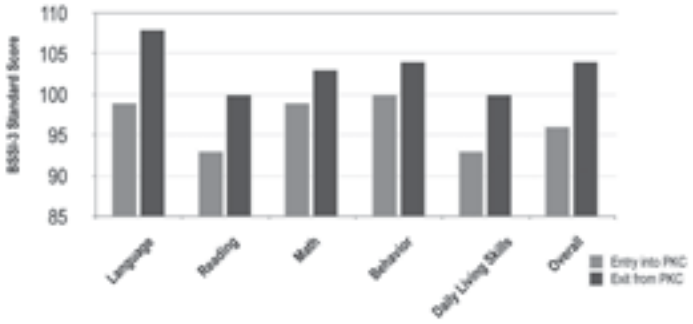


Exhibit 5-18: Progress data on early learning competencies for all PKC children

Domain	Entry into PKC	Exit from PKC	p-value
Language	99 (15)	108 (17)	<.001
Reading	93 (14)	100 (11)	<.001
Math	99 (9)	103 (8)	<.001
Behavior	100 (13)	104 (12)	<.001
Daily Living Skills	93 (14)	100 (11)	<.001
Overall	96 (14)	104 (13)	<.001

**BSSI-3 Mean Standard Score and Standard Deviation*

OUTCOME: Children's Progress in PKC Met or Exceeded National Research Indicators for Effective Programs

Specific Outcome Synopsis

- Developmental progress rates in some skill areas (spoken language, reading, and daily living skills) exceeded the statistical indices established in national U.S. early childhood intervention studies.
- Actual developmental progress rates after participation in PKC exceeded children's expected maturational rates before participation in PKC.

Comparative Standard for Effect Size and Dosage in Early Childhood Intervention

Guralnick (1991) proposed that in community-based early childhood intervention programs, effect size "is an especially useful metric to evaluate effectiveness ttbecause it allows data to be aggregated across diverse studies…[and] serves as a useful summary measure of effectiveness for individual studies" (p.175). The most consistent finding across the myriad of early intervention outcomes research has been that an effect size of between .50 and .75 of a standard deviation (7-12 standard score points) underpins the range of an effective intervention.

Researchers and practitioners in the fields of early childhood intervention understand clearly that the impact of a program or services on a child's developmental progress involves a myriad of complex factors including parent engagement, age-at-entry, length of participation, intervention match, intensity of related services, treatment fidelity, program quality, teacher's instructional behaviors, and type of disability. Unfortunately, despite this admonition about complexity, policymakers and funders, especially private foundations, have pushed for simplistic but more digestible markers of accountability and have embraced the concept of dosage. Many funders have embraced the simplistic concepts that dosage equates with the minimum amount of time a child participates in program before demonstrating measurable progress and benefits, mostly for cost-effectiveness analyses. To overcome the limitations of this conception but still retain its communicability, we seek to provide some standardization of dosage and dosage analysis applied to early childhood intervention.

These interrelated measures can be directly or indirectly expressed through the concept of minimum dosage, defined as the minimum amount of time during which a child receives and is exposed to early childhood intervention services within a program before showing expected functional progress according to an external evidence-based criterion (e.g., either meeting a minimum progress standard derived from national research, or showing greater progress toward age-level performance). Recent dosage studies using this concept in early childhood intervention have been conducted to examine the

effects of multi-session prevention programs for young boys with aggressive behaviors (Charlebois, Brendgen, Vitaro, Normandeau, & Boudreau, 2004); the extent to which time in a child care program predicts socio-emotional adjustment during kindergarten transition (NICHD Early Child Care Research Network, 2003); attendance in Head Start programs related to cognitive and social gains and family risk status (Tait, McDonald-Culp, Huey, Culp, Starost, & Hare, 2002); and the impact of time-in-program on the early learning and social behavioral progress of young children at developmental risk due to poverty in diverse early care and education settings (Bagnato, 2002; Bagnato, et., al, 2002; Reynolds, 2005; 1995).

Despite the initial array of dosage studies, it is clear that researchers and policymakers still need some uniform methods to determine minimum dosage that can be applied in state and national accountability efforts. Through these uniform methods, government regulators and funders can have assurances about the rigorous and precise nature of the methodology employed. For this PKC study, we employed the first step in the dosage analysis process to establish a criterion by which developmental progress and success can be established (Bagnato, Suen, & Fevola, in press).

Evidence-based Minimum Progress Target Standards

In order to determine this standard or external criterion, we conducted a thorough examination of the research literature across the fields of early childhood intervention pertaining to impact, outcomes, and efficacy studies for children who were at-risk or with delays/disabilities. Exhibit 5-19 summarizes the review of this evidence-base involving mostly meta-analytic studies over the past 20 years. The meta-analytic studies reported effect size statistics regarding mostly programmatic effects (i.e., intensity, duration) on child developmental progress. This analysis allowed the determination of the most representative effect size based upon diverse early childhood intervention outcomes studies.

Exhibit 5-19: National studies to establish a minimum "dosage" effect size standard from early childhood

Research Article	Number of studies	Sample type	Effect Sizes
Bagnato, 2002; Bagnato, et. al, 2002	Longitudinal ECI study in PA; n= 1350 over 5 years	At-Risk and mild delays	Mean range= .40-.84
Casto & Mastropieri (1986)	Meta-analysis; n= 74	Early intervention; delays/disabilities	Mean= .67
White & Casto (1985)	Meta-analysis; n= 230 studies	Early intervention; delays/disabilities	Longer interventions 500 hrs. or 10 hrs/wk= .86 High quality studies; Disabilities= .43; At-Risk= .51
Shonkoff & Hauser-Cram (1987)	Meta-analysis; n= 31 studies—the best of the White & Casto (1985) group	Early intervention; delays/disabilities	Mean= .74
Gorey (2001)	Meta-analysis; n= 35 studies	Early care and education; at-risk, poverty	Moderate/High Intensity= .74-.82; Duration (5 years)= .74-.88
Goldring & Presbrey (1986)	Meta-analysis; n= 11 studies	Early care and education; at-risk, poverty	Mean: Math= .25; Reading= .19; IQ= .42
Blok, et. al, (2005)	Meta-analysis; n= 19 studies from 1985 to 2005	Early care and education; at-risk, poverty	Median range= .32-.44
Dunst & Rheingrover (1981)	Meta-analysis; n= 49 studies	Early intervention; "organically handicapped children"	Extrapolated mean= .31
Spiker & Hopmann (1997)	Review; n= 12	Down Syndrome	Estimated mean= .30
Mahoney, et. al, (1998)	Review= 4 studies	Parent-child interaction- at-risk and disabilities	Extrapolated mean= .42
Harris (1988)	Meta-analysis= 9 studies	NDT with disabilities	Mean= .31
Farran (2000)	Meta-analysis= 74 studies	At-risk and disabilities	Mean range= .25-.55
Kavale, et. Al (1999)	Meta-analysis: multiple studies: special education and related services	At-risk, disabilities, behavior; special instruction, medication	Range= .52-1.62

Intervention research

Based on the review of the studies in Exhibit 5-19, we found the median effect size to be .46 (range= .19 to 1.62). This would serve as a reasonable base indicator of expected progress and was therefore chosen as the target/standard of minimum progress. An effect size of .46 translates into a progress metric of 6.8 standard score points (15 standard score points is the common standard deviation of most outcome measures). This minimum effect size derived from the national early childhood intervention research literature also coincidentally corresponds approximately to Cohen's (1988) criterion of a "moderate" effect size value (i.e., 0.5). This minimum dosage standard establishes the comparative indicator for early childhood intervention studies based upon established effect size.

The progress data for children within PKC was compared to this national standard and is illustrated in Exhibits 5-20 and 5-21. It is clear that PKC children matched or exceeded the national criterion of 6.8 standard score units in 4 of 6 early learning domains. While PKC children did not meet the national indicator in math and behavior, their entry-exit gains nonetheless in these two domains were statistically significant but not of the same magnitude. Children who participated in PKC for longer, sustained periods of time made greater progress than children who participated for shorter time frames.

Exhibit 5-20: Graphic comparison of standard score gains in early learning of PKC children at K-transition to median national indicator

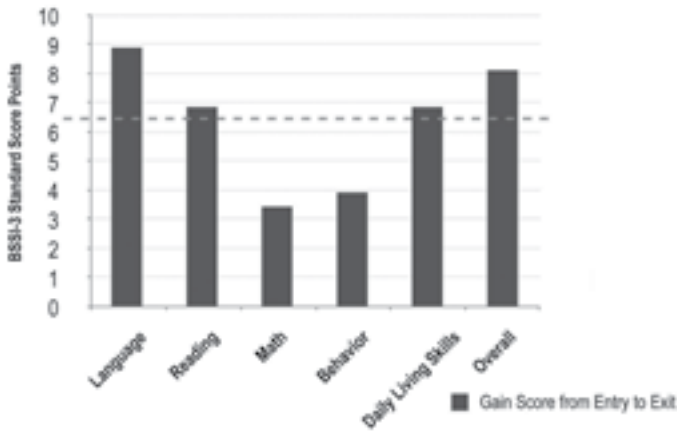


Exhibit 5-21: Early learning skill gains (standard scores) of PKC children between entry and exit compared to national research indicator

Domain	Gain Score
Language	8.93*
Reading	6.90*
Math	3.45
Behavior	3.97
Daily Living Skills	6.88*
Overall	8.17*

**Exceeded median indicators of change (.46 effect size; 6.8 standard score units) based on national research*

OUTCOME: Children in PKC Program Matched or Exceeded National and State Norms for Early Learning Skills to Achieve Success at Kindergarten Transition

Are PKC children "ready" for kindergarten?

Specific Outcomes Synopsis

- 6971 children showed at least average age-expected early learning competencies in all skill domains at transition and entry into kindergarten, and exceeded expected competencies in spoken language, math, writing, and classroom behavior.
- Overall, 80% of PKC children met critical early school success competencies in the Pennsylvania Early Learning Standards (OCDEL, PAELS, 2005) at transition to kindergarten.
- The gains of PKC children exceeded the kindergarten transition skills of same-aged peers on the BSSI-3 national norms in spoken language, reading, math, classroom behavior, and daily living skills.
- The projected PKC special education placement rate is only 2.4%, which is dramatically lower than the 18% historical special education placement rate of receiving school districts (Pennsylvania Department of Education, Special Education Bureau, 2008).
- 2000 children in PKC matched or exceeded the performances of 2000 comparable children at kindergarten transition in specific early learning competency domains, in a comparison study between similar Pennsylvania model early childhood intervention initiatives.

The PKC outcome data demonstrate clearly that PKC children are "ready" for early school success in kindergarten. This conclusion is supported through 3 comparisons: (1) national normative data; (2) state early learning standards; and (3) existing state research data.

Comparison to National Normative Data

6971 PKC children (i.e., who were age-eligible to transition to kindergarten) showed at least average age-expected early learning competencies in all skill domains at transition and entry into kindergarten, and exceeded expected competencies and national norms in spoken language, math, writing, and classroom behavior (Exhibits 5-22 to 5-27). The strongest advantage for PKC children was in spoken language (SS= 106).

Exhibit 5-22: Mean early learning competencies of PKC children at transition into kindergarten

Domain	Transition Score*
Language	106 (17)
Reading	99 (12)
Writing	100 (9)
Math	102 (8)
Behavior	103 (12)
Daily Living Skills	99 (12)
Overall	102 (14)

**BSSI-3 Mean Standard Score and Standard Deviation*

Exhibit 5-23: Comparison of spoken language competencies between PKC children and national norms

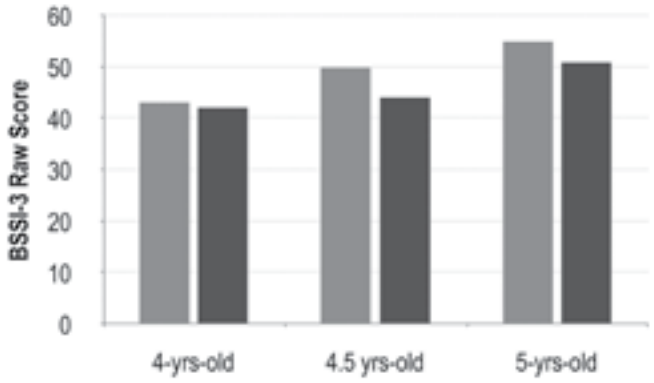


Exhibit 5-24: Comparison of reading competencies between PKC children and national norms

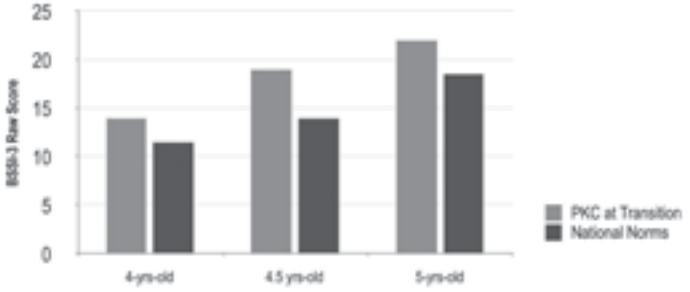


Exhibit 5-25: Comparison of math competencies between PKC children and national norms

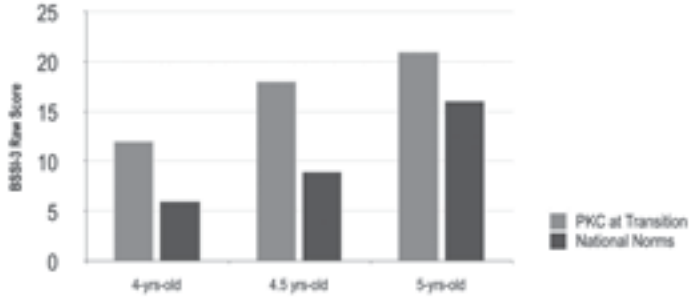


Exhibit 5-26: Comparison of social behavior competencies between PKC children and national norms

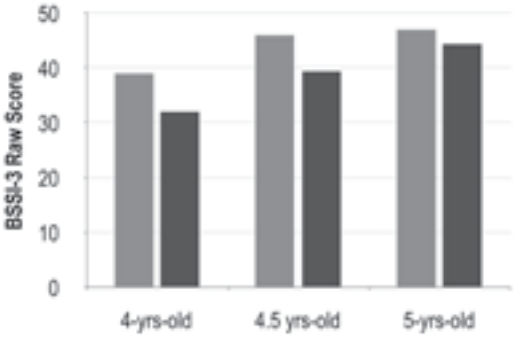
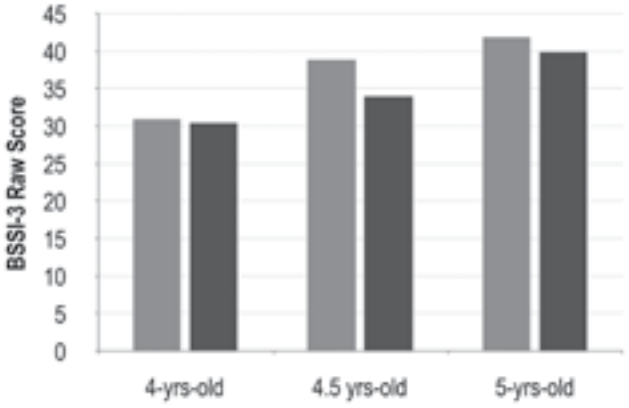


Exhibit 5-27: Comparison of daily living skills scores between PKC children and national norms



Attainment of State Standards

The Pennsylvania Early Learning Standards (PAELS; OCDEL, 2005) are the compendium of developmental and pre-academic competencies, derived through rigorous expert and community stakeholder consensus procedures, which function as the curricular criteria for all state pre-kindergarten programs. The PAELS are conceived as the standards for child achievement from pre-k into kindergarten. The SPECS team conducted a consensus process to cross-walk the content competencies of the Basic School Skills Inventory-3 (BSSI-3) to the content competencies of the PAELS. Exhibit 5-28 shows the 7 core competency domains (incorporating numerous and specific assessment items and curricular objectives) linking the BSSI-3 to the PAELS.

Children in PKC at the May 2008 assessment before transition into kindergarten in September 2008 showed strong average attainment of the 7 PAELS standards (range= 73-87%). Overall, PKC children, at an average age of 4.6 years, attained 80.7% of the PA standards with strongest achievements in initiative and curiosity, communicating ideas, and showing self-control skills.

Exhibit 5-28: Critical PAELS competencies attained by PKC children at K-transition

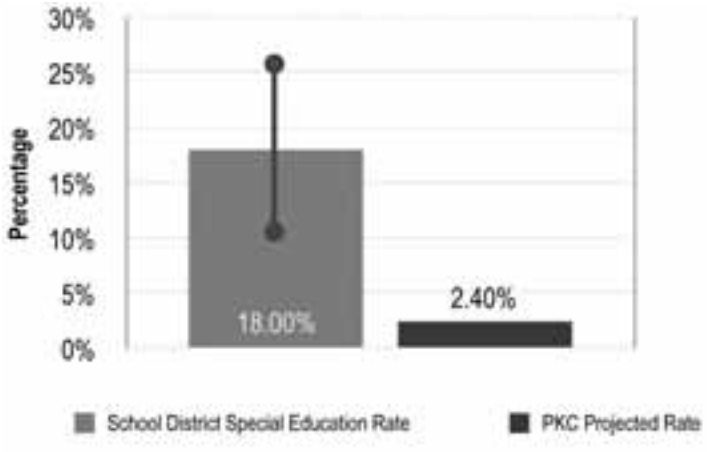
Specific Competency	% Attained
Demonstrate initiative and curiosity	85
Develop and expand listening and understanding skills	80
Communicate ideas, experiences and feeling for a variety of purposes	87
Comprehends information from written and oral stories and texts	78
Develop increasing understanding of letter knowledge	76
Learn about numbers, numerical representation, and simple numerical operations	73
Develop self-regulation	81

Comparison to Existing State Research Data Special Education Placement Rates

One of the most powerful and persuasive "functional indicators" that PKC works is the comparison among the percentages of high-risk children in impoverished school districts who are historically placed in special education at kindergarten/first grade versus the percentage of PKC children who meet special education criteria. For those 21 school district-community partnerships who participated in PKC, the historical special education placement rate is 18.6% (i.e., based on PDE database analysis), specifically, nearly 1/5 of preschool children are placed in special education early in their school lives due to below average and problematic early learning skills and social behavior deficits. The strong result for PKC is that participation in PKC is associated with only a 2.4% special education placement rate (Exhibit 5-29)! Not only is this functional indicator a clear demonstration of the impact of PKC on child progress and "readiness" for success in school, but also, has substantial economic implications. While the SPECS team members are not economists, our discussions with school superintendents across PA indicate that the approximate average cost of educating a typical child in school is $9,900 per year from K-12th grade. For a child in special education, the average cost exceeds $16,000 per year from k-12th grade—almost double the cost. Clearly, participation in high quality early care and education programs reduces the costs of education for the district while having a positive impact on children's early lives in the community.

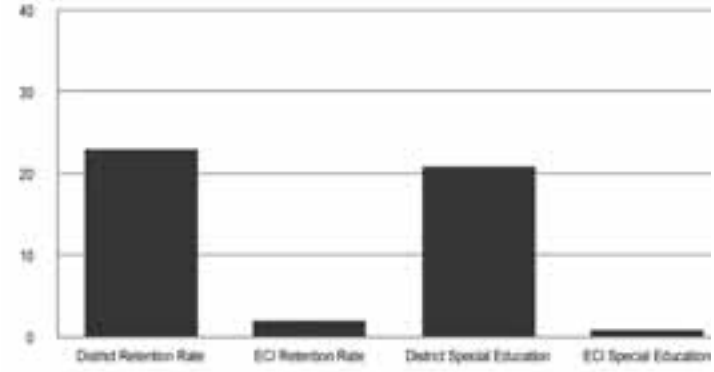
It is helpful also to put this result into context within PA. In 2002, Bagnato and colleagues reported on a 5-year longitudinal study of the Heinz Pennsylvania Early Childhood Initiatives (ECI). From ECI child outcome data compiled in Allegheny County, and Lancaster, York, and Erie, the SPECS team analyzed the historical school district grade retention and special education placement rates. Similar to PKC, the historical rates were approximately 24% for grade retention (grade retention data were unavailable from PDE databases for PKC) and 21% for special education placement (Exhibit 5-30). Yet, for children participating in ECI programs, less than 3% and 1% of ECI children, respectively, had poor outcomes at school entry. These comparative data from a decade earlier support the current PKC results.

Exhibit 5-29: Historical Pennsylvania school district special education placement rate vs. PKC rate at K-transition (2008)



Note. PKC Projected Rate was obtained by calculating the percentage of children whose overall BSSI-3 score fell at least 1.5 standard deviations below average on the assessment at transition.

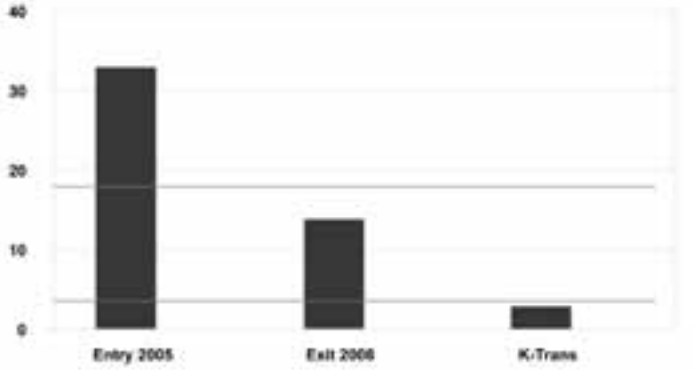
Exhibit 5-30: Historical Pennsylvania grade retention and special education placement rates vs ECI rate at K-transition (2002) ECI vs. Typical School District Grade Retention and Special Education Rates



Risk/Disability Rates: U.S. vs. PKC

Another persuasive "functional indicator" of the success of PKC is the comparisons between the risk/delay rates before and after PKC with national incidence rates. Exhibit 5-31 graphs the U.S. national prevalence rate range of 3-18% to show the relationship between poverty and disability and the increased incidence of delay/disability in the US documented in the epidemiological studies of Fujiura and Yamaki (2005). Recall that the average combined risk/delay rate for all children at entry into PKC was 33%. After PKC, the incidence rate for all children was now 14%--within the national range. Yet, for PKC children transitioning to kindergarten, only 2.4% of children met criteria for placement in special education—delay/disability (1.5 standard deviations below the mean). This low rate is a proxy for the reduced incidence rate of delay/disability in these 21 PA school district regions among these children after participation in PKC programs and is at the low end of the U.S. national range identified by Fujiura and colleagues.

Exhibit 5-31: Comparison of U.S. national delay/disability incidence rates vs. PKC rates



PA State Research Studies

A final indicator of the success of PKC is the comparison with data from other PA early childhood intervention studies. Bagnato and colleagues (2002; 2004) published outcome data on the Heinz Pennsylvania Early Childhood Initiatives (ECI). ECI was an exemplar of a successful preschool venture which shared many of the same intervention elements as PKC, including: community-based partnerships; focus on improving quality through mentoring; alignment with standards; and emphasis on early school success. Thus, the SPECS team proposes the following logic and hypothesis: PKC and ECI were essentially the same type of initiatives; PKC and ECI shared most of the same elements; PKC and ECI were state-wide initiatives; PKC and ECI used the same outcome measures at K-transition; ECI was very successful in promoting the progress of high-risk children. Therefore, if PKC matched or exceeded the results of ECI, then, PKC would be successful by comparison.

For this focused analysis, SPECS randomly selected from the SPECS PA databases (from 1998 to 2008), 2000 ECI children and 2000 PKC children who were transitioning to kindergarten. All children in both groups were assessed by teachers using the BSSI-3 to document children's attainment of early learning competencies in May of their kindergarten transition year. Exhibit 5-32 displays the comparative competencies of the PKC and ECI children at K-transition. The results reveal no educationally meaningful or statistically significant differences between the two groups. Overall, the average children in both groups show early learning competencies which are within the average range for their age compared to national norms of peers with no more than 2 standard score units separating the groups in any domain. Simply, PKC achieved the same positive results as its successful predecessor program--ECI.

Exhibit 5-32: Comparison of early learning competencies of PKC (2005-2008) vs. ECI children (1998-2002) at K-transition

Domain	PKC Score*	ECI Score*
Reading	99 (12)	99 (11)
Writing	100 (9)	98 (7)
Math	102 (8)	102 (8)
Behavior	103 (12)	102 (12)
Daily Living Skills	99 (12)	100 (11)

**BSSI-3 Mean Standard Score and Standard Deviation N=2000 in each group: Time-in-intervention for both groups= 3 years (median= 12.3 months)*

"Take-Home" Points

- Lack of opportunity and experience rob preschool children of the advantages of critical developmental skills vital for early school success and future life success.
- PKC gave high-risk children the competencies for early school and life success.
- PKC dramatically reduced the incidence rate of risk/delay and increased the rate of typical performance for children.
- PKC children gained specific language, reading, math, behavior, and daily living skills.
- PKC reduced dramatically the rate of social behavior problems in children and increased their social and self-control skills.
- PKC accelerated the developmental course toward typical performance for all children in all ethnic groups, particularly those with risks and delays.
- PKC children successfully transitioned to kindergarten with average to above average performance and dramatically reduced special education rates.
- Children with delays and challenging behaviors benefited by being educated in inclusive PKC settings with typically-developing peers.
- PKC children with typical or advanced competencies continued to show steady and expected progress when educated with peers with delays and social behavior problems.
- The success of PKC children is supported by comparisons to state and national norms, standards, and indicators.
- Prevention Works! Inclusion Works! PKC Works!

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DID PRE-K COUNTS PROGRAMS ACHIEVE QUALITY TO PROMOTE CHILDREN'S PROGRESS?

CHAPTER 6

FAST FACTS

- Keystone STARS procedures improved the quality of PKC programs.
- Variety of mentoring modes used by coaches fostered improvements in teaching practices which facilitated children's progress in acquiring early learning competencies.
- Improvements in both program quality and teaching practices promoted children's success.
- Higher program quality is a necessary and vital prerequisite for helping children to develop.

Pre-K Counts programs partnered with Keystone STARS supplemented by their own in-house coaches to facilitate ongoing mentoring and program quality improvement throughout their partnership classrooms. Specifically, Keystone STARS worked with early care and education centers and family childcare arrangements to help them maintain or improve quality.

What is Keystone STARS?

Keystone STARS is a continuous quality improvement program for early care and education programs, from small home-based day care arrangements to larger center-based preschool and after school care programs for children of all ages (PA Keys, 2009). The purpose of Keystone STARS is to improve the quality of early learning programs to fit standards based on research and evidence for quality programming. Quality early learning is felt to be the basis upon which children succeed in both pre-academic and social-emotional development. Research findings strongly support these identified standards of care (Peisner-Feinbreg et al., 1999; Reynolds & Temple, 1998; Schweinhart & Weikart, 1997). By using evidence-based standards for early learning environments, as determined by state health and safety, and public welfare licensing requirements, all centers will meet the appropriate standards for education and safety for all children. Parents can know that when they choose a site of care for their child, whether the focus is on day care or preschool or after school care – their children will receive an optimum level of support, education and safety appropriate for all children.

The approach of Keystone STARS is multifaceted. Numerous programs including Pennsylvania Departments of Public Welfare and Education, Office of Child Development & Early Learning, Regional Keys staff and partners and many early learning stakeholders across Pennsylvania have provided valuable input into the system of Keystone STARS. This input has supported how the PA Early Learning KEYS to Quality ensures that the standards are met locally and state-wide and support ongoing quality improvement systems. Keystone STARS requirements align with national professional standards of practice of the National Association for the Education of Young Children, The Division for Early Childhood and Head Start. Keystone STARS is organized by four STAR levels, each level representing an assessment of degree to which the center or site is meeting predetermined state performance Standards of Quality. When a program meets performance standards for a particular STAR level, they receive a mark of quality or a STAR designation of 1, 2, 3, or 4. There is also a "Start with STARS" level to designate a program just beginning an application into the Keystone STARS program. STAR 4 represents the most desired degree of quality for the care of young children. This means that all standards for quality in education, professional staff development, safety and licensing requirements have been successfully addressed and met. What Keystone STARS means to families and caregivers is that in each center for child-care and education the following are present:

- Staff are educated and well trained.
- An enriched environment is provided every day.
- Leadership and management of center programs are evident.
- Family, caregiver and community partnerships are encouraged.

To move to the next STAR level, a process is rigorously followed. This process involves assessment, professional training, center planning, coaching, mentoring, financial support and standards review. Financial support may be provided in the form of grants to eligible early learning practitioners who participate in the Keystone STARS program. For six designated areas of the state, "regional keys" staff is in place to administer the program of Keystone STARS. Technical assistance is provided by designated staff to help guide programs through the process.

The administration of the Keystone STARS program is accomplished by support from and networking with partnering programs. Some of these partners include Pennsylvania Department of Public Welfare, STARS technical assistance (TA), School-age Child Care, Early Intervention Support Services, Community Engagement groups, higher education facilities and school district supports. There are also a network of resource programs such as Early Childhood Education Linkages System, Better Kid Care and Color Me Healthy. The major premise of the Keystone STARS program is to provide all Pennsylvania families with access to high quality care and education for their children, fostering successful outcomes in their education and in life (PA Keys, 2009).

A primary goal of Pre-K Counts was to support various early childhood programs' efforts in improving quality. Coaching was the primary vehicle for driving the quality improvement efforts. To accomplish the goal of quality improvement, staff required professional development. Professional development occurred through a number of initiatives by the regional keys of the Pre-K Counts system, one of which was effective leadership at the partner level. Funding and assigning in-house "coaches" to the programs was most effective for childcare and preschool staff. In addition to program coordination, coaches were also responsible for developing collaborative relationships with teachers. This was accomplished through mentoring. In Pre-K Counts, the coaching and mentoring process varied widely based on the partnership, funding and staffing limitations. Leaders for Pre-K Counts also recognized that coaching would need to include support for a process of mentoring. To formalize this process of mentoring and coaching, the state organized trainings (Sue Mitchell, personal communication, January, 2008) for approaching this need in a more systematic fashion.

What Do We Know about Mentoring to Improve Professional Practice?

Wesley and Buysse (2006) provide useful information about the stages of consultation from which a process of consultation might be derived. These stages include entry, building an active working relationship with the consultee, gathering information through assessment, setting goals, selecting strategies, implementing the action plan, evaluating the plan and holding a summary conference or what might be considered "debriefing." Each stage in the consultation process requires varying degrees of staff skill in collaboration. Consultation in the Pre-K Counts model requires successful coaching and varying approaches to mentoring of teaching staff. The difference between coaching and mentoring may appear difficult to differentiate, as the terms "coach" and "mentor" often have similar association for the functions required in consultation. The two terms are often used interchangeably by staff and state leaders when reviewing consultation processes in Pre-K Counts. This may be because each term helps us to understand the multi-focus needs for successful implementation of the goals of Pre-K Counts. Partners may prefer use of one term over the other when trying to assign responsibilities to their supervisory or "coaching" staff for Pre-K Counts. Each partnership has unique needs and goals which may lend to the use of the term coach over mentor more frequently.

For this chapter, the two terms will be differentiated, understanding that the evidence for these processes is still being collected. First the term, "coaching" is examined. The original use of the term, coach comes from private instructor or trainer. Coaching means to inspire and encourage others. Coaching requires strong organization skills, creativity, energy and good listening skills. Each activity may depend upon the ultimate goals of the partnership. For example, if staff have a classroom that is primarily driven by only teacher-centered practices, one might "coach" the staff member by providing more education and resources about child development

concepts to help staff bring in more child active learning curriculum. Effective coaching is meant to facilitate the development of another. In Pre-K Counts, coaching is also a method of directing, instructing and training a person or group of people, with the aim to achieve some goal or develop specific skills. There are many ways to coach, types of coaching and methods to coaching. Motivational speaking with another is often a technique used. Staff may need the "active coaching" to become motivated sufficiently to modify and make changes to improve quality in their day care or classroom setting. Training by a coach may include seminars, workshops, and supervised practice. For example, building a relationship requires building trust and agreement on roles between teachers and consultant. This can lead to a strong supportive relationship and hopefully a sense of partnership. Staff may even describe a sense of friendship with "coaching" support. Often the coaches become assigned to this new position of Pre-K Counts coach from a previous position as classroom teacher or other teaching staff. This may allow a coach to "understand where the teachers are coming from" when challenged to implement Pre-K Counts quality initiatives or new practices.

In contrast to coaching, mentoring has a more recent history of application to education. As opposed to coaching, mentoring may be considered a more specific form of professional development for early childhood providers and teachers to improve their quality of their classrooms or day care sites and improve their overall education in early childhood evidence-based practices. If teachers and day care staff improve their working knowledge and skills though education and training, they can implement new strategies and practices with children. This is done with the support of more skilled colleagues or "mentors." Mentoring is to receive not just the workshop training or classroom-based education but to receive the on-site support to implement the new information (Korkus-Ruiz, Dettore, Bagnato, & Hoi, 2007). Mentoring is thought to be a valuable way to help staff incorporate actual practices. One kind of mentoring activity may include developing a "plan of action" or "professional goals." Other mentoring activities may include modeling of evidence-based practices, facilitating staff in a professional development plan, providing resources for direct use with children or families and providing timely, systematic feedback about their classroom or center practices. Mentoring may involve a great amount of trust between the mentor and staff to address perceptions about child development and allow staff to view changing old practices without judgment or fear of negative performance reviews. Wearing a different "hat" for your many functions in a leadership role for Pre-K Counts may be challenging.

It is very significant that the mentoring be separated from employee evaluation or supervision. It is not the same as progress monitoring. In fact, to build employee supervision or performance evaluation into the process of mentoring may undermine the relationship between mentor and staff. But, having the luxury of separate functions becomes especially difficult when there are too few mentors available in the programs. The luxury of more than one staff was not available to all Pre-K Counts partners and often goals of the partnership may not have permitted much focus or time for on-site mentoring. When classroom goals and plans have more need for "practical supports" such as equipment or basic quality improvements of physical space, the mentoring needs of staff take more time to creatively implement. Separating roles of supervisor as opposed to mentor may create challenges for supervisors or grant writers, as they attempt to best serve their program.

What Were the Roles of Mentors?

Functions of coaching and mentoring for Pre-K Counts are divided into two main areas, management and staff development. Management functions include significant planning and organization. These functions may include any of the following in differing intensity and time:

- Build a community of partners.
- Receive and disseminate required materials and information from the state.
- Assess community and partner needs.
- Advocate for Pre-K Counts early childhood inititives.
- Write reports required by the state.
- Apply evaluation procedures.
- Attend required state meetings for training.
- Assist with grant writing.
- Develop procedures for partners to access STARS and PA Keys technical assistance.
- Order curriculum.
- Work with identified community leaders to support early childhood programs.
- Ensure child assessments are collected.
- Build use of literacy practices.
- Encourage sites to apply for STARS and utilize the resources.

Staff development functions may require some of the above management functions but also extend the quality goals by greater attention to staff development. These functions may include any of the following in differing degrees dependent on staff professional development needs.

- Coordinate and plan staff professional development.
- Coach each partner in his/her own individual professional development.
- Build early childhood professionalism.
- Assist sites in applying Early Learning Standards and curriculum applications.
- Mentor each staff member in evidence-based practices and quality enhancement.
- Build a community of learners.

There are other functions that depend on specific goals of Pre-K Counts grantees. These may vary and have a strong focus in some programs and no focus in others, depending on the needs of the partnership. These functions may include parent engagement, build transition practices, plan outreach activities for enrollment of children, provide materials and equipment to sites, support inclusion practices and provide consultation on specific topics (e.g. managing behavior and building social skills). In reviewing these numerous functions, it may be easy to see the challenges in meeting both quality initiatives of the state and professional development needs at the classroom level.

In summary, mentoring is complex and central to quality improvement at the level of child and teacher, teacher and parent and even child and parent relationship. Mentoring involves often a fine balance of both " coaching" and trusting relationship interaction with staff for change. Consultation in a quality improvement program such as Pre-K Counts requires forming effective coaching and sustained mentoring relationships.

OUTCOME: Ongoing Mentoring Improved Teaching and Program Quality

Mentoring occurred in the Pre-K Counts programs by various modes, strategies, and topics. Exhibits 6-1 to 6-6 display the frequencies of these mentoring variables which were coded for SPECS analysis through the collection of electronic logs from the PKC coaches via the SPECS Mentoring Monitor (see Appendix B).

Exhibit 6-1: Frequency of Communication Modes Used by Coaches

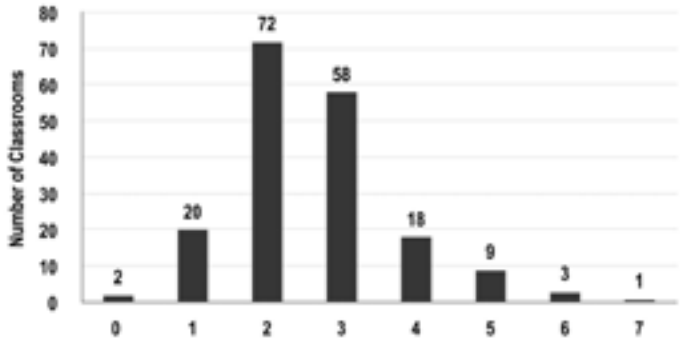


Exhibit 6-2: Frequency Distribution of Specific Communication Modes Used by Coaches

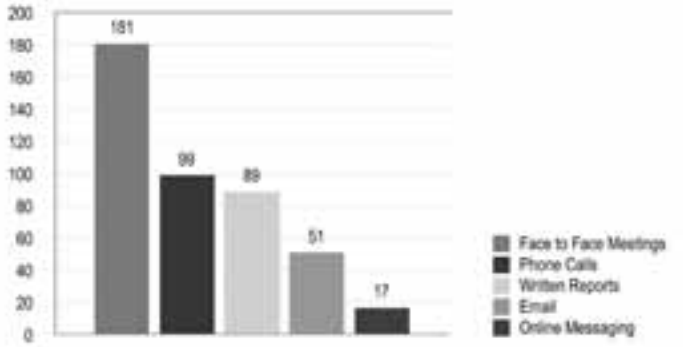


Exhibit 6-3: Frequency of Coaching Strategies Used by Coaches

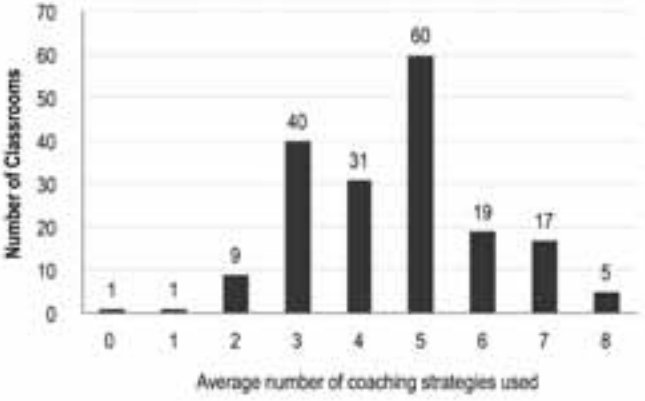


Exhibit 6-4: Frequency Distribution of Specific Coaching Strategies Used by Coaches

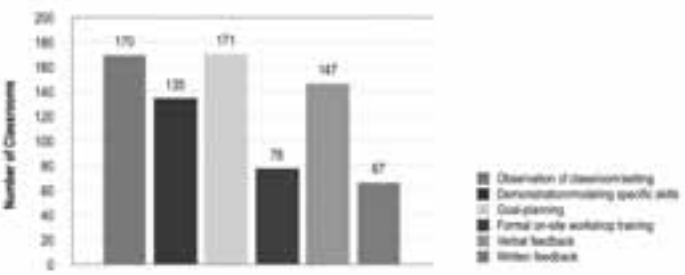


Exhibit 6-5: Frequency of Mentoring Program Quality Topics

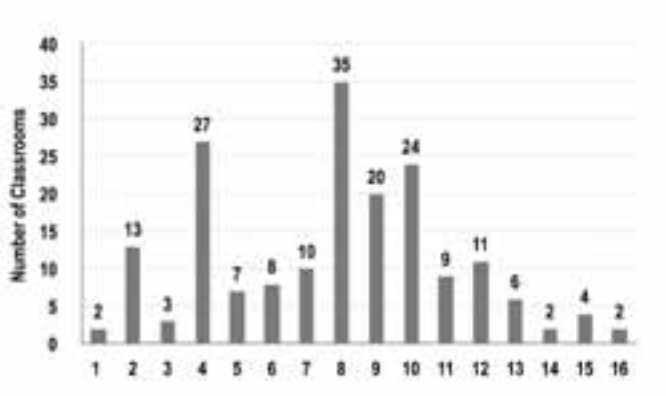
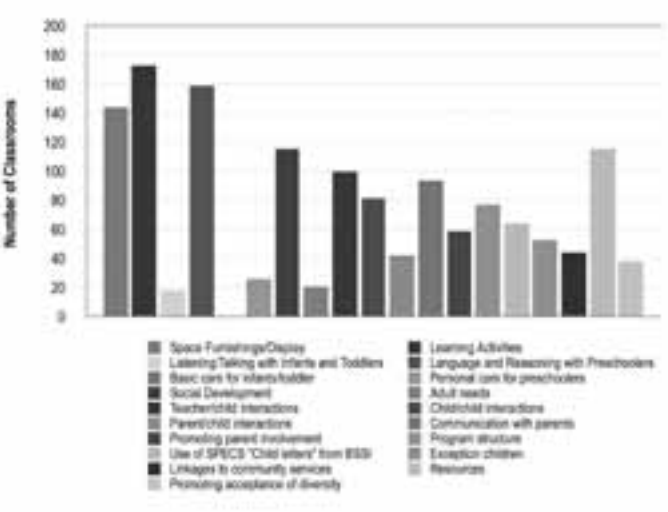


Exhibit 6-6: Frequency Distribution of Mentoring Program Quality Topics



As discussed in Appendix A, analysis of the impact of mentoring demonstrated that the variety of modes used by the coaches was the single most important variable which was partially responsible for improvements in program and teaching quality which improved children's reading, math, and daily living competencies at kindergarten transition. The greater the variety of communication modes used by coaches to guide teachers, the better their improvements in program quality and teaching. Specifically, these modes included:

- Face to face meetings
- Phone calls
- Written reports
- E-mail
- Online messaging

OUTCOME: Improved Program Quality Promoted Children's Early School Success

Was program quality the reason for the success of PKC children?

Results from the SPECS for PKC analysis show the following outcomes for program quality related to child success:

Specific Outcome Synopsis

- 45% of PKC programs made significant improvements in their quality per Keystone STAR level (p.<.01).
- Improvements in program quality had a direct influence on children's significant functional gains in language, reading, math, behavior, and daily living skills at exit from Pre-K Counts.
- Specifically, after controlling for variables such as gender, ethnicity, age, entry early learning competency score, and STAR level at entry, an increase in program quality was responsible for the difference in the level of early learning competencies at exit from PKC and kindergarten transition (p<.01).
- Children in high quality programs gained significantly more than children in low quality programs.
- Specifically, children in high quality programs demonstrated significantly higher (p<.01) competencies in spoken language, reading, math, and daily living skills than children in low quality programs.
- A higher level of program quality (between a STAR 3 and 4) is necessary to promote sustained child progress and success, especially for children with risks/delays.

Exhibits 6-7 to 6-9 illustrate clearly that 45% of PKC programs improved in their STAR level during the 3-year research phase of PKC. Improvement in STAR level is associated with observational changes in specific program characteristics and teaching practices as recorded on the Early Childhood Environment Rating Scales -Revised (Harms & Clifford, 2005). A Keystone STAR 3 level is associated with an average center ECERS level of 4.25 (no classroom can be less than 3.5) and a Keystone STAR 4 level, an ECERS level of 5.25 (no classroom can be less than 4.25) (G. Nourse, personal communication, August 14, 2009). It should be noted that Keystone STARS did not become fully functional as an operational entity until 2006-2007. Thus, progress occurred during an actual period of coaching of approximately 18 to 24 months.

Exhibit 6-7: Frequencies of STAR Level at Entry into Pre-K Counts

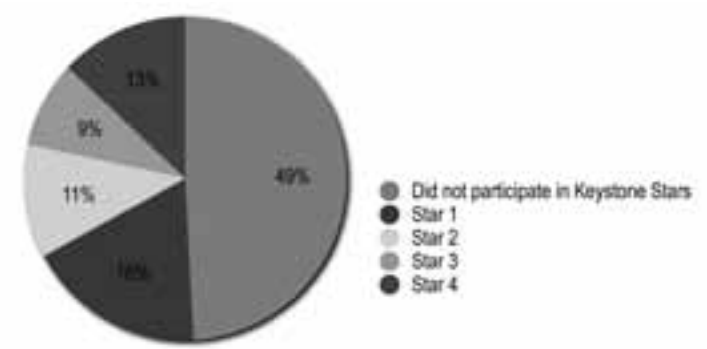


Exhibit 6-8: Frequencies of STAR Level at Exit from Pre-K Counts

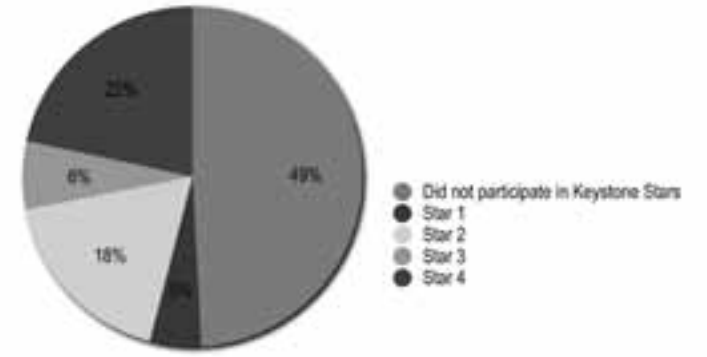
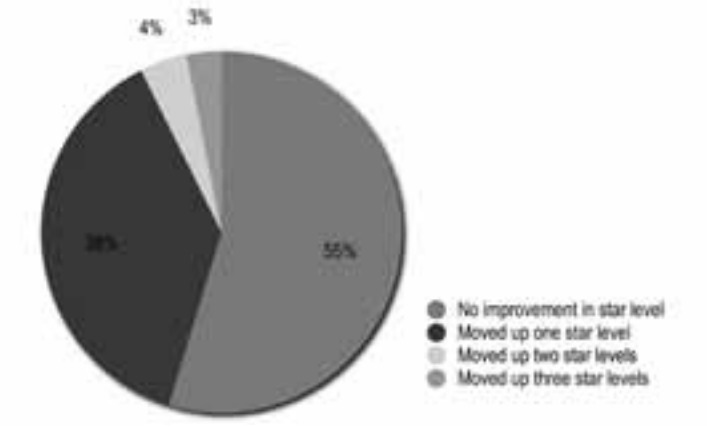


Exhibit 6-9: Frequency of Improvement in STAR Levels of PKC Programs



Improvement in PKC program quality shows clear associations with improvements in children's early learning competencies (Exhibits 6-10 to 6-13). PKC programs with higher program quality promoted the progress of all PKC children to a higher level of competence than lower quality programs, including children with developmental delays. Overall, higher quality is associated with a three to four standard score unit difference in early learning competency scores between the low and high quality groups of classrooms (one fifth of a standard deviation). Children's competencies in early learning are directly related to improvements in STAR level with strongest evidence for gains in spoken language and social and self-control behavior, and daily living skills for children with delays. The pattern of variable gains in children's skills related to improvement in program quality is illustrated in Exhibit 6-13. Our results indicate that a higher level of program quality (between a 3 and 4 STAR level) is necessary to promote sustained child progress and success, especially for children with risks or delays.

A series of regression analyses were conducted to determine if change in program quality (as indicated by an increase in STAR level) was related to the children's performance on their exit early learning assessment. Specifically, the regression analysis examined whether the variability, or difference, in early learning competencies could be explained by the variance (in this study, improvement) in Keystone STAR level.

Exhibit 6-10: Pattern of Comparative Child Competencies for Low (1-2 STAR level) vs High (3-4 STAR level) Quality PKC Programs

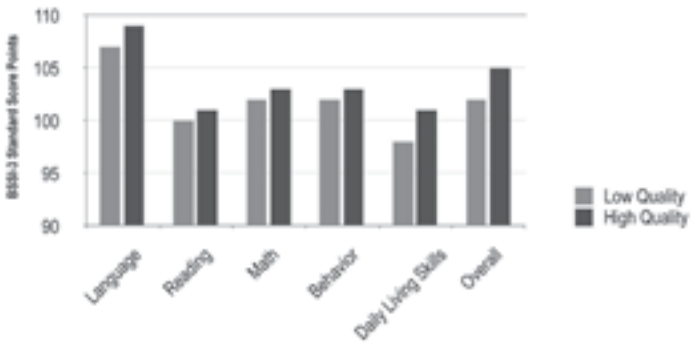


Exhibit 6-11: Comparative Child Outcomes for Low (1-2 STAR level) vs High (3-4 STAR level) Quality PKC Programs

Domain	Low Quality-Score*	High Quality-Score*
**Language	107 (18)	109 (18)
**Reading	100 (11)	103(12)
**Math	102 (8)	103 (9)
Behavior	102 (13)	103 (12)
**Daily Living Skills	98 (12)	101 (11)
**Overall	102 (14)	105 (14)

**BSSI-3 Mean Standard Score and Standard Deviation*
***p<.01*

Exhibit 6-12: Variability in Early Learning Competencies at PKC Exit Explained by Improvement in STAR Level

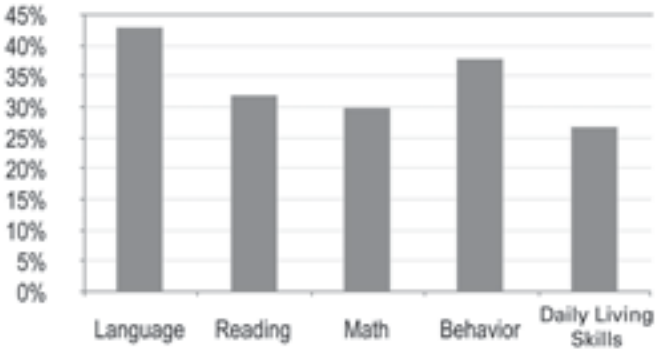
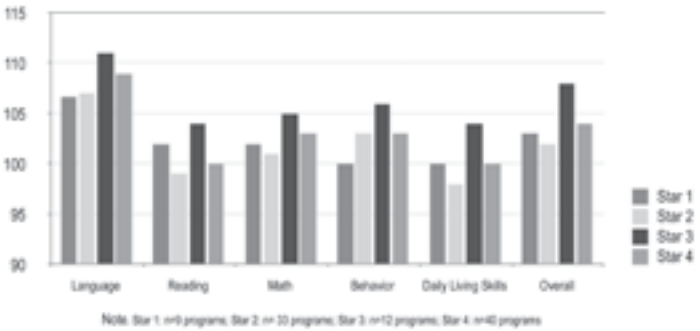


Exhibit 6-13: Pattern of Child Gains (Exit Level) in Early Learning Skills by Keystone STAR Level



How much time engaged in a quality PKC program did it take for vulnerable children to show functional progress?

Specific Outcome Synopsis

- Children participated in PKC for varying lengths of time; the effective "dosage" range for PKC was 4-24 months (Appendix A). (MEAN = 9.8 Months)
- Initial functional progress was achieved only after the average child spent at least 6.4 months in PKC.

How Are Improvements in Program Quality and Teaching Practices Related to Child Success?

Specific Outcome Synopsis

- The percent of classrooms with good program quality increased by nearly 20%.
- The percent of classrooms with minimal program quality decreased by nearly 25%.
- Teacher's instructional practices increased in quality and effectiveness by nearly 20%.
- Children's early learning competencies increased by 7 standard score units to match the national research criteria of 6.8 units.
- Clear relationships are evident among child progress and improvements in program quality features (e.g., activities and materials; language interaction) and teacher instructional behavior (e.g. instructional learning format; teacher facilitation; and student engagement)

The SPECS evaluation team selected 34 classrooms from the 21 participating Pre-K Counts partnership programs to conduct a qualitative and quantitative analysis of interrelationships among program quality, teacher's instructional practices, and children's learning.
To ensure that classrooms from each site were included in the sample, it was decided by the team to include two classrooms from each site. To do this, coordinators were asked to identify two classrooms in their sites that were the most different from each other and to explain how they were different. Coordinators also identified back-up classrooms in case the first choice classroom was not available on the day of the scheduled evaluation. For example, if the lead teacher was sick on the evaluation day, the back-up classroom was observed instead. Our goal was to compile a sample that included a range of classroom quality and types. Types varied in many ways such as by location (i.e. church-based, school district-based, center-based, rural, and urban), and by program (i.e. Montessori, Head Start, school district, early intervention, community support center, and YMCAs). This sample of classrooms was evaluated in the spring of both 2007 and 2008 using the ECERS-R screening version and the CLASS-modified version.

SPECS conducted **independent**, on-site observations using the screening version of the revised Early Childhood Environmental Rating Scale (ECERS-S; Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005), and a modified version of the Classroom Assessment and Scoring System (CLASS; Pianta, 2005) in order to support the results from the Keystone STARS study of program quality.

The ECERS-S and the CLASS were selected to capture important components of quality including aspects of classroom environment, instructional learning format used by teachers and student engagement with the teachers. The Early Childhood Rating Scale – Revised (ECERS-R; Harms, 2005) has been used by the SPECS team in past projects and widely used both nationally and internationally to assess components of program quality. Examination of the psychometric properties of this shorter, "screening" version (ECERS-S) support it's effectiveness to measure important dimensions of classroom quality (Cassidy, et al., 2005). Of the original 43 ECERS-R items grouped into seven subscales, the ECERS-S is comprised of 17 items grouped into two subscales. While this shorter version requires less time to complete, it correlates with the full ECERS-R scale.

The ECERS-S evaluates the classroom in two general areas:

a) Activities/Materials (nine items): This includes books and pictures, and activities that take place within the classroom (i.e., fine motor, art, blocks, dramatic play, nature/science, and math/number);

b) Language/Interaction (seven items): This area includes language reasoning (reasoning skills, informal use of language), interactions (supervision, staff-child interaction, discipline, and child-child interaction), and program structure (group time).

Each ECERS-S item is scored on a scale from one (poor/inadequate) to seven (excellent). To calculate average subscale scores, the items in each subscale are summed and then divided by the total number of items scored. The total mean scale score is the sum of all items scored for the entire scale divided by the number of items scored.

The SPECS Evaluation team modified the CLASS to measure specific teacher behaviors reflective of positive teacher-student interactions. The modified version includes two general areas:

a) Instructional Learning Formats (four items): This includes utilization of materials, teacher facilitation, and modalities

b) Student Engagement (two items): This includes the quality and type of student engagement observed in the classroom (active vs. passive, and the relative maintenance of interest over the class time).

Each of the six modified CLASS items are rated on a scale from one (poor/inadequate) to seven (excellent). All six items are averaged to calculate the total CLASS score.

SPECS program evaluators received ECERS training and established inter-rater reliability. The four-hour training presented by an ECERS expert, focused on the 16 items in the screening version. Six CLASS items were selected to include in the evaluation. The SPECS evaluation team grouped the CLASS ratings into three groups: low (scores of one and two), mid-range (scores of three, four and five), and high (scores of six and seven). Each of these groups was defined for each item. For example, for the Student Engagement item, a low rating is described as "the majority of students appear distracted or disengaged, a mid-rating is described as "the majority of students are passively engaged, listening to or watching the teacher", and the high rating is described as "most students are actively engaged – frequently volunteering information or insights, responding to teacher prompts, and/or actively manipulating materials." SPECS program evaluators met and reached a consensus on each item and the criteria for rating those items.

The SPECS Evaluation team established reliability on both the ECERS-S and the CLASS modified version through classroom observations in groups of two and three raters. Most groups consisted of experienced raters. An experienced rater was considered someone who had been trained before on the ECERS and had conducted many evaluations in the past. The classroom observations to establish reliability and the Pre-K Counts classroom observations lasted about four hours. The observation time also included a brief interview with the teacher to collect information that was not easily observable.

A total of sixty-seven program assessments were completed during the spring of 2007 and the spring of 2008. Thirty-four classrooms were assessed in the spring of 2007 and thirty-three classrooms were evaluated in the spring of 2008. One class room was not evaluated in the spring of 2008 because the center no longer participated in the partnership. The demographics for the final sample in the study are presented in the Exhibits 6-14 and 6-15 below. Only children with two BSSI-3 time points, and remained in the same classroom from Spring 2007 through Spring 2008 were included in this analysis.

Exhibit 6-14: Frequency Distribution of Gender

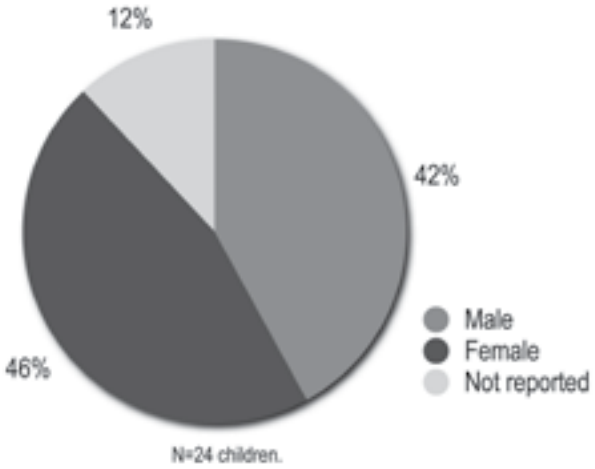


Exhibit 6-15: Frequency Distribution of Ethnicity.

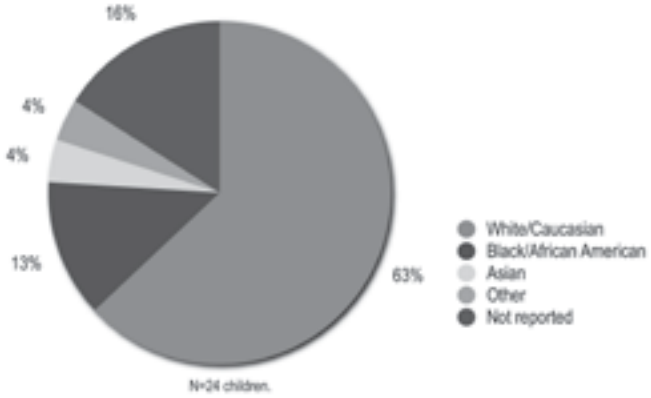
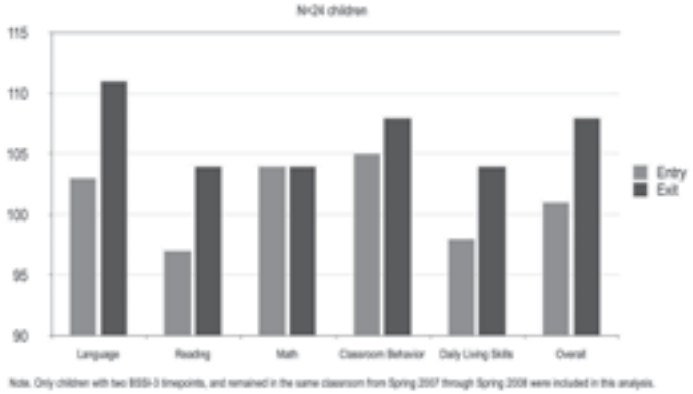


Exhibit 6-16: Early Learning Progress of Children



Note. Only children with two BSSI-3 timepoints, and remained in the same classroom from Spring 2007 through Spring 2008 were included in this analysis.

Exhibit 6-17: Early Learning Progress of Children

Domain	Entry into PKC	Exit from PKC
Language	103 (13)	111 (13)
Reading	97 (10)	104 (7)
Math	104 (8)	104 (6)
Behavior	105 (8)	108 (8)
Daily Living Skills	98 (10)	104 (7)
Overall	101 (10)	108 (9)

Exhibit 6-18: ECERS and CLASS Improvements for Classrooms

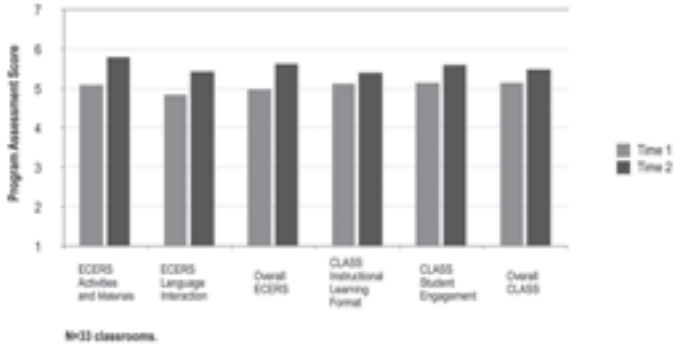


Exhibit 6-19: ECERS and CLASS Progress of Classrooms

Program Assessment Domain	Entry into PKC	Exit from PKC
ECERS Activities and Materials	4.77	5.24
ECERS Language Interaction	4.85	5.44
Overall ECERS	4.81	5.33
CLASS Instructional Learning Format	4.83	5.40
CLASS Student Engagement	5.11	5.39
Overall CLASS	4.92	5.40

Analyses of the data collected on the randomly selected sites show that the children demonstrated significant gains in language, reading, daily living skills, and overall school readiness skills (p<.01) (Exhibits 6-16 and 6-17) . Clear relationships are evident among child progress and improvements in program quality features (e.g. activities and materials, language interaction) and teacher instructional behavior (e.g. instructional learning format, teacher facilitation, and student engagement) (Exhibits 6-18 and 6-19).

Descriptive analyses of the program assessments indicate that the classrooms were rated as average on both the ECERS and CLASS at pre-test, and then again on the post-test assessments. Further exploration of the program data showed the following as illustrated in Exhibits 6-20 to 6-23:

- The percent of classrooms rated as demonstrating good evidence of quality increased from 49% to 67% on the ECERS
- The percent of classrooms rated as demonstrating minimal evidence of quality decreased from 49% to 27% on the ECERS
- The percent of classrooms rated in the high range increased from 30% to 46% on the CLASS overall score
- The percent of classrooms rated in the mid range decreased from 64% to 46% on the CLASS overall score

Exhibit 6-20: Percent Distribution of Overall ECERS Scores at Time 1

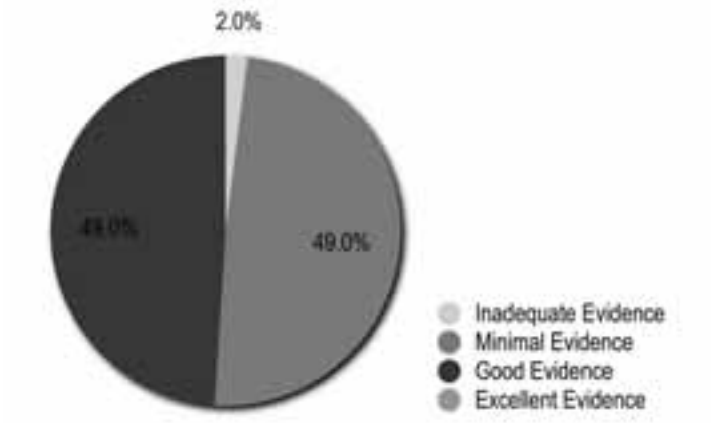


Exhibit 6-21: Percent Distribution of Overall ECERS Scores at Time2

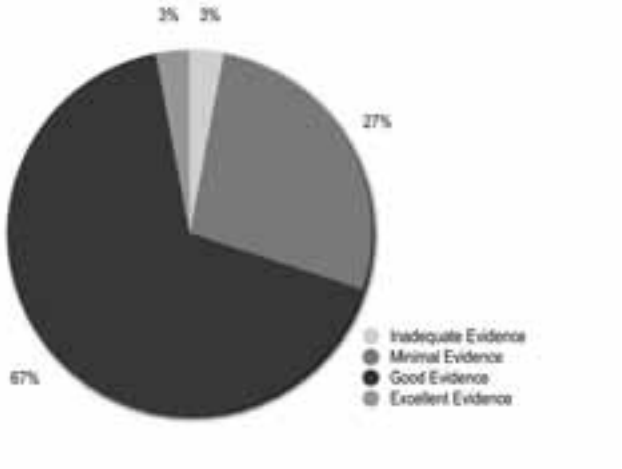


Exhibit 6-22: Percent Distribution of Overall CLASS Scores at Time 1

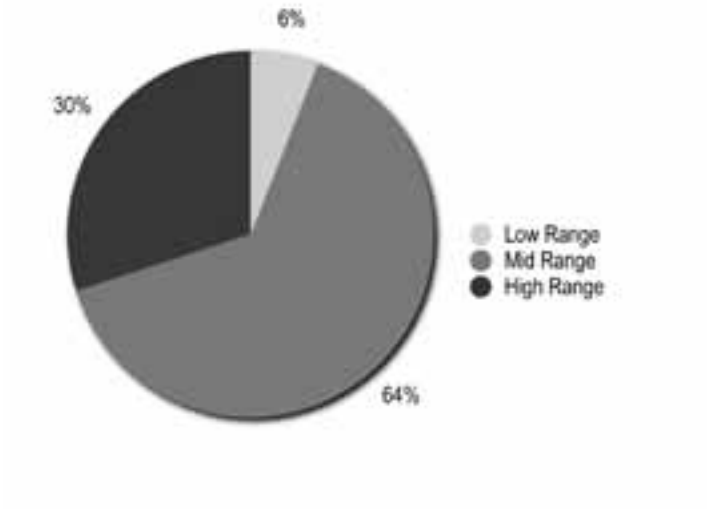
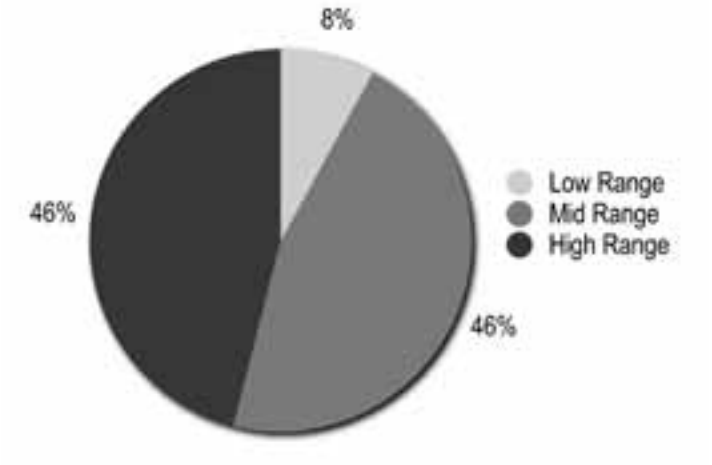


Exhibit 6-23: Percent Distribution of Overall CLASS Scores at Time 2



"Take-Home" Points

- Higher program quality, effective teaching, and nurturing care are necessary and vital for young children's positive growth, development, early learning, and school success.
- A process of structured coaching, optimally mentoring, aligned with professionally sanctioned standards ensures improvements in program quality and teaching practices.
- A structured, uniform, and evidence-based process for coaching and mentoring would refine and improve the already effective Keystone STARS process.
- Methods to measure and monitor the content and process of coaching and mentoring are recommended to improve the Keystone Stars process.
- Measuring and interpreting child outcomes with limited data on programmatic elements hinders the advancement of accurate and positive accountability efforts.

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DID PARTNERSHIP FEATURES IN THE PRE-K COUNTS PROGRAMS BENEFIT PROGRAMS AND CHILDREN?

CHAPTER 7

FAST FACTS

Working Partnerships	…partners must have shared values for high quality programs and create a seamless system of community-based care for young children
Parental Involvement	…parents are involved in all aspects of pre-k programs. Creating a partnership with families that begins the foundation for future school success and achievement. Appropriate training should be offered.
Quality Program Design	…regardless of where pre-k services are delivered, they are designed to stimulate child development and school achievement.
Leadership Network	…consisting of senior representatives from the participating school districts and their partners as well as others.
Community Engagement and Leadership	…participants at many levels will become partners in community engagement advancing the pre-k message to key opinion leaders at the local and state level.
Sustainability	…be futuristic in their thinking. Strategic planning will include methods and strategies for sustaining funding, as well as expansion of funds.

Pre-K Counts is a public-private initiative in Pennsylvania designed to build and strengthen pre-kindergarten partnerships, bringing together the school district, Head Start, child care, early intervention, and other community agencies. Pre-K Counts partnerships were built upon a number of core **expectations** detailed in the original RFP from OCDEL for PKC grantees which are summarized in the FAST FACTS above (Partnership for Quality Pre-Kindergarten, 2005).

One of the initial partners stated in a report (Pittsburgh Public Schools, 2006/07) "Throughout this first year of implementation, the project has experienced its share of successes and challenges. As with all first-year projects, ours had plenty of starts and stalls that were greatly influenced by the planning and coordination process. However, our successes have outweighed our challenges". Some of those successes listed were: hosting monthly partner informational sharing meetings, relationship development between coaches and classroom staff, and goal attainment related to Keystone STARS and/or Early Learning Standards.

Another statement made in the Grant Summary mentioned above by the same partner was, "This first year of implementation has focused upon the initial building of relationships with each of the partners and their staff. For our next year, we want to concentrate on deepening our level of support and heighten opportunities given to direct teaching staff" (Pittsburgh Public Schools, 2006/07).

One of the main elements of Pre-K Counts was to develop sustainable "working partnerships" in communities to help improve and maintain the quality of local pre-kindergarten programs. Based on survey data collected from partners, many factors affected this element of partnership, including (Mitchell, 2007):

- Leadership
- Benefits to members
- Respect, understanding, and trust
- Goals and objectives
- Investment in process and outcomes
- Adaptability
- Productivity
- Partnership decision making
- Resources

As Pre-K Counts builds to improve the quality of preschool programs in Pennsylvania, some areas are highlighted as "key" to this process. These include such factors as: teachers with early education credentials and expertise; smaller class size with an emphasis on more one-on-one time with teacher; and using a quality curriculum in the classroom. The commitment of the partners reflects greatly on the expected program outcomes of Pre-K Counts of having a greater investment in early childhood, establishing a distinct high-quality program, and engaging community agencies to not only support early education, but help sustain these working partnerships.

Program Partnership Classification: Expectations & Elements

Based on existing data from PKC Management, the SPECS research team developed a rubric to measure the extent to which each Pre-K Counts grantee program implemented the requirements and expectations of partnership, and the elements of the partnership. The rubric was created by examining the requirements of the initial request for proposal of the Partnership for Quality Pre-Kindergarten. Specifically, rubric categories were defined by the core expectations of the partnerships, as outlined in the proposal: (1) Working Partnerships, (2) Parental Involvement, (3) Quality Program Design, (4) Leadership Network, (5) Community Engagement and Leadership, and (6) Sustainability. The SPECS research team evaluated each partnership by examining the quarterly reports completed by each grantee program, and then completing the rubric. A combination of qualitative and quantitative data and analysis methods were used by SPECS to reach consensus conclusions about the impact of "partnership" on PKC programs. A total of 16 programs were rated by

the research team. The partnership rubric is included in **Appendix B.**

To What Extent Did the Programs Implement Partnership Expectations and Elements?

All PKC partnerships were directed to include the following partnership elements in their application for funding. Variety is evident in the frequency with which the applicants included these partnership elements.

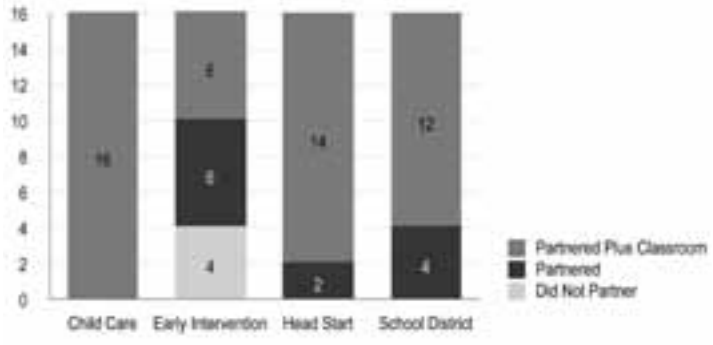
Working Partnership Elements

- School District
- Head Start
- Early Intervention
- Child care

Our analysis (Exhibit 7-1) shows the following findings:

- All 16 of the rated PKC programs developed partnerships and created classrooms in community childcare programs.
- Six of the programs developed partnerships with Early Intervention programs and classrooms.
- Fourteen of the programs developed partnerships with Head Start programs and shared classrooms.
- Twelve of the programs developed partnerships with School District programs and shared classrooms.

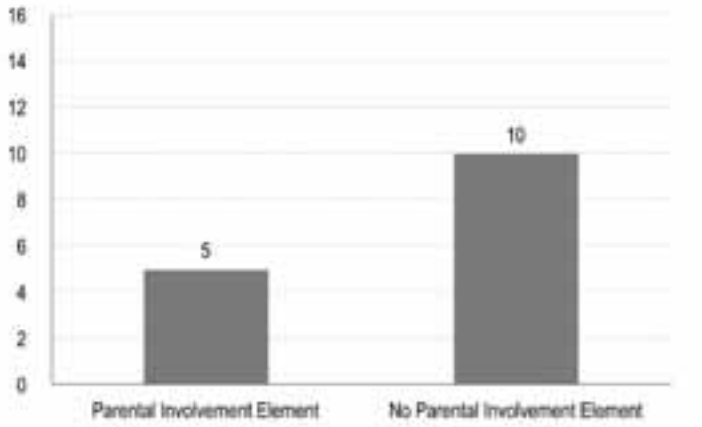
Exhibit 7-1: Frequency of working partnership elements implemented by programs



Parental Involvement Element

- Five of the rated sixteen programs included parental involvement as a partnership element in their model (Exhibit 7-2).

Exhibit 7-2: Frequency of parent involvement implemented by programs



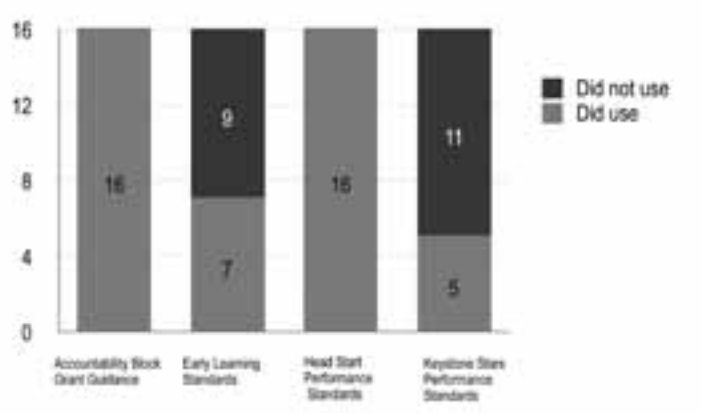
Quality Program Design Elements

- Early Learning Standards
- Accountability Block Grant Guidance
- Keystone Stars Performance Standards
- Head Start Performance Standards

Our analysis in Exhibit 7-3 shows the following results:

- Seven of the sixteen rated programs utilized the Pennsylvania Early Learning Standards framework in the partnership model.
- Five of the programs utilized the Keystone Stars Performance standards framework.

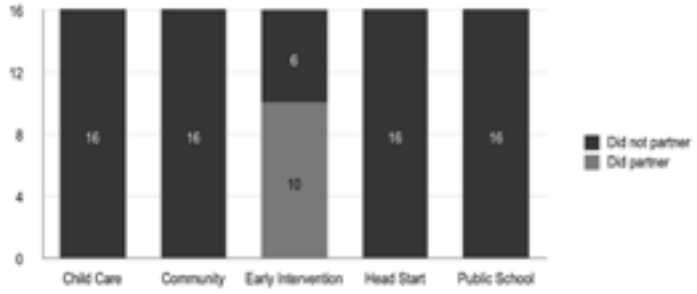
Exhibit 7-3: Frequency of quality program design elements implemented by programs



Leadership Network Elements

- School District
- Head Start
- Early Intervention
- Child care
- Community representative
- All 16 of the rated programs rated included representatives from child care, community, Head Start, and public school programs.
- Ten of the programs included representatives from Early Intervention programs.

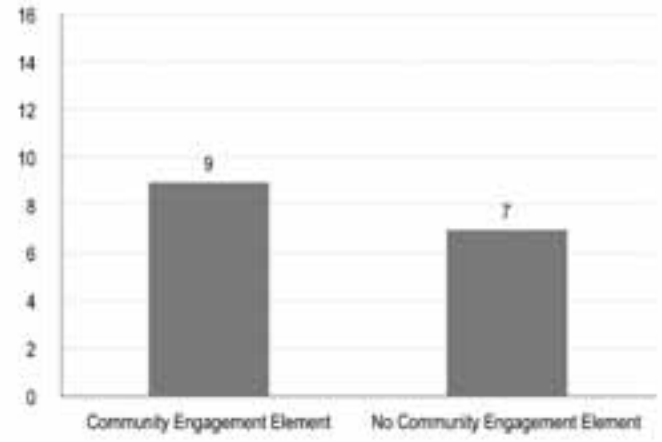
Exhibit 7-4: Frequency of leadership network elements implemented by programs



Community Engagement and Leadership Elements

- Nine of the sixteen rated programs included community engagement as an element in the partnership model (Exhibit 7-5).

Exhibit 7-5: Frequency of community engagement implemented by programs



Sustainability Element

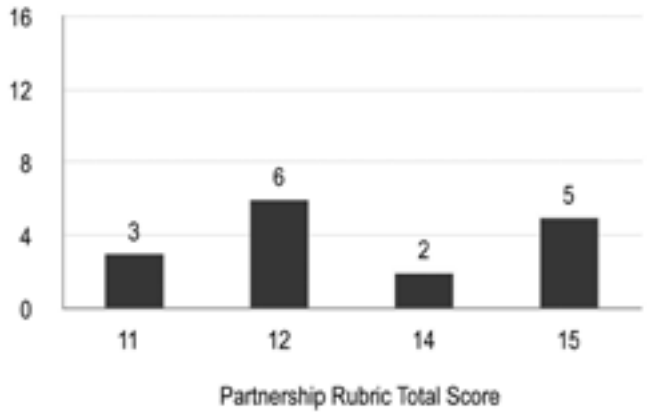
- Only one of the sixteen rated programs included a sustainability plan element in the partnership model (Exhibit 7-6).

Exhibit 7-6: Frequency of sustainability implemented by programs

Extent of Partnership Element Implementation

- A total partnership rubric score was calculated by summing each of the above element scores. A total of 18 points was possible. The programs' total scores ranged from 11 to 15.

Exhibit 7-7: Total partnership rubric score



OUTCOME: Extent of Implementation of Partnership Expectations and Elements Promoted Children's Success?

To examine the impact of the extent of partnership on child outcomes, the total partnership rubric scores for each program were divided into two categories (Exhibit 7-8): high-extent of implementation of partnership elements and low-extent of implementation of partnership elements. Results of the qualitative and descriptive analyses are presented in the tables below.

Overall, our analysis reveals the following conclusions regarding the interrelationship between extent of partnership in PKC and child outcomes:

- Children in programs that implemented a greater number of partnership elements demonstrated significantly higher skills in all areas of early learning than children in programs that implemented a few number of partnership elements ($p<.001$) (Exhibit 7-9 and 7-10).

Exhibit 7-8: High vs. low implementation of partnership elements

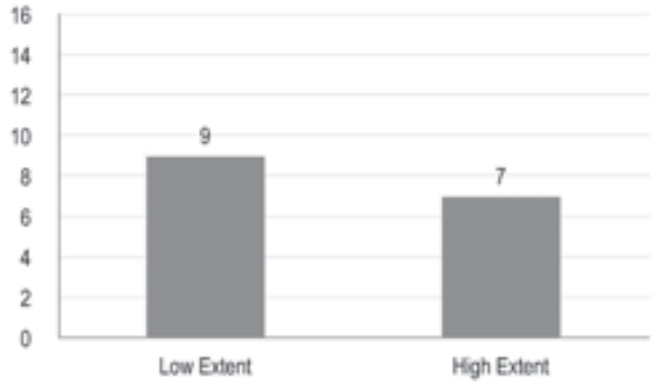


Exhibit 7-9: Comparative early learning competency pattern at PKC exit at transition by level of partnership implementation

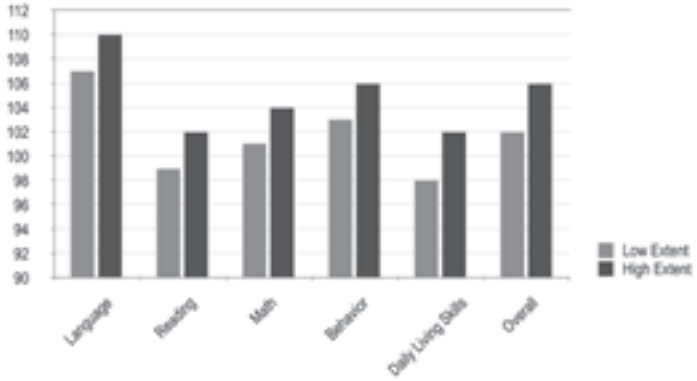


Exhibit 7-10: Early learning competency levels at PKC exit at transition by level of partnership implementation

BSSI-3 Domain	Low Extent-Score*	High Extent-Score*
Language	107 (18)	110 (16)
Reading	99 (11)	102 (10)
Math	101 (8)	104 (8)
Behavior	103 (13)	106 (12)
Daily Living Skills	98 (11)	102 (11)
Overall	102 (13)	106 (13)

**BSSI-3 Mean Standard Score and Standard Deviation*

What are Examples of Some Innovative and Effective PKC Partnerships?

Woodland Hills School District PKC/4KIDS in Braddock-Heritage Community Initiatives (www.HeritageCommunityInitiatives.org)

- A Direct Instruction (DI) add-on to a Developmentally-Appropriate (DAP) curriculum reduced developmental delay and promoted the early school success of high risk children in reading (Salaway, 2008).
- 4KIDS used a grant from a private donor to train select specific teachers as small group "interventionists" using the Language for Learning curriculum, a fast-paced, interactive, question-answer direct instruction model that has been field-validated in other Head Start and early childhood programs.
- All at-risk children continued to receive programming using the developmentally-appropriate (DAP) curriculum model in their NAEYC accreditation.
- However, sequentially, children were randomly assigned to a DI-add-on group and all children eventually received the DI supplement.
- Overall, results demonstrated that both the DAP and DI models were effective ($p<.01$) in promoting progress and successful transition to kindergarten, but the DI model ensured significantly higher levels of performance and skill acquisition in reading and language and social skills than the DAP model alone ($p<.05$). (see Exhibits 7-11 to 7-15). (Appendix A)
- 4KIDS demonstrated that the 2.4% of children who remained delayed could be promoted using the DI model.

Exhibit 7-11: Comparison of DI-Add-On vs. DAP-Only for Progress in Number Skills

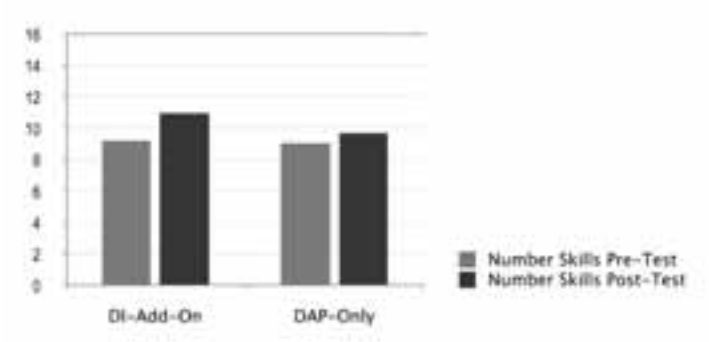


Exhibit 7-12. Comparison of DI-Add-On vs. DAP-Only for Progress in Letter and Word Skills

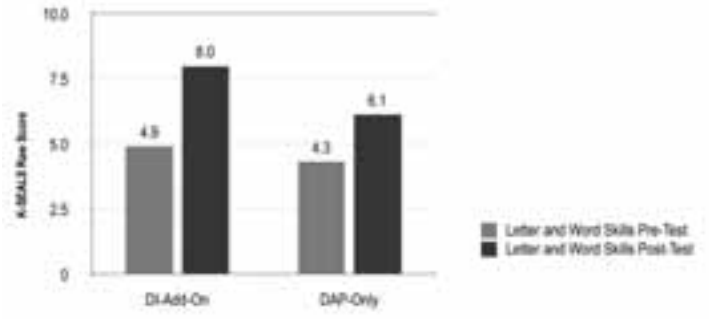


Exhibit 7-13: Comparison of DI-Add-On vs. DAP-Only for Progress in Expressive Language Skills

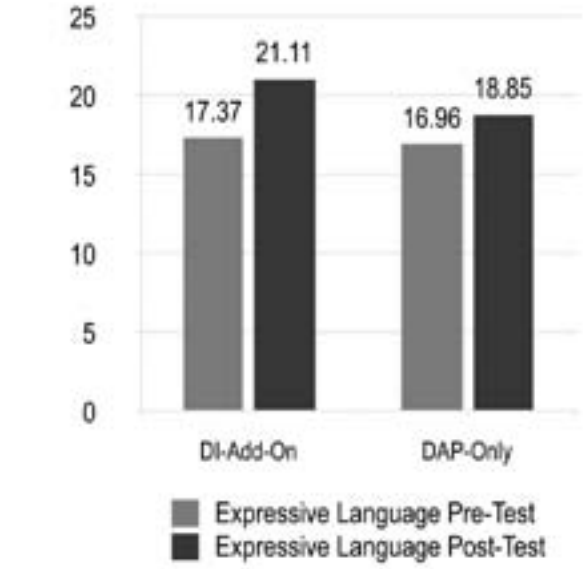


Exhibit 7-14: Comparison of DI-Add-On vs. DAP-Only for Progress in Receptive Language Skills

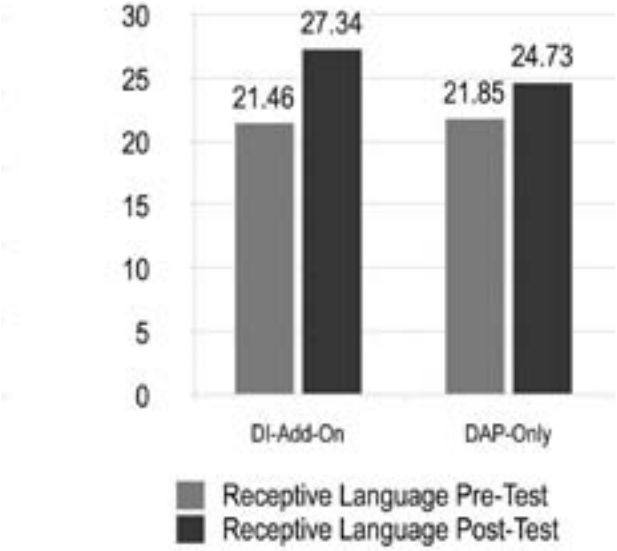
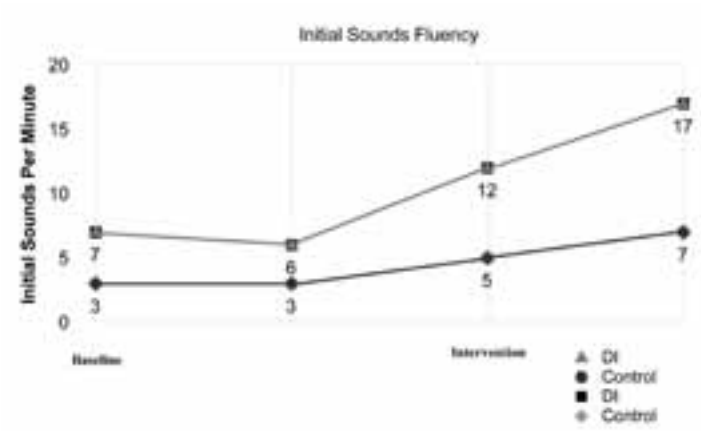


Exhibit 7-15: Comparison of initial sounds fluency for both groups across intervention



Pittsburgh Public Schools PKC

- Using the full array of early childhood partners, PPS enhanced their fully inclusive and integrated early childhood "system" within the school district using PKC funds for Pre-K classrooms, and Head Start centers as the inclusion settings for children in early intervention with developmental delays and mild to severe developmental disabilities, including those with chronic medical conditions.

Tyrone School District PKC

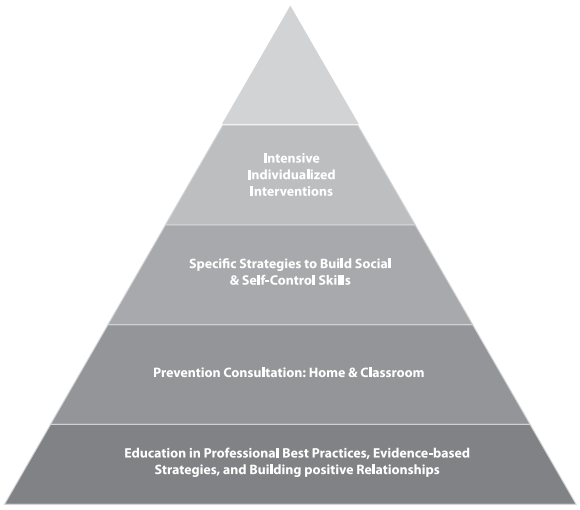
- A unique central "community campus" model was created in Tyrone to unify early care and education programs in school district classrooms and with the primary grades

Woodland Hills School District PKC and Pittsburgh Public Schools PKC

- Both PKCs developed a collaborative relationship with the HealthyCHILD Developmental Healthcare Support Program from University of Pittsburgh/ Children's Hospital to help teachers to effectively build critical social and self-control skills for children through direct in-classroom mentoring (Exhibit 7-16) and the implementation of a "response-to-intervention" model of a graduated continuum of prevention to intervention supports (Exhibit 7-17) using the following model:

Exhibit 7-16: HealthyCHILD operational model

Exhibit 7-17: HealthyCHILD graduated prevention to intervention supports



Tussey Mountain PKC

The unique mission and model developed in the Tussey Mountain partnership created child care provider training and credentialing at high school graduation for high school students in order to create a work-force development initiative.

Testimonials of PKC Partners

- "The benefits of Pre-K Counts to at-risk children are clear. Children that receive this level of quality preschool are better prepared for kindergarten. These children are prepared both academically and with important non-academic skills such as dispositions for learning, interpersonal interactions, self-esteem, and self-control. It makes a world of difference if the child comes to Kindergarten with these skills already in place. They are ready for the Kindergarten curriculum and they have the aptitude to achieve throughout their academic careers". **Carol Barone-Martin, Executive Director, Early Childhood Education, Pittsburgh Public Schools.**

- The Scranton School District had a very positive experience with Pre-K Counts. With the Pre-K Counts funding, we provided literacy coaches who worked with the staff at the childcare and preschool centers. The

benefits were tremendous. The child care staff received educational supplies and professional development that they would not have had access to otherwise. The children were able to use literacy materials that were not available in the child care and preschool settings prior to Pre-K Counts. The exchange of ideas between the child care centers and preschool classrooms was very beneficial to all involved". **Anne Salerno, Chapter 1 Administrator, Scranton School District**

- "During the two years of our coordination of Pre-K Counts, a Public Private Partnership, we witnessed measurable improvements across all classrooms. In my opinion, the part of this program that truly made it stand out above all others was the coach – staff mentoring component. We were incredibly fortunate to have hired two Mastered Degreed professionals that supplied the sites with their infinite wisdom, expertise and innovative ideas on a weekly basis. Coupled with the funding for equipment, curriculum, and peer interaction in addition to first class trainings; this program was second to none. We, along with our partners were very sad to see it end. However the positive impact of this program has had a lasting impression on this region and the seventeen classrooms and close to 500 students that benefited from this experience". **Elaine Errico, Director, Success By Six, United Way of Lackawanna County**

- "The PreK Counts private/public partnership (PKC) had a tremendous impact upon the Harrisburg PreK Program (HPP). Most significant was the ability to increase the number of instructional coaches who greatly impact classroom teachers' instructional practices. The opportunity for coaches and other staff to participate in high quality professional development opportunities (TRIP training with Cathy Feldman) was of great import. It provided authentic and meaningful strategies to enhance the strong oral language emphasis that is the foundation of HPP. Our staff enjoyed working with the SPECS staff. Their professionalism, support and ability to work with us and our prek model was greatly appreciated". **Debra W. Reuvenny, Director, Early Childhood Program, Harrisburg School District**

- "The Pennsylvania Pre-K Counts Public/ Private Partnership created the foundation for our initial outreach and the building of a comprehensive partnership known as PEAK – Pottstown Early Action for Kindergarten Readiness. PEAK's overarching goals encompass the following: improving school readiness through community outreach, family engagement, work force development, quality improvement, health and wellness, and kindergarten transition. Thanks to PA Pre-K Counts Public/Private Partnership, community child care providers in Pottstown are unified and functioning as one entity rather than competing, as they were formerly. Our families and the Pottstown School District are reaping the benefits of children transitioning to kindergarten who are now better prepared to learn and achieve". **Jeffrey R. Sparagana, Ed.D., Director of Education and Human Resources, Pottstown School District**

- "Pre-K Counts has given the Tyrone Area School District a wonderful opportunity to provide quality early childhood educational experiences to our community's children. Our program reaches not only a large number of children but it includes the families, as well. Our teachers work closely together to make sure that we are moving towards the same goals and provide a great deal of support to each other. We share ideas, people, classrooms, and materials. We have a wonderful resource room full of curricular materials, provided by Pre-K Counts, which enhance our teaching and provide diverse learners with exactly what they need. Our Early Childhood Center is a wonderful environment where we are all growing and learning together: the staff, the children and the families. I am so proud to be a part of such

an innovative and beneficial program". **Shana Smith, Full Day K4 Teacher, Tyrone Area Elementary School.**

- "At the Heritage Community Initiatives, we have learned that the high-quality research offered by the SPECS team in Early Childhood Partnerships over 10 years has provided strong evidence about the efficacy of specific practices in our 4 Kids Early Learning program. Implementing classroom practices that use reliable evidence about curriculum design, special programming, interventions, teacher training, and educational approaches, has proven highly effective in promoting superior academic achievement". **Robert M. Grom, President, Heritage Community Initiatives.**

- "Dr. Bagnato's SPECS Team's focused, high quality evaluation research has helped us in many important respects. First, it documents the impact and outcomes of our high-profile public-private Pre-K Counts partnerships. Second, kudos to Dr. Bagnato for finding a way to communicate our positive results in a digestible manner that can reach lay stakeholders including civic and elected leaders, and business leaders and help them to understand the impact in terms and language that works for them". **Harriet Dichter, Deputy Secretary, Office of Child Development and Early Learning, Departments of Education Public Welfare, Commonwealth of Pennsylvania.**

"Take-Home" Points

- Child outcomes are influenced by important programmatic and systemic features which must and can be measured in program evaluation research.

- Extent of the partnership in terms of the specific operational features included influences on both program quality and child outcomes.

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Mitchell, A. (2007). PreK counts in Pennsylvania results of the 2006 partnership survey: Measuring partnership in PreK counts summary report. Early Childhood Policy Research.

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Salaway, J.. Efficacy of a direct instruction approach to promote early learning. Ph.D. dissertation, Duquesne University, United States -- Pennsylvania. Retrieved October 24, 2009, from Dissertations & Theses @ Duquesne University.(Publication No. AAT 3303027).

WHAT ARE THE "LESSONS LEARNED" FROM SPECS FOR PKC FOR POLICY, PRACTICE AND RESEARCH IN PA AND THE U.S.?

CHAPTER 8

FAST FACTS

- Specific features of PKC seem to make a difference.
- Future research is needed on preschool to school connections and continuity.
- A mentoring model and rigorous documentation is needed to enhance Keystone STARS.
- SPECS for PKC research can help prospective programs make strategic decisions.
- PKC partnerships must embrace and include all types of community ECI partners.
- Inclusion works and benefits all children.
- Maximize Early Head Start and Head Start as a key part of the foundation for PKC.
- Response-to-intervention is a key to effective and integrated service delivery in PKC.
- Authentic Assessment is the most effective form of measurement for PKC purposes.
- The best measurement methods for both children and contexts must be re-examined for use in the PKC system.
- Commitment to standards underlies the success of PKC.

The Heinz Pennsylvania Early Childhood Initiatives (ECI) was clearly the forerunner of Pre-K Counts in Pennsylvania. Bagnato and colleagues (2002) conducted the longitudinal studies of the impact and outcomes of ECI in the Pittsburgh region, Erie, York, Central PA, and Lancaster from 1997 to 2005. As a result of ECI, Bagnato (2002; see Chapter 11) derived conclusions about the "lessons learned" for ECI for future policy, practices, and research in PA. Some of those lessons learned directly influenced the development of the PKC model (e.g., integral linkages through partnerships among schools and ECI programs; focus on standards; the primacy of authentic assessment from Pre-K through K). Some of the same lessons learned from 2002 are still quite applicable to the future of PKC.

We offer 11 **lessons learned** derived from the SPECS for PKC research (and informed by the ECI research) for consideration by policymakers, practitioners, and researchers to enhance PKC in the future. The sections below are meant as implications and "guide-points" of the PKC research for consideration by OCDEL and the Governor's Pennsylvania Early Learning Council (ELC) to influence public policy, professional practice, and future research in early childhood intervention/early care and education. We believe that points below have national applications and implications as well.

1. Specific features of PKC seem to make the difference.

For too long, in both Pennsylvania and across the U.S., stakeholders repeatedly asked whether pre-kindergarten or early childhood intervention programs are effective—Can it work? After nearly 40 years of research in the U.S. and after, at least, 25 years of research in Pennsylvania, the unequivocal answer is yes--certainly! Pre-K Counts in Pennsylvania for Youngster's Early School Success—end of story.

It is time that we stop asking the "can it work?" question. We must start asking the "does it work?" question as Guralnick (1991) posed in his seminal article about the future of early childhood intervention research for practice. "Does it work" is a much more complicated question since we need to identify the specific programmatic and ecological (i.e., family, environmental, geographic, cultural) features which enable a program to work. We must identify what works, where, under what conditions, and for whom. This is difficult, yet doable. The SPECS for PKC research coupled with the ECI research sheds light on the "does it work?" question.

Like most research, stakeholders in PKC were most interested in the end result, in this case, how well the children did. While very important, children do not develop in a vacuum; something(s) has to have an impact on how well children do. While most of the resources of SPECS for the PKC research had to focus on the children, we devoted additional (and unfunded) time and energy to focus on the most salient features of the PKC "intervention" to determine their influence on child success. While viewed as only preliminary findings, the following programmatic features appear to have enhanced the success of all children in PKC.

- Increased participation and time engaged in the program's activities
- Ongoing use of a variety of coaching/mentoring modes used in the Keystone STARS process with teachers and program directors to enhance program quality and their specific instructional and management practices
- Improved overall program quality aligned with professional standards of practice (ECERS; NAEYC; PAELS)
- Improved teaching practices through a higher frequency of use of specific instructional strategies (e.g., instructional learning formats; facilitation; student engagement)
- Applied use of feedback from authentic assessments about the individual competencies and strengths and needs of children to plan goals and to communicate with parents

The children in programs whose teachers engaged in these activities showed enhanced progress in acquiring critical early learning skills. **Future research must focus nearly exclusively on the enabling features of programs and contexts which promote success for children**. Research on global dimensions is not useful (i.e., comparing a specific program against no program); applied community-based research in real-life, not contrived settings on specific programs and elements will yield the "practice-based evidence" that can be immediately applicable for programs in community settings (for example, studying the value-added effect of a direct instruction component in developmentally-appropriate program arrangements; studying the impact of effective elements of activity-based intervention models in ECI settings). The table below summarizes both qualitative and quantitative evidence of the six specific programmatic features of PKC partnerships which fostered children's early learning:

PKC Program Feature	Description
Increased time of participation and engagement in the program	Children who spent between 10 and 24 months engaged in the program's activities had the best early learning outcomes.
Variety of coaching/mentoring modes	A wide variety of mentoring communications modes and tactics used by coaches with teachers/providers best enhanced teaching practices, overall program quality and promoted child progress.
Improved overall program quality	Children in programs which improved to higher quality (Keystone STARS 3-4) had better early learning outcomes than children in programs with lower quality and negligible improvement (Keystone STARS 1-2).
Alignment of practices with professional standards	PKC benefited from policies which aligned assessment, curricular content, teaching, program quality, and expected outcomes with state and professional standards (ECERS, Keystone STARS, PAELS, and NAEYC).
Improved teaching practices	Higher quality programs were distinguished also by higher levels of teacher's use of specific instructional strategies and engagement with students.
Individualized use of feedback from authentic assessments (AA) through "child voice letters"	Teacher's use of the AA content to identify individualized goals helped the teacher to focus teaching and to communicate with families.

2. Future research is needed on preschool to school connections and continuity.

As indicated above, ongoing research within PKC, itself, is critical for future growth and improvement of the initiative. However, in addition, we must ensure funding for future independent research to analyze the sustained success of PKC children into the primary grades (K-5th). Most research suggests that the positive results from high quality preschool programs diminish or "wash out" once children transition to school. Understanding this potential pitfall and process is vital for helping our young children to continue their success and to realize their potential.

While speculative, our experiences and associated SPECS research suggest that certain differences among preschool and school programs may account for children's failing to succeed. We suggest continued research on the following factors (as limited examples, only) in order to influence changes in policy and practice:

- Lack of continuity and alignment between pre-k and school-age standards
- Differences in pre-k and school-age philosophy and instructional practices (e.g., Developmentally Appropriate Practices—DAP vs. academic approaches)
- Lack of general continuity, especially curricular connections and functional use of state PAELS and PA Academic
- Lack of uniform transition policies and practices between pre-k and kindergarten
- Individualization versus ability grouping
- Conventional, one-time only, group achievement normative testing versus continuous authentic, portfolio-based measurement methods to chart intra-individual progress

3. A mentoring model and rigorous documentation are needed to enhance Keystone STARS.

Keystone STARS is a good and indispensable ongoing professional development model which has been effective in fostering quality within and across the widely disparate types of early care and education programs in the PKC network. The SPECS research has identified and supported the impact of Keystone STARS coaching for improving quality and for indirectly helping to promote the success of children.

Nevertheless, within the national professions of early care and education, policymakers and researchers are blending their efforts to identify structured and uniform approaches for using a mentoring process to improve the professionalism and effective instructional and management behaviors of teachers. We advocate for improving and validating the Keystone STARS process by implementing a uniform, evidence-based mentoring model for coaches and teachers. Early Childhood Partnerships has a federal grant, **Center on Mentoring for Effective Teaching (COMET),** (from the US Department of Health and Human Services, Administration on Children and Families, Head Start Bureau) (Bagnato, 2008) as one of seven national partners to improve teaching through mentoring for Head Start teachers. COMET is developing and studying the impact of just such a mentoring model (www.earlychildhoodpartnerships.org). Keystone STARS can profit from this work.

Our PKC outcome data in SPECS does show that coaching and Keystone STARS was partially responsible for the effect on teachers, programs, and children. However, data on the SPECS Mentoring Monitor does demonstrate limitations of the Keystone STARS process which could have provided more varied and definitive evidence of the direct impact of the stars process on program quality.

First, Keystone STARS (KS) coaches and PKC on-site, in-house coaches have broad experience in early childhood intervention, but do not use any uniform approach for consulting with and coaching teachers. Thus, there is no way to fully evaluate the impact of the KS process since the KS coaches' approaches are so idiosyncratic. Next, the coaches do not necessarily develop an individual relationship with each teacher as would occur using a mentoring approach. In **mentoring**, the coach develops a trusting and ongoing professional relationship with each teacher and uses collaborative methods to enable the mentee to set his/her own professional development goals. Then, the process involves a consensus on the best strategies to use to help the teacher increase his/her competencies in instruction and management. Moreover, the KS coaches/mentors need to be trained to use a specific method with a menu of strategies to be effective. Also, the KS process appears to involve no explicit way to collect ongoing data about the frequency, intensity, duration, and content of the coaching/mentoring. KS data (beyond the SPECS Mentoring Monitor for this study) consists mostly of narrative and anecdotal records by coaches and merely time data with each teacher. Lastly, KS does not involve a specific way to monitor and evaluate the efficacy of the mentoring process for both quality improvement and impact.

Simply, the KS process is neither uniform, strategic, nor easily measurable. We recommend the following to improve the already good Keystone Stars professional development process:

- Collaborate with COMET to infuse a mentoring process into KS
- Train all mentors to use a uniform method for mentoring
- Link mentoring to both specific teacher competencies and to program data
- Learn systematic methods to collect mentoring data
- Collect ongoing data on the effort and process of mentoring

SPECS believes that the KS effect in PKC would have been much stronger, more varied, and more definitive if these elements had been in place.

4. SPECS for PKC research can help prospective programs make strategic decisions.

This full report regarding the impact of PKC in 21 different programs across PA can help prospective school district-community partnerships to make strategic decisions about the potential design of their unique PKC programs.

Three parts of the SPECS for PKC research help in this strategic planning process.

A. Chapters 5-7 provide descriptive and graphic evidence about how children benefited from PKC; what program elements were associated with the benefits; and the extent of change that might be expected within a certain timeframe.

B. Chapter 7 provides a qualitative (and some quantitative) profile of each of the 21 school-community partnerships, their geographic location, and the partnership and even program elements that were emphasized in their proposed models in response to the original OCDEL RFP. Chapter 7 also estimates the partnership elements that appear to be most effective. A review of these elements can help prospective programs to match their model with that of a "sister" program.

C. Within the January to March, 2010 period, SPECS will produce individual SPECS research reports for each of the 21 partnerships. Prospective partnerships can inquire from the sister PKC programs to see if there would be a willingness to share the data to guide strategic planning around strong and weak points.

5. PKC must embrace and include all community ECI partners.

Not all PKC partnerships included the same mix of community partners as specified in the original OCDEL RFP. In some ways, this provided more variability for the SPECS analysis. However, based upon the qualitative partnership analysis, programs that included children with delays and with Early Intervention partners and service supports showed excellent outcomes. The mission of PKC was to have school districts not start their own programs, but rather to fashion a collaborative among already existing community partners; this collaborative should have blended as many types of programs as possible, but essentially the major categories of Head Start, Early Intervention, and early care and education centers. Some PKC models did not include Early Intervention. Several that did include Early Intervention merely used segregated, non-inclusive centers as a nominal partner. It is important that future mandates in PKC enforce the requirement that future PKC partnerships embrace all ECI community partner agencies i**n inclusive settings**, particularly for children with challenging behaviors and delayed development. Since services still exist in "silos", a unique feature of each partnership is or will be the extent to which the school and community partners are skilled at fashioning interagency agreements among health and human service and other education entities to create a **cohesive network** to provided integrated supports for children and families and consultation to the teachers and staff in programs. Creative collaborations could include school-university collaborations; involvement of family support programs; partnerships with charter and after-school initiatives and faith-based programs; agreements with behavioral health agencies. Future evaluations must analyze the extent to which such individual creative initiatives produce differential outcomes for children and families.

6. Inclusion works for all children.

Inclusion in a high-quality preschool is an effective choice for children with mild delays and challenging behaviors based upon the PKC results and supported by other companion studies in the early childhood intervention field over the past 15 years. Perhaps the best example in the SPECS for PKC study was the Pittsburgh Public Schools PKC model which involves full inclusion for children with mild-moderate developmental delays and disabilities into pre-K and Head Start classrooms. Moreover, our results demonstrate that children with typical development continue to progress at expected rates and beyond when educated in settings with their peers who have risks, delays and disabilities. We conclude from our results that inclusion is an effective universal model for PKC programs and should be endorsed and required in keeping with federal law.

Successful inclusive programs, however, are distinguished by administrative commitment; availability of responsive related services and support to teachers and children in the classroom; and a high degree of parent engagement. Within early childhood education, Head Start is mandated to be the inclusion site for 10-15% of children with delays/disabilities and can serve as a major foundation element of PKC.

7. Maximize participation of Early Head Start and Head Start as a key part of the foundation for PKC for ages 0-5 years

Require the participation of Early Head Start and Head Start as the foundation for all future funded PKC partnerships. If earlier and longer participation in preschool makes the most difference for children with risks/delays, then, it stands to reason that PKC must expand its focus from ages 3-5 to now promote programs for infants and toddlers (0-3) in both home and center arrangements.

Not all of the 21 PKC partnerships included Head Start as a central component of their initiatives. Moreover, Head Start was not required to participate in Keystone Stars which must be rectified. Clearly, Head Start, reinforced by its federal mandate over the past several years to collaborate with and support early care and education programs in their communities, and the blending of state and federal monies, is the logical choice as the key foundation for PKC in the future. Pittsburgh, Philadelphia, and Harrisburg are examples of Head Start being part of the school district's administrative purview. Moreover, Head Start's history with family centered decision-making and its mental health and family advocacy services provide one type of model for linkages to the needed support services to strengthen and broaden the PKC network as a "catalyst" for a unified and integrated early learning network.

8. Response-to-intervention (RTI) can be a key to effective, integrated, and inclusive services and programs in PKC.

PKC can strengthen its model and the model's influence by linking with and serving as a "community-based laboratory" or proving ground for federal education mandates (e.g., No Child Left Behind; OSEP indicators; RTI; Race to the Top). Perhaps, the mandate with the most immediate benefit to PKC is the federal "response-to-intervention" or RTI requirement for school districts regarding the design of responsive psycho-educational services for school-age children with learning problems.

Children in PKC showed significant progress in both early learning competencies and social behavioral competencies, but not by accident. Some PKC programs showed ingenuity in reaching agreements with local partners to provide early intervention and behavioral health supports within early childhood classrooms to support the teachers and children (i.e., Direct Instruction supports at 4KIDS in Braddock; HealthyCHILD in Pittsburgh Public Schools and Woodland Hills School Districts). These models enabled high-risk children to succeed.

Some federally-funded university research centers are focusing upon the development of RTI frameworks applied to preschool children in early childhood intervention programs (e.g., Kansas, Minnesota, North Carolina). PKC can enhance its model by embracing the preschool RTI movement (Bagnato, 2007; Bagnato, 2004; Lehman, Salaway, & Bagnato, 2010) and use Pennsylvania as a proving ground for bringing preschool RTI to scale.

PKC can apply and research the "response-to-intervention" (RTI) framework, before it is mandated for use in preschool. RTI can ensure a graduated continuum of prevention-intervention supports which would link regular and special education and related support services (e.g., family support, behavioral health) directly into the classroom setting.

Another advantage of RTI at preschool is that it emphasizes 3 tiers of graduated services of increasing intensity. Tier 1 focuses upon professional development and mentoring of teachers/providers so that they have advanced training to use developmentally-appropriate and evidence-based instructional and management practices with children and also screen and support all children who may have different learning styles/needs and/or learning problems. Tier 2 focuses upon the use of more intense, small group instruction such as direct instruction (DI) and activity-based interventions (ABI) to help children with risks/delays; and Tier 3 emphasizes much more intense and individualized supports to maintain the fewer children with significant learning problems in the typical classroom setting.

Overall, RTI applied to PKC has the potential to transform the PKC model in the following ways.

- Provide a uniform and evidence-based model for instruction and care
- Integrate educational, behavioral, and family/ecological services and supports into the school and classroom in natural and authentic ways
- Infuse professional development of teachers and

staff into the instructional model of the school

- Require accountability by using data-driven decision-making through ongoing monitoring of progress about whether a particular intervention is working for a child and what modifications need to be made to increase its efficacy
- Ensure inclusion for all children
- Braid the funding streams for basic education, special education, Head Start, and federal Title I for the benefits to all children

Infusing the RTI framework as fundamental to its model, PKC can be truly an even more effective prevention and promotion initiative for all children.

9. Authentic Assessment is the most effective form of measurement for PKC to link assessment, intervention, progress monitoring, and accountability.

Authentic assessment (AA) has proven its rigor, value, and effectiveness in Pennsylvania and several other states as the most developmentally-appropriate form of measurement for use in the fields of early childhood intervention. Our AA research and that of other states should de-legitimize the criticisms and doubts of some recent publications: Taking Stock (Pew Foundation, 2007) and Early Childhood Assessment (The National Academies, 2008).

AA is regarded by the major professional organizations as "best professional and evidence-based practice" and is fundamental to their standards of practice—National Association for the Education of Young Children (NAEYC); Division for Early Childhood (DEC) of the Council for Exceptional Children; Head Start Performance Standards. AA is institutionalized as required practice in the Pennsylvania Early Learning Standards (PAELS).

AA is supported by nearly 15 years of early childhood intervention research in Pennsylvania involving 15,000 children, 2,000 teachers/providers, 1000 classrooms and 2,000 families: [see www.earlychildhoodpartnerships.org-- Heinz Pennsylvania Early Childhood Initiatives (ECI; 1997-2004); Pennsylvania Early Intervention Outcomes Study (PEIOS; 2005-2007); SPECS for Pre-K Counts in Pennsylvania; (2006-2008)].

Authentic Assessment is a unique form of measurement which has the following advantages for early childhood intervention.

- Adheres to professional standards of practice in early childhood
- Relies upon standardized observations of children's naturally occurring, ongoing functional behavior in everyday settings and routines, including play
- Uses the observations of familiar and informed caregivers (teachers, parents, team) who know the child's typical behavior to collect "true" performance data on individual children
- Implements ongoing initial and booster trainings of teachers to ensure reliable and valid observational assessments
- Monitors skill acquisition in natural activities (i.e., preschool, home, community) over sufficient time periods, settings, and occasions
- Links assessment and instruction through feedback to teachers on functional content
- Provides periodic feedback to teachers & parents about children's status and progress to design individualized early learning plans (e.g., "Child's voice letters")
- Aligns program goals, curricular content, state (e.g., PAELS) and federal standards (OSEP; NCLB), & expected (PKC) outcomes
- Emphasizes profiles of intra-individual changes in each child's developmental profile, rather than just inter-individual group comparisons.

The effectiveness of AA to derive optimal outcomes from the PKC research actually validates the process and methods of AA for Pennsylvania that are mandated in the PAELS. We suggest the following important activities to refine and validate further AA methods for PA practices and to ensure the credibility of its assessment and outcome data.

- Enhance the process and training for use of the Ounce and the Work Sampling System (WSS) to ensure the reliability of teacher/provider observations for PKC purposes
- Fund studies to actually validate the use of the Ounce and the WSS as a progress and outcome measure for state and federal accountability purposes for which it was never intended nor has ever been validated
- Fund studies to identify a "justifiable compromise" to analyze the sequential developmental content (e.g., Item Response Theory) and generate a scoring format for the Ounce and the WSS for which none exists or was ever envisioned
- Conduct a PA standardization and norming of the WSS Fund studies to validate the Ounce and the WSS to detect specific children who are at-risk or delayed for which it is not currently validated
- Fund studies to conduct a true cross-walk among the Ounce and the WSS content and PAELS content
- Collaborate in research with the Minnesota Department of Education and the SPECS team to validate a short-form version of the WSS for use in kindergarten with implications for use in PA and for continuity research into the primary grades

10. Measurement methods for both children and contexts must be re-examined for use in PKC.

The state-mandated authentic assessment framework for accountability and quality improvement has been operating now for several years after being informed by the input of a state-wide task force. The measurement methods have been infused into the state data systems (i.e., Early Learning Network—ELN and PELICAN). This development has been a major advancement for PA and a model for other states.

Nevertheless, the PKC initiative and OCDEL have reached a level of maturity and experience through which it is vital that we re-examine and re-evaluate our approaches to improve the Early Learning Network (ELN) measurement and database system and its measures of children and contexts.

The state-mandated accountability measures for PKC and Keystone STARS are:

- The Ounce
- The Working Sampling System (WSS)
- The Early Childhood Environment Rating Scale (ECERS) or ERS—Environmental Rating Scales

In the previous section we presented the viewpoints that both the Ounce and the WSS must be validated for intended purposes to ensure validity and credibility in our outcome data. It is important that stakeholders, again after several years of use, have the opportunity to "weigh in" regarding the pros and cons of the use of the Ounce and WSS for PKC purposes. For example, the WSS was never developed for our use with children who have developmental delays and disabilities. In fact, its item content is not appropriate in terms of its lack of functional character or universal design for children with limitations. Perhaps, it is time to consider the use of a more specialized scale for children with special needs. (See Bagnato, S.J. et al. (2010) Linking Authentic Assessment and Early Childhood Intervention: Best Measure for Best Practices, 4th edition, Baltimore, MD: Paul Brookes Publishing, Inc.)

Similarly, it is time to re-examine the utility and validity of our "ecological" or contextual outcome measures. The SPECS team and other national researchers began using a shorter version of the ECERS-R (Cassidy, Hestenes, Hegde, Hestenes, & Mims, 2005). Examination

of the psychometric properties of this shorter, "screening" version (ECERS-S) support it's effectiveness to measure important dimensions of classroom quality as well as to measure clear quality dimensions to produce research outcomes related to children's progress (Cassidy, et al., 2005). SPECS has shown the same positive results in our random sample study within PKC. Similarly, national studies, supported by the SPECS for PKC random sample study, show the effectiveness of the **Classroom Assessment Scoring System** (CLASS; Pianta et., al, 2008) to assess teacher instructional and management practices which have clear and direct implications for improving child outcomes.

Given this body of national and PA research, we offer the following suggestions for PKC.

- Re-examine the use of the Ounce, WSS, and other potential measures for use with both typical children and those with delays/disabilities
- Retain the ECERS only as a measure to guide Keystone STARS in evaluating the quality of programs and professional development of teachers
- Consider seriously the adoption of the nationally validated CLASS measure (which is required by the federal government for use in Head Start) to ensure a more targeted observation of teacher instructional and management behaviors for professional development/mentoring purposes and as a longitudinal measure of changes in teaching practices
- Reach consensus among parents and professionals about a measure to sample parenting practices and parent/family satisfaction as a critical contextual variable which has high interrelationships with child outcomes (i.e., parent scales currently in beginning use in OCDEL)

11. Commitment to standards underlies the success of PKC programs and children.

OCDEL and its stakeholders have spent much effort and energy to develop solid standards to guide professional development and practice. Development of the PAELS and related Infant/Toddler and Kindergarten standards have clearly ensured continuity of expectations for children. The development of the Keystone STARS system has increased the quality of programs and the professionalism of teachers and providers. We believe that all these system and programmatic factors underlie the superb outcomes in the SPECS for PKC longitudinal research. Little more needs to be stated regarding this strong aspect of PKC. However, for the future, it is important to retain and strengthen these pillars of PKC in future government administrations. We offer the following avenues for enhancing standards in PKC.

- Develop systematic links among the requirements for the Keystone STARS levels and the content of the ECERS and also the CLASS
- Create an explicit alignment of the PA professional standards with the national professional standards of NAEYC, DEC, and HS
- Develop a feedback format for the authentic assessment measure's content linked to the PAELS and computer-generated through the data network of the ELN and PELICAN so that teachers can use the PAELS as a type of universal curriculum for children to create individualized early learning plans for children and to communicate systematically with parents about their children's progress and "readiness" for kindergarten

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WHAT CAN BE IMPROVED ABOUT PKC AND ITS RESEARCH?

CHAPTER 9

9

Introductory Statement

Lerner (2005) refers to the field of applied developmental psychology as "applied developmental science" which has the following attributes which we believe applies to the SPECS for PKC study and its outcomes and implications:

- Natural setting prevention and promotion programs
- "Use of scientific knowledge to improve life changes of diverse individuals and communities"
- Develop sensitive measures of change and context
- Design/implement program evaluations for stake holders
- Service learning for outreach scholarship
- Community partnerships for systems reform
- Mentoring and professional development
- Dissemination for lay public

The following chapter outlines considerations that can strengthen the future applied evaluation of PKC in this spirit.

Core Mandates and Objectives of PKC Research

PKC was created by the Commonwealth of Pennsylvania (OCDEL) as a community-based "natural experiment", brought quickly to scale to guide future replication and expansion within the term of governance for the Rendell administration. SPECS was conceived, fundamentally, as an applied program evaluation research venture using participatory action research methods to align with the consensus mandates and objectives of the government, foundation, and community stakeholders. SPECS is grounded in the spirit of applied developmental science defined by Lerner (2005). These mandates and objectives provided the boundaries (with both strong and weak points) for the SPECS evaluation research. It is important again to reiterate these mandates and objectives:

- All children in each school-community PKC partnership must be enrolled and engaged in the PKC "intervention".
- Thus, vulnerable young children could not be excluded from PKC intervention for research purposes using an experimental-control group design.
- SPECS assessment and research methods must align with written policies and standards espoused by OCDEL and the major national professional organizations regarding developmentally-appropriate practices.
- Stakeholders posed two overarching research questions involving impact and outcomes rather than efficacy:

    1. Do children in Pre-K Counts partnership pro grams gain important functional competencies for early school success? (Did it work?)
    2.What programmatic elements of Pre-K Counts are associated with children's early learning progress and success? (Why did it work?)

As indicated, these parameters influenced the SPECS research methods and analyses as well as the type of outcomes examined. While the SPECS for PKC research showed results which were positive, progressive, and in some cases, dramatic, both PKC and its research can be improved by considering the issues and dimensions which are briefly cited and discussed next.

Considerations and Issues

Ensuring generalization of PKC results

Conceptually, both the Hawthorne and Pygmalion effects could be presumed to have potential influences in the PKC study. In this respect, the novelty and high-profile of the PKC funding and the model could encourage teachers to be enthusiastic and effortful in their teaching and care of children. Similarly, teachers and staff in PKC likely have greater expectations to succeed given the clarity of the plans, objectives and expected outcomes to be promoted in the PKC initiative. Most lay individuals would argue that these influences are positive and desirable, but

research requires sufficient rigor to counter such potential biasing influences. Such potential influences can affect the capacity of the research results about children's progress and the quality of programs to be generalized to other situations and circumstances.

Future PKC research, for example, can identify other contrast groups which use similar novel approaches (e.g., computer-based methods) that generate equivalent excitement but not necessarily the high-quality or instructional benefits of PKC. However, our past Pennsylvania research with similar children, teachers, and programs suggests that neither of these potential biasing influences exists. The Heinz ECI studies (1997-2005) show comparable results as PKC under similar programmatic elements; in fact, the PKC kindergarten transition results for children have the same educationally meaningful results as those for ECI children in a different region and era.

While we do not endorse traditional E-C designs for vulnerable young children, we would support the inclusion of different contrast groups to validate the PKC results.

Identifying sensitive measurement of the impact of programmatic elements

The SPECS funding focused mostly on measuring child status and progress given the primary stakeholder emphasis on this objective; however, SPECS expended additional (and unfunded) efforts to document programmatic factors that were associated with child success. The programmatic measures chosen were weaker indirect and "proxy" measures for important programmatic variables: Keystone Stars level (e.g., underpinned by ECERS scores); partnership classifications based upon the original PKC RFPs.

It is likely that the positive, but limited associations between child outcomes and program variables were the result of measures which lacked sufficient sensitivity and variance (e..g., PPRP; KS). Future studies must emphasize the documentation of specific programmatic elements which are responsible for the success of children. For example, germane to this issue, the SPECS team effectively employed the CLASS and the ECERS (screening version) in the small random selection study of 36 classrooms to document positive and definitive relationships among program quality, teacher instructional practices and child progress. Future studies must devote sufficient funds to the use of the CLASS and other similar programmatic measures to more comprehensively and precisely target the numerous specific features of teacher-child interaction, classroom climate, and instructional methods, formats, and management techniques that promote early learning in children. The SPECS Mentoring Monitor proved to be a valuable tool for measuring specific elements of the coaching process in Keystone Stars responsible for child progress.

Validating the results for lower functioning children

When children with high-risk status and delays make considerable progress, individuals may raise the presumed phenomenon of regression to the mean. However, we believe strongly that this presumed hypothetical effect is minimal,at most, based upon the past ECI research and the functional indicators established in ECI and the PKC research.

Children in PKC made progress which improved their risk status from risk/delay to non-risk/delay categories beyond what is typically seen without intervention; Reductions in the risk/delay rate from 33% to 14% to 2% is extremely unusual. The results of ECI showed similar functional improvements. Moreover, the functional indicators of meeting and exceeding national and state normative and historical criteria is persuasive also. The small standard error associated with the results in PKC as well as ECI belies the criticism of regression effects as does the analyses of the functional gains of children with typical developmental capabilities across the 21 PKC sites—which underscores similar performance trajectories for both groups.

Implementing a continuous authentic outcomes assessment process across the early childhood period

The primary early learning measure for the SPECS for PKC research was chosen for several reasons including: sensitivity and effectiveness in past ECI research; simplicity for training teachers in its use; simplicity in conducting the observational assessments; acceptability; and functional links with PAELS indicators and goals for instruction (e.g., meeting the majority of the 8 DEC developmentally appropriate standards). This measure again showed its effectiveness in PKC as it did in ECI. However, the longitudinal study could have been enhanced if the ELS measure developed and normed for use with 3 year olds in the PKC study was continuous with the primary scale and vertically-integrated. This attribute of continuity would have likely increased the longitudinal sensitivity of the results. Nevertheless, the results of the CIVID analysis in PKC were clearly positive with progress outpacing maturational expectations.

In the ECI study, using the same scale on 350 children, the independent observational assessments of receiving kindergarten teachers were congruent with those of the transitioning children's assessments by preschool teachers (r= .81). Similarly, in the PKC study, 61 children were independently assessed by school psychology graduate students using the Kindergarten Scales of Early Academic and Language Skills (KSEALS) compared to the preschool teachers observational assessments with a correspondence (in the language domains) of r= .78 (comparable standard scores of 91 and 93, respectively). Both concurrent validity studies using the same and also related but separate measures found that authentic assessments of teachers are congruent with conventional performance assessments and free of bias under the rigor of ongoing training. These findings are supported by those of Meisels and colleagues also.

When the Ounce and Work Sampling System are validated and a scoring system developed, these scales in the ELN database can solve the issue of continuous authentic assessment from infancy through 4th grade in PA.

Enforcing uniform requirements for all programs

Some delimiting factors in the PKC research including the lack of uniformity in enforcing programmatic requirements for all PKC grantees. Not all PKC programs were required to participate in the Keystone Stars quality mentoring process, particularly, Head Start. Similarly, not all PKC programs included all types of ECI program types in their partnership: early intervention, Head Start, and public/private ECE. Future research must ensure that the character of PKC programs is similar to document fully representative outcomes.

Using the ELN and PELICAN databases to ensure full data collection

The advent of the ELN and PELICAN databases to systematize the collection of congruent information about teachers, children, programs, and families using uniform measures is a unique and advantageous development which was not available for the current PKC research; this will revolutionize future research in PA. For children, important data about such factors as entry to and exit from early intervention services through IEPs can be documented and tracked. For programs, ongoing program quality assessments will be available to coincide with and strengthen the Keystone Stars level decisions. Information on teachers past years of experience, education level and credentials and other demographic factors will be complete.

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APPENDIX A

WHAT STATISTICAL ANALYSES AND RESULTS UNDERSCORE PRE-K COUNTS OUTCOMES AND CONCLUSIONS?

This section details sets of statistical analyses conducted in tandem by both the SPECS team at Penn State University and the University of Pittsburgh to document the impact and outcomes of SPECS for Pre-K Counts in Pennsylvania. The following is divided into two sections: Overarching Analyses and Intermediate and Summative Analyses.

OVERARCHING ANALYSES

Two primary series of overarching data analyses were conducted on the Pre-K Counts data collected by the SPECS Evaluation Team to evaluate the impact of Pre-K Counts in general and various mentoring variables and partnership model elements in particular. The first series of analyses were designed to evaluate the overall impact of Pre-K Counts services by examining the gain in BSSI scores associated with Pre-K Counts, after controlling for natural maturation of the children. The second series of analyses is to evaluate what specific feature or component of Pre-K Counts, if any, might account for any gains in BSSI scores.

Controlling for Maturation

For the evaluation of early childhood program impact and outcomes in which pretest-posttest score gains are examined, the natural maturation of children at these early ages is quite possibly the most prominent competing hypothesis that can explain any observed gains among children. As such, it is a critical threat to the internal validity of any conclusion of intervention efficacy. McCall and colleagues (McCall, Ryan, & Green, 1999; McCall & Green, 2004) have suggested the use of a method to control for maturation in evaluation of the efficacy of early childhood interventions. They referred to their method as the non-randomized constructed comparison group (CCG) method. The CCG method is essentially a single-group pretest-posttest design in which natural maturation is controlled. It involves the determination of an "expected" age or developmental rate function for the dependent variable using pre-test scores for individuals of different ages entering intervention at different time-points. Then, one can calculate an age-adjusted expected post-test score against which "actual" progress of each individual can be examined.

Technical problems with previous methods to control for maturation

The CCG has been proposed as an innovative and practical alternative analytic method for the field, but its statistical rigor has been questioned (Bagnato, 2002; Bagnato, Suen, Brickley, Smith-Jones, & Dettore, 2002). Bagnato and colleagues modified McCall and Green's method to produce an empirically-derived, and statistically enhanced metric to control for maturation; this "enhanced" constructed comparison group method, The Expected-Actual Progress Solution (EAPS), applied a regression equation in which a dependent variable was regressed on subjects' age under a no-intervention condition, i.e., using only the child's pretest. The EAPS was used successfully in a large longitudinal early intervention outcome study, The Heinz Pennsylvania Early Childhood Initiatives (ECI) (Bagnato etal, 2002). The EAPS metric articulated a standard error of performance or progress statistics more precisely, because the expected scores did not sufficiently reflect the variability of maturation scores to the standard error of the test statistics. In basic principle, the EAPS method is similar to the CCG method, but is expressed on a different metric. The EAPS method does provide a relatively minor technical statistical improvement by adjusting the error term in significance testing. Specifically, an implicit assumption under the McCall and Green CCG method is that the error around the expected (or constructed) score is the same as the error around the original pretest

score. Such an assumption is not reasonable because the expected score is the result of a regression process. The original error of the pretest score has been compounded by the error of regression. Therefore, the expected scores contain larger errors.

The EAPS metric removed this unreasonable assumption by proposing a modified test statistic as follows:

$$\frac{Mean(Y_O) - Mean(Y_E)}{\sqrt{\frac{Var(Y_O) + Var(Y_E) + Var(\varepsilon) - 2Cov(Y_O, Y_E))}{N}}} \quad (1)$$

There are at least three other technical problems that are shared by both the CCG method and the EAPS method. First, both methods implicitly assume that the observed pretest score is unrelated to the error around the expected scores. This is an unreasonable assumption as long as there is a significant correlation between a dependent and independent variables, because the higher dependent value will have positive errors, and the lower dependent value negative errors. Therefore, the covariance between the observed pretest score and prediction error is not zero but positive. The second technical problem is the likely violation of the assumption of homogeneity of variance (i.e., homoscedasticity). This violation would render the significance test inaccurate and the use of the same margin of error estimate for all predicted scores unjustified. Finally, both methods require the extrapolation of values beyond the range in the available data for at least some of the children. In both cases, the age of at least some of the children at posttest will be beyond the range of age of children at pretest. The expected scores due to maturation for these children would be arrived at based on extrapolating the regression equation beyond the range of available data.

Control for individual variation in development (CIVID)

For the evaluation of Pre-K Counts, we employed an improved approach, named the Control for Individual Variation in Development (CIVID) method. The fundamental principle used in the CIVID method is the same as that used in both the CCG and the EAPS method: Comparing actual performance at posttest against expected performance based on maturation. For the CCG and the EAPS method, expected level of performance is based on a regression of pretest scores on age. If the actual performance is significantly better than expected, there is evidence that treatment is effective over and beyond maturation. However, in the CIVID approach, while using regression methods, we use a different metric to determine whether there has been a gain over and beyond maturation.

Given a set of pretest-posttest data with age information, in order to model the relationship between age and test scores, there are only three possible general approaches. We use either only pretest data, use only posttest data, or use both pretest and posttest data to regress on age. Both the CCG and EAPS methods opted for the use of only pretest data because these data have not been affected by treatment; and therefore the resulting regression equation would model the relationship due to maturation alone without treatment. Using posttest data alone would not model maturation because of the existence of possible treatment effect. However, it is possible to isolate treatment effect beyond maturation when we use both the pretest and posttest data simultaneously in a series of regression analysis. In the CIVID method, we attempt to do precisely that.

Specifically, in the CIVID method, we regress the test score on age in a manner similar to those used in the CCG and the EAPS methods. Since maturation is unlikely to be linear, we would perform polynomial regression by adding a quadratic term to age in the model. The polynomial regression would be similar to that used in the EAPS

method. However, instead of using only pretest data, we use both pretest and posttest data simultaneously. We treat the pretest data and the posttest data of the same child as if they were from two separate independent cases. To identify treatment effect over and beyond maturation, we add a dummy variable to represent time point. For our purpose, let us label this dummy variable as T2. For a pretest case in which the data are pretest data, T2 would be coded as 0 (zero). For a posttest case, T2 would be coded as 1 (one). T2 then is essentially an indicator of whether the case is one of pretest or one of posttest. We would then test the model that performance score (pretest or posttest) is a function of a combination of age, age-squared, and T2. Equation 2 below describes the regression model:

$$Test\ score = \beta_0 + \beta_1(age) + \beta_2(age)^2 + \beta_3(T_2) + e \quad (2)$$

Even though performance scores at posttest are raised by maturation, the relationship between age and performance scores does not change from pretest to posttest. If there were no treatment effect beyond maturation, the same polynomial relationship would be found between age and score, regardless of whether it is a pretest or a posttest. The T2 variable would not add any more predictive power to the model; and thus T2 would not show up as a significant predictor. However, if the treatment adds value to the performance over and beyond maturation, T2 would prove to be a significant predictor. Additionally, since T2 is dummy-coded, the magnitude of the un-standardized regression coefficient associated with T2 would indicate the expected gain due to treatment.

Instead, if a simple pretest-posttest design is used, data have been collected over multiple time points such as in a time-series design or in a longitudinal study, the CIVID can be extended to multiple observations by simply adding more "dummy" variables to represent each time point. For example, if there are 5 observation time points including pretest as one of the 5 time points, the regression can be extended by including all data from all 5 time points of the same child as if they were 5 separate cases. The dependent variable score (performance score) can then be modeled by using age, age-squared, T2, T3, T4, and T5 as predictors. T2 would be coded as 1 if the data are for a given case are those for Time Point 2; otherwise T2 would be coded as 0. Similarly, T3 would be coded as 1 for a Time Point 3 case; otherwise T3 would be coded as 0. Repeat such coding scheme for T2 through T5. The resulting regression coefficient associated with each of these dummy variables (i.e., T2, T3, T4, and T5) will show respectively whether there is a significant treatment effect over and beyond maturation at each of these time points.

Effects of Pre-K Counts after controlling for effect of maturation

Some of the children in the sample joined their programs before the age of 4 while others entered their programs after 4-years-old. For the first group, the BSSI-3 (i.e., 3rd edition) would not be appropriate as a pretest since it is for ages 4-0 to 8-11 only. Instead, the Early Learning Index (Bagnato & Suen, 2005) was created and used for these younger children as their pretests. By the time of the post-test, these children were all 4-years-old or older. Thus, the BSSI-3 was used as the post-test measure. There were a total of 978 such children and, on average, these children had been in their respective programs for 210 days prior to post-testing. The remainder of the sample consisted of children age 4 or older at the time of entry. Therefore, they were given the BSSI-3 as both their pretest and posttest. There were a total of 4,104 children in this group. On average, they had been in the respective programs for 185 days prior to post-testing.

(1) The information is based on the regression weight (i.e.,) for T2 in Equation 2 above.

(2) The information is based on the standard error of regression weight (i.e.,) for T2 in Equation 2 above, but does not account for the standard error of estimates.

Since the pretests were similar but not identical, the CIVID method described above was used to analyze these two samples separately. **In all cases, for both samples and for all subscale and composite BSSI measure, T2 was found to be statistically significant. This indicates that Pre-K Counts contributes to a gain in BSSI-3 scores in all areas, over and beyond what can be explained by natural maturation of the children.**

Analyses of BSSI3 - BSSI3 dataset

Technical details of the results of the CIVID analyses of the data for the 4,104 children who had BSSI-3 as both the pretest and the post-test are presented in **Appendix A (1). Table 1** below provides a summary of the predictive power of having received Pre-K Counts services in explaining the differences in BSSI posttest scores based on data from these 4,104. It also provides estimates of expected gains in BSSI standard scores.
On the left hand side of Table 1, the percentages under "Maturation" in "Predictive Power" are the percentages of the differences in standard BSSI subscale scores that could be explained by age differences. The column under "Pre-K counts" provides the percentages of standard BSSI subscale score differences that can be explained by having participated in Pre-K Counts programs. The column for "both" indicates the combined effect of maturation and Pre-K Counts. As can be seen, Pre-K Counts accounted for 3.4% to 6.8% of differences in BSSI scores -- more than were accounted for by maturation in all cases except for the Writing subscale score. (As a point of reference for interpretation, variation in SAT test scores for college entrance typically account for around 12% of freshmen year GPA variance.)

The information in the right-hand side of Table 1 indicates that expected gains in BSSI subscale standard scores based on the results of the CIVID analyses. The children in this sample received on average a total of 185 days of Pre-K Counts services prior to being evaluated with the post-test. The column "expected typical gain" indicates expected total gains in BSSI subscale standard scores over a period of 185 days of Pre-K Counts services, over and beyond gains due to maturation.1 The column "expected gain for 95% of children" takes into account errors in the estimated regression weight and provides estimates of the range of potential gains for 95% of the children.2 The column "expected gain per 30 days" is the calculated based on a linear progression due to Pre-K Counts services.

Table 1
Effects of Pre-K Counts on children with BSSI-3 as both pretest and posttest (N=4,104)

	Predictive power			Expected gain in standard scores		
	Maturation	Pre-K counts	Both combined	expected typical gain	expected gain for 95% of children	expected gain per 30 days
SPOKEN subscale	3.5%	4.0%	7.5%	8.28	7.42-9.14	1.34
READING subscale	2.6%	4.8%	7.4%	6.93	6.28-7.58	1.12
WRITING subscale	7.8%	3.4%	11.2%	3.89	3.26-4.52	0.63
MATH subscale	1.0%	4.9%	5.9%	4.74	4.29-5.19	0.77
CLASS BEHAVIOR subscale	0.2%	3.7%	3.9%	6.03	5.37-6.69	0.98
DAILY LIVING subscale	1.0%	6.8%	7.8%	8.38	7.72-9.04	1.36

Norming of Early Learning Index (ELI) and equating between BSSI-3 and ELI

A total of 978 children started their Pre-K Counts programs before the age of 4, making it inappropriate to use the BSSI-3 as a pretest since BSSI-3 is normed only from age 4-0 to 8-11. In order to maximize the comparability between pretest and post-test for these children, we used a modified version of the BSSI-3, the Early Learning Index (ELI), as the pretest. Items for the ELI were developed using expert opinion by a panel and other developmental curriculum content as indicators. Items were chosen according to the following criteria: Measurement gradations, curricular and PA standard linkages, and observable using natural methods and classroom environment. The ELI is designed to assess early academic and behavioral skills in children ages 36-47 months. The ELI contains items reflecting the following domains: Language, Pre-Reading, Pre-Mathematics, Social Behavior, and Daily Living Skills. All scores, including subscale scores, and scaling for the ELI were established based on an independent sample of 3,038 children ages 3-0 to 4-2 in Pennsylvania. Norms were established via a weighting process to ensure representation of the population in Pennsylvania in 2008, according to U.S. Census figures, in terms of gender, race/ethnicity and rural/urban residence. Appendix A (4) shows the norm tables by 3-month age groups for the ELI.

On average, these 978 children, who were given the ELI as pretest, received 210 days of Pre-K Counts services. By the time of their post-tests, they were all within the age appropriate for BSSI-3. Therefore, the BSSI-3 was used for their post-tests.

Although the ELI was constructed based on a process to maximize its continuity with BSSI-3, due to the differences in actual items used, the two scales are not directly comparable. Minimally, BSSI-3 items are generally more advanced than those for ELI. To ensure comparability of scores as a pretest and a post-test, a vertical equating procedure was conducted to equate ELI scores to that of BSSI-3. Equating was accomplished via a common-subject design. Specifically, a sample of 423 children who were between the age of 4-0 and 4-2 were administered both the ELI and the BSSI-3 within a month of each other. Their ELI and BSSI-3 raw subscale scores were found to be related with the following correlations: Spoken subscale = 0.79; reading subscale = 0.52; math subscale = 0.65; class behavior subscale = 0.72; daily living skills = 0.68; and total score = 0.78. Thus, there was deemed sufficient evidence to justify equating of their raw scores. Based on the two corresponding raw scores of the common sample, both a linear equating process and an equipercentile equating process were performed to determine BSSI-RE scores on the BSSI-3 metric. All equating procedures were conducted via the specialized software LEGS by Brennan (see Kolen & Brennan, 2004, p. 534). The program can be downloaded at the University of Iowa site at http://www.education.uiowa.edu/casma/computer_programs.htm#equating. **Appendix A (5)** provides the conversion tables between the ELI and BSSI-3 for all ELI subscales and the total scale. The equipercentile equated scores were used for subsequent analyses.

Analyses of ELI to BSSI-3 dataset

Table 2 below provides results of the CIVID analyses of the sample of 978 children who, due to their young age at the time of pretest not being appropriate for BSSI-3, had been administered the ELI as the pretest. However, they received the BSSI-3 as post-tests. Again, technical details of these analyses are presented in Appendix A (2).

Table 2
Effects of Pre-K Counts on children with ELI as pretest and BSSI-3 as posttest (N=978)

	Predictive power			Expected gain in standard scores		
	Maturation	Pre-K counts	Both combined	expected typical gain	expected gain for 95% of children	expected gain per 30 days
SPOKEN subscale	3.4%	0.6%	4.0%	3.82	1.60-6.04	0.55
READING subscale	0.2%	0.0%	0.2%	0.00	0.00	0.00
MATH subscale	3.8%	1.8%	5.6%	5.52	3.73-7.31	0.90
CLASS BEHAVIOR subscale	3.4%	1.4%	4.8%	5.59	3.58-7.60	0.91
DAILY LIVING subscale	0.0%	0.0%	0.0%	0.00	0.00	0.00

As can be seen in Table 2, the observable effects and gains of Pre-K Count are substantially smaller for this sample of children. For reading skills and daily living skills, the observable effect of Pre-K Counts is nil. The results for this subsample are thus incongruent with those for the much larger sample reported in Table 1. The difference between the results in Tables 1 and 2 is that BSSI-3 was used as pretest in the analyses in Table 1, while the ELI was used as pretest in the analyses in Table 2. The incongruence in results suggests that the difference in contents between ELI and BSSI-3 is substantially more consequential than we had originally expected. Even though we had NUMERICALLY equated the two scales, the two scales are not qualitative comparable and are most likely not construct-equivalent. Therefore, the results in Table 1 are more meaningful than those in Table 2.

Isolating Effective Pre-K Counts Programmatic Variables

Results presented in Table 1 demonstrate that participation in Pre-K Counts contributes to gains in all early learning domains, substantially over and beyond what can be expected by natural maturation of the children. However, the results provide no indication as to which features, if any in particular, of Pre-K Counts may have accounted for these gains. The information cannot be obtained via the CIVID analyses. This is because programmatic features, such as partnership elements or mode of mentoring, are characteristics of the program or classroom. These features are shared by all children within the same program or same classroom. As such, there is no variation across children in the same class or same program in terms of program features. The CIVID analyzed relations among child variables such as pretest scores and age, which are theoretical difference from child to child even within the same classroom or same program. The method cannot adequately analyze variables that are different between classrooms but are the same within a classroom, such as programmatic features. Therefore, in order to discern what programmatic features may contribute to the observed gains, a multilevel analytic procedure was needed.

For the purpose of isolating effects of Pre-K Counts programmatic components on gains in BSSI-3 scores, we employed the **Hierarchical Linear Modeling (HLM)** approach. Specifically, we modeled each BSSI-3 posttest score as predictable by two different levels of variables. First, we hypothesized at the individual child level that part of a child's posttest score is predictable by that same child's pretest score. Next, we hypothesized at the classroom level that the exact nature of the relation between pretest and posttest scores of an individual child is impacted by programmatic components.

There were 90+ measures of programmatic components. Before we could specify the exact classroom level model to be evaluated, we needed to reduce the number of component measures to a manageable subset. The 90+ measures included such variables as years of experience of the mentor, average coaching time/month, type of communication mode, variety of communication

mode, type of coaching strategy used, variety of coaching strategy used, type of program quality topic, variety of program quality topic, time spent on individual topics, type of partnership, quality program design type, and so on. Appendix A (6) provides a detailed listing of all the programmatic variables examined. To identify components that are potentially useful predictors of gains in posttest scores, we examined the preliminary correlation matrix among these variables and with posttest scores. Based on their correlations, the number of viable variables was whittled down to a smaller subset. These were further filtered through a preliminary set of HLM analyses to identify a set of class level predictors that showed promise in that their predictive ability was sufficient high to be able to refute chance (null hypotheses) in these early analyses. The final set of viable predictors included the following programmatic variables:

- WPEARLYI: program has a working partnership with early intervention programs;
- QUALITYP: total number of Quality Program Designs;
- LEADERSH: Having a mentoring objective that focused on leadership/ supervision/ professional development;
- MODESUM: The variety of communication modes used to deliver mentoring;
- STRATSUM: The variety of strategies employed;
- TOPICSUM: The variety of topics covered; and
- TOPICLEN: Having a mentoring topic focusing on learning activities.

Thus, the following general model was examined via a series of HLM analyses:

$$BSSI\ posttest\ score_{ij} = \beta_{0j} + \beta_{1j}(BSSI\ pretest) + r_{ij}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{WPEARLYI}) + \gamma_{02}(\text{QUALITYP}) + \gamma_{03}(\text{LEADERSH}) + \gamma_{04}(\text{MODESUM}) + \gamma_{05}(\text{STRATSUM}) + \gamma_{06}(\text{TOPICSUM}) + \gamma_{07}(\text{TOPICLEN}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{WPEARLYI}) + \gamma_{12}(\text{QUALITYP}) + \gamma_{13}(\text{LEADERSH}) + \gamma_{14}(\text{MODESUM}) + \gamma_{15}(\text{STRATSUM}) + \gamma_{16}(\text{TOPICSUM}) + \gamma_{17}(\text{TOPICLEN}) + u_{1j}$$

Essentially, the model hypothesizes that each of the identified program components will have an impact on the BSSI posttest score; and that they also will have an impact on the relation between BSSI pretest and BSSI-posttest scores.

The variety of communication modes used for mentoring (MODESUM), the variety of strategies employed (STRATSUM), and the total number of quality program designs (QUALITP) were found to be significant predictors of BSSI-3 posttest scores in specific subscales, over and beyond what could be predicted by initial differences in pretest scores. Appendix A (7) provides detailed technical information regarding the outcomes of these analyses.

Results of the analyses show that the hypothesized model is only partially supported, and for only some of the BSSI subscales. Specifically, γ_{04} was found to be statistically different from zero for Reading, Math and Daily Living Skills subscale scores. The value of γ_{04} was found to be 1.34 for the Reading model, 1.33 for the Math model, and 1.56 for the Daily Living Skills model. γ_{05} was found to be statistically significantly different from zero with a value of -0.90 for the model for Reading subscale scores. Finally, γ_{02} was also found to be different from zero with a value of -3.16 for the prediction of Reading subscale scores.

These statistics mean that a classroom that has received mentoring help via a large variety of communication modes (MODESUM) (i.e., face-to-face visits, online chat, phone calls, email, and so on) tends to have a greater gain in BSSI-3 posttests in the areas of Reading, Math, and Daily Living Skills than those with help delivered via

fewer modes of communication. On average, each additional mode of communication used is associated with a posttest standard score gain of 1.34 in Reading, 1.33 in math, and 1.56 in Daily Living Skills.

A classroom that has been guided to use a large variety of instructional strategies (STRATSUM) tends to have a SMALLER gain in BSSI-3 Reading posttest scores than those being guided to use fewer strategies. In other words, it is more effective in terms of improvement in Reading scores to guide a classroom to focus on the use of a few appropriate instructional strategies than to suggest that the classroom uses a large variety of strategies. On average, every additional strategy a classroom is guided to use is associated with a 0.90 point loss in BSSI-3 posttest scores.

Finally, the total number of quality program designs (i.e., Early Learning Standards, Accountability Block Grant Guidance, Keystone Stars Performance Standards, Head Start Performance Standards) is negatively associated with Reading posttest scores. In other words, the more program quality design standards a classroom attempts to comply with, the worse the BSSI-3 Reading posttest score becomes. On average, every additional set of quality program design is associated with a 3.16 point loss in BSSI-3 posttest scores. No other programmatic variable was found to be a significant predictor of BSSI-3 posttest score gain in any of the subscale areas.

Beyond what can be explained by the positive effects of the variety of communication modes used on Reading, Math and Daily Living Skills; the negative effects of the variety of strategies on Reading; and the negative effects of the total number of quality program designs; there remains a large portion of variation in BSSI-3 posttest gains that is unexplained by the set of programmatic variables examined.t

INTERMEDIATE AND SUMMATIVE STATISTICAL ANALYSES

The following statistical analyses were conducted by the SPECS team at the University of Pittsburgh to document intermediate and also summative analyses of both quantitative and qualitative data for questions pertaining to child, program, and partnership outcomes of PKC. All analyses are judged both on statistical as well as educationally meaningful differences (e.g., the extent to which the results represent status or progress data which indicate real rather than artifact differences which affect "functional" educational performance).

Analyses for Chapter 5

Analysis of the Impact of Pre-K Counts on 3-year-old Children

For this analysis, four criteria were used for selecting children. First, the children had to have had least one ELI assessment and one BSSI-3 assessment completed while attending the program. Second, the ELI assessment had to be completed when children were between 36 to 47 months of age. When the children had more than one ELI assessment completed within the age range, the earliest assessments were selected for the analysis. Third, the BSSI-3 assessment had to be completed when children were 48 months old, or older. When children had more than one BSSI-3 assessment completed within this age range, the last assessment was selected for the analysis. Finally, the time interval between the two assessments was designated as three months or longer. After applying the selection procedure to the overall population, the final sample yielded 1,986 children. The average time interval between the ELI and BSSI-3 was 11.55 months (sd=5.16), ranging from 3 to 26 months.

Paired sample t-tests were conducted to compare the pre-test ELI data and post-test BSSI-3 scores within this sub-sample. The ELI scores were equated to BSSI-3 raw scores using the equi-percentile table presented

in the Appendix. Overall, children showed statistically significant progress over time across all sub-domains. The results of the paired sample t-tests are reported as follows: Spoken Language (t=-43.07, p<.001); Pre-reading (t=-11.08, p<.001); Mathematics (t=-10.67, p<.001); Classroom Behavior (t=-13.13, p<.001); Daily Living Skills (t=-13.15, p<.001); and Overall (t=-72.06; p<.001). Descriptive data and results of the paired sample t-tests are presented in the Appendix.

A series of regression analyses were conducted to determine if the length of time children participated in the program significantly predicted their post-test scores. Gender, and the pre-test ELI scores were entered into to the first block as the control variable. The time interval between the pre-test ELI assessment and post-test BSSI-3 assessment were entered into the second block as the predictor variable. Overall, the time interval significantly predicted the BSSI-3 post-test scores, across all sub-domains. Results of the regression analyses are reported as follows: Spoken Language (β=1.27, p<.001); Pre-reading (β=.80, p<.001); Mathematics (β=.92, p<.001); Classroom Behavior (β=.79, p<.001); Daily Living Skills (β=.97, p<.001); and Overall (β=5.46, p<.001). The results of the regression analyses are presented are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Children with Risks/Delays

For this analysis, children were selected based on their overall BSSI-3 score on the pre-test assessment. Specifically, children with an overall BSSI-3 standard score of 85 or below, and had both a pre-test and post-test assessment, were selected for the analysis, yielding a sample of 1,349 children.

Paired sample t-tests were conducted to compare the pre-test BSSI-3 scores and post-test BSSI-3 scores within this sub-sample. Overall, children showed statistically significant progress over time across all sub-domains. The results of the paired sample t-tests are reported as follows: Spoken Language (t=-30.05, p<.001); Reading (t=-39.75, p<.001); Mathematics (t=-29.09, p<.001); Classroom Behavior (t=-28.21, p<.001); Daily Living Skills (t=-37.53, p<.001); and Overall (t=-46.03; p<.001). Descriptive data and results of the paired sample t-tests are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Children with Risks/Delays

For this analysis, children were selected based on their overall BSSI-3 score on the pre-test assessment. Specifically, children with an overall BSSI-3 standard score of 85 or below, and had both a pre-test and post-test assessment, were selected for the analysis, yielding a sample of 1,349 children.

Paired sample t-tests were conducted to compare the pre-test BSSI-3 scores and post-test BSSI-3 scores within this sub-sample. Overall, children showed statistically significant progress over time across all sub-domains. The results of the paired sample t-tests are reported as follows: Spoken Language (t=-30.05, p<.001); Reading (t=-39.75, p<.001); Mathematics (t=-29.09, p<.001); Classroom Behavior (t=-28.21, p<.001); Daily Living Skills (t=-37.53, p<.001); and Overall (t=-46.03; p<.001). Descriptive data and results of the paired sample t-tests are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Children with Challenging Behavior

For this analysis, children were selected based on their BSSI-3 Classroom Behavior score on the pre-test assessment. Specifically, children with a Classroom Behavior standard score of 85 or below, and had both a pre-test and post-test assessment, were selected for the analysis, yielding a sample of 506 children.

Paired sample t-tests were conducted to compare the pre-test BSSI-3 scores and post-test BSSI-3 scores within this sub-sample. Overall, children showed statistically significant progress over time across all sub-domains. The

results of the paired sample t-tests are reported as follows: Spoken Language (t=-30.05, p<.001); Reading (t=-39.75, p<.001); Mathematics (t=-29.09, p<.001); Classroom Behavior (t=-28.21, p<.001); Daily Living Skills (t=-37.53, p<.001); and Overall (t=-46.03; p<.001). Descriptive data and results of the paired sample t-tests are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Four-Year-Old Children At-risk for Classroom Behavior

For this analysis, children were selected based on their BSSI-3 Classroom Behavior score on the pre-test assessment and their age at the time of the pre-test assessment. Specifically, children with a Classroom Behavior standard score below 85, had both a pre-test and post-test assessment, and were between 48 and 59 months of age at the time of the pre-test assessment, were selected for the analysis, yielding a sample of 245 children.

A paired sample t-test was conducted to compare the pre-test BSSI-3 Classroom Behavior scores and post-test BSSI-3 Classroom Behavior scores within this sub-sample. Overall, children showed statistically significant progress over time on the Classroom Behavior domain. The results of the paired sample t-test are reported as follows: Classroom Behavior (t=-20.47, p<.001). Descriptive data and results of the paired sample t-test are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Four-Year-Old Children with Delayed Classroom Behavior

For this analysis, children were selected based on their BSSI-3 Classroom Behavior score on the pre-test assessment and their age at the time of the pre-test assessment. Specifically, children with a Classroom Behavior standard score below 78, had both a pre-test and post-test assessment, and were between 48 and 59 months of age at the time of the pre-test assessment, were selected for the analysis, yielding a sample of 147 children.

A paired sample t-test was conducted to compare the pre-test BSSI-3 Classroom Behavior scores and post-test BSSI-3 Classroom Behavior scores within this sub-sample. Overall, children showed statistically significant progress over time across the Classroom Behavior domain. The results of the paired sample t-test are reported as follows: Classroom Behavior (t=-15.63, p<.001). Descriptive data and results of the paired sample t-test are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Three-Year-Old Children At-risk for Classroom Behavior

For this analysis, children were selected based on their BSSI-3 Classroom Behavior score on the pre-test assessment and their age at the time of the pre-test assessment. Specifically, children with a Classroom Behavior standard score below 85, had both a pre-test and post-test assessment, and were between 36 and 47 months of age at the time of the pre-test assessment, were selected for the analysis, yielding a sample of 208 children.

A paired sample t-test was conducted to compare the pre-test BSSI-3 Classroom Behavior scores and post-test BSSI-3 Classroom Behavior scores within this sub-sample. Overall, children showed statistically significant progress over time across the Classroom Behavior domain. The results of the paired sample t-test are reported as follows: Classroom Behavior (t=21.32, p<.001). Descriptive data and results of the paired sample t-test are presented in the Appendix.

Analysis of the Impact of Pre-K Counts on Three-Year-Old Children with Delayed Classroom Behavior

For this analysis, children were selected based on their BSSI-3 Classroom Behavior score on the pre-test assessment and their age at the time of the pre-test assessment. Specifically, children with a Classroom Behavior standard score below 78, had both a pre-test and post-

test assessment, and were between 36 and 47 months of age at the time of the pre-test assessment, were selected for the analysis, yielding a sample of 64 children.

A paired sample t-test was conducted to compare the pre-test BSSI-3 Classroom Behavior scores and post-test BSSI-3 Classroom Behavior scores within this sub-sample. Overall, children showed statistically significant progress over time across the Classroom Behavior domain. The results of the paired sample t-test are reported as follows: Classroom Behavior ($t=12.84$, $p<.001$). Descriptive data and results of the paired sample t-test are presented in the Appendix.

Analysis of the Impact of Pre-K Counts for All Children

For this analysis, all children who had a BSSI-3 completed at pre-test and had at least two BSSI-3 assessments were included, yielding a sample of 4,101 children. When a child had more than one BSSI-3 assessment, the last assessment was selected for the analysis.

Paired sample t-tests were conducted to compare the pre-test BSSI-3 scores and post-test BSSI-3 scores within the sample. Overall, children showed statistically significant progress over time across all domains. The results of the paired sample t-tests are reported as follows: Spoken Language ($t=-30.05$, $p<.001$); Reading ($t=-39.75$, $p<.001$); Mathematics ($t=-29.09$, $p<.001$); Classroom Behavior ($t=-28.21$, $p<.001$); Daily Living Skills ($t=-37.53$, $p<.001$); and Overall ($t=-46.03$; $p<.001$). Descriptive data and results of the paired sample t-tests are presented in the Appendix.

Comparison of Outcomes for Pre-K Counts Children vs. ECI Children

For this analysis, children with a BSSI-3 assessment completed between 54 and 66 months of age (typical age at transition to kindergarten) were included. If a child had more than one BSSI-3 assessment completed within this age range, the last assessment was selected for this analysis. The final Pre-K Counts sample included 6,971 children who participated in the program between 2006 and 2008, and the final ECI sample included 2,051 children who participated in the program between 1998 and 2002. A total of 2000 children were randomly chosen from each sample, in order to compare the BSSI-3 outcomes between the two groups at transition to kindergarten.

Independent sample t-tests were conducted to compare the post-test BSSI-3 scores between the Pre-K Counts group and the ECI group. Overall, children in the Pre-K program demonstrated statistically significant higher scores on the Classroom Behavior domain ($t=-3.66$, $p<.001$) and Writing domain ($t=-5.14$, $p<.001$). No statistically significant differences were found between the groups on the Reading domain and the Mathematics domain. Overall, children in the ECI program demonstrated statistically significant higher scores on the Overall BSSI-3 score ($t=3.51$, $p<.001$), Spoken Language domain ($t=12.35$, $p<.001$), and Daily Living Skills domain ($t=2.78$, $p<.01$). Overall, because of the minor standard score differences among the two groups, no educationally significant or meaningful differences were apparent between PKC and ECI children. Thus, both similar groups made essentially the same progress in the context of high quality early care and education programs. Descriptive data and results of the independent sample t-tests are presented in the Appendix.

Analyses for Chapter 6

Analysis of PKC Program Quality Improvement

For this analysis, only programs that were required to participate in the Keystone STARS quality mentoring process by OCDEL were included (n=95). Non-parametric analyses were conducted to compare the STAR Level at entry into the program with the STAR Level at exit from the program. Results of the analyses indicate that the programs demonstrated statistically significant and educationally meaningful improvement (z=-27.65, p<.001) in their STAR Level from entry into Pre-K Counts to exit from Pre-K Counts. Descriptive data and results of the independent sample t-tests are presented in the Appendix.

Analysis of Improvement in PKC Program Quality Associated with Child Outcomes

For this analysis, only programs that increased in Keystone STAR Level were included (n=43). For this analysis, all children who had a BSSI-3 completed at pre-test and had at least two BSSI-3 assessments, were included, yielding a sample of 681 children. If a child had more than one BSSI-3 assessment, the last assessment was selected for the analysis.

A series of regression analyses were conducted to determine if improvement in Keystone STAR Level predicted children's BSSI-3 post-test scores. In the first regression analysis, the first BSSI-3 spoken language subtest score, gender, ethnicity, and the first star level were entered as predictor variables in the first block. The final star level was entered as a predictor in the second block, with the final BSSI-3 spoken language subtest score entered as the dependent variable. R for regression was significantly different from zero, F, (5, 531) = 81.36, p <.01. Altogether, 43.4% (42.8% adjusted) of the variability in the BSSI-3 Spoken Language scores was explained by the model. After controlling for gender, ethnicity, the first star level, and the first spoken language subtest score, the final star level significantly predicted children's spoken language skills.

In the next regression analysis, the first BSSI-3 reading subtest score, gender, ethnicity, and the first star level were entered as predictor variables in the first block. The final star level was entered as a predictor in the second block, with the final BSSI-3 reading subtest score entered as the dependent variable. R for regression was significantly different from zero, F, (5, 531) = 50.96, p <.01. Altogether, 32.4% (31.8% adjusted) of the variability in the BSSI-3 Reading scores was explained by the model. After controlling for gender, ethnicity, the first star level, and the first reading subtest score, the final star level significantly predicted children's reading skills.

In the next regression analysis, the first BSSI-3 math subtest score, gender, ethnicity, and the first star level were entered as predictor variables in the first block. The final star level was entered as a predictor in the second block, with the final BSSI-3 math subtest score entered as the dependent variable. R for regression was significantly different from zero, F, (5, 531) = 45.35 p <.01. Altogether, 29.9% (29.3% adjusted) of the variability in the BSSI-3 Math scores was explained by the model. After controlling for gender, ethnicity, the first star level, and the first math subtest score, the final star level significantly predicted children's math skills.

In the next regression analysis, the first BSSI-3 classroom behavior subtest score, gender, ethnicity, and the first star level were entered as predictor variables in the first block. The final star level was entered as a predictor in the second block, with the final BSSI-3 classroom behavior subtest score entered as the dependent variable. R for regression was significantly different from zero, F, (5, 531) = 65.45, p <.01. Altogether, 38.1% (37.5% adjusted) of the variability in the BSSI-3 Classroom Behavior scores was explained by the model. After controlling for gender, ethnicity, the first star level, and the first classroom behavior subtest score, the final star level significantly predicted children's classroom behavior skills.

In the final regression analysis, the first BSSI-3 daily living skills subtest score, gender, ethnicity, and the first star level were entered as predictor variables in the first block. The final star level was entered as a predictor in the second block, with the final BSSI-3 daily living skills subtest score entered as the dependent variable. R for regression was significantly different from zero, F, (5, 531) = 38.41, p <.01. Altogether, 26.6% (25.9% adjusted) of the variability in the BSSI-3 Classroom Behavior scores was explained by the model. After controlling for gender, ethnicity, the first star level, and the first daily living skills subtest score, the final star level significantly predicted children's daily living skills.

Analysis of Child Outcomes by Program Quality Level

For this analysis, all children who had a BSSI-3 completed at pre-test and had at least two BSSI-3 assessments, were included, yielding a sample of 2,529 children. If a child had more than one BSSI-3 assessment, the last assessment was selected for the analysis. To compare the child outcomes by program quality, programs were divided into two groups based on their final STAR Level. The high quality group (STAR Levels 3 and 4) included 1,288 children and the low quality group (STAR Levels 1 and 2) included 1,241 children.

Independent sample t-tests were conducted to compare the post-test BSSI-3 scores between the high quality group and the low quality group. Overall, children in the high quality demonstrated statistically significant higher scores on the BSSI-3 Spoken Language, Reading, Mathematics, and Daily Living Skills sub-domains. The results of the independent sample t-tests are reported as follows: Spoken Language (t=--2.60, p<.01); Reading (t=-2.71, p<.01); Mathematics (t=-4.76, p<.01); Classroom Behavior (t=-7.04, p<.01); Daily Living Skills (t=-5.38, p<.01). No statistically significant differences were found between the two groups on the Classroom Behavior subdomain. Descriptive data and results of the independent sample t-tests are presented in the Appendix.

Analysis of Child Outcomes in SPECS Random Selection Sub-study

For this analysis, the SPECS evaluation team randomly selected 34 classrooms from within the 21 participating Pre-K Counts partnership programs to conduct qualitative and quantitative analysis of the interrelationships among program quality, teacher's instructional practices, and children's early learning. A total of 67 program assessments were completed during the spring of 2007 and the spring of 2008. Thirty-four classrooms were assessed in the spring of 2007 and thirty-three classrooms were evaluated in the spring of 2008. One classroom was not evaluated in the spring of 2008 because the center no longer participated in the partnership. Only children with two BSSI-3 time points, and remained in the same classroom from Spring 2007 through Spring 2008 were included in this analysis, yielding a sample of 24 children.

Paired sample t-tests were conducted to compare the pre-test BSSI-3 scores and post-test BSSI-3 scores within the sample. Overall, children showed statistically significant and educationally significant progress over time across the BSSI-3 Spoken Language, Reading, Daily Living Skills, and Overall domains. The results of the paired sample t-tests are reported as follows: Spoken Language (t=-4.14, p<.001); Reading (t=-3.59, p<.01); Daily Living Skills (t=-3.20, p<.01); and Overall (t=-4.18; p<.001). No statistically significant differences were found between the Mathematics and Classroom Behavior pre-test and post-test sub-domains. Descriptive data and results of the paired sample t-tests are presented in the Appendix.

Analyses for Chapter 7

Analysis of Outcomes by Pre-K Counts Extent of Partnership Elements

For this analysis, all children who had a BSSI-3 completed at pre-test and had at least two BSSI-3 assessments, and whose programs were rated and classified on the Pre-Kindergarten Program Partnership Rubric were included, yielding a sample of 2,914 children. If a child had more than one BSSI-3 assessment, the last assessment was selected for the analysis. To compare the child outcomes by the extent of partnership elements, the total partnership rubric scores for each program were divided into two categories: high extent of implementation of partnership elements and low extent of implementation of partnership elements. The high-extent group included 1,625 children and the low-extent group included 2,289 children.

Independent sample t-tests were conducted to compare the post-test BSSI-3 scores between the high extent group and the low extent group. Overall, children in the high-extent demonstrated statistically significant higher scores on all of the BSSI-3 sub-domains. The results of the independent sample t-tests are reported as follows: Spoken Language (t=--5.01, p<.001); Reading (t=-7.92, p<.001); Mathematics (t=-11.21, p<.001); Classroom Behavior (t=-7.04, p<.001); Daily Living Skills (t=-11.44, p<.001); and Overall (t=-8.96; p<.001). Descriptive data and results of the independent sample t-tests are presented in the Appendix.

Analysis of the impact of a Direct Instruction (DI) add-on to a Developmentally-Appropriate (DAP) curriculum in Woodland Hills School District PKC/4KIDS in Braddock-Heritage Community Initiative

A 2- way between-subjects multivariate analysis of covariance was performed on two dependent variables that assessed pre-academic skills: number skills and letter and word skills. Adjustment was made for the pre-test scores: number skills and letter and word skills knowledge prior to the intervention.

With the use of Wilks' criterion, a significant main effect was found for each covariate, approximate F (2, 56) = 11.68, p<.01, observed power = .99 for Number Skills pre-test and approximate F (2, 56) = 10.11, p<.01, observed power = .98 for Letter and Word Skills pre-test on the set of Pre-Academic Skills dependent variables. Additionally, using Wilks' criterion, a significant main effect was found between groups on the set of dependent variables, approximate F (2, 56) = 4.08, p<.05, observed power = .70. There was a moderate association between Number Skills pre-test and the dependent variables, partial η2 =.29 and between Letter and Word Skills pre-test and the Pre-Academic Skills dependent variables, η2= .27. Results of this analysis are summarized in the table below.

MANCOVA Results of DI on Pre-Academic Skills

Source	*df*	*F*	Partial η^2	Observed power
Number skills pre-test (covariate)	2	11.68**	0.29	0.99
Letter word skills pre-test (covariate)	2	10.11**	0.27	0.98
Group	2	4.08*	0.13	0.70
Error	56			

***p<.01.*
**p<.05.*

`Effects of the intervention on each dependent variable after adjustment for covariates were investigated by univariate tests of between subjects effects. Results of the univariate tests showed a significant difference between groups on both Number Skills, F (1, 57) = 5.69, p<.05, η2 = .10, observed power = .65 and Letter and Word Skills, F (1,

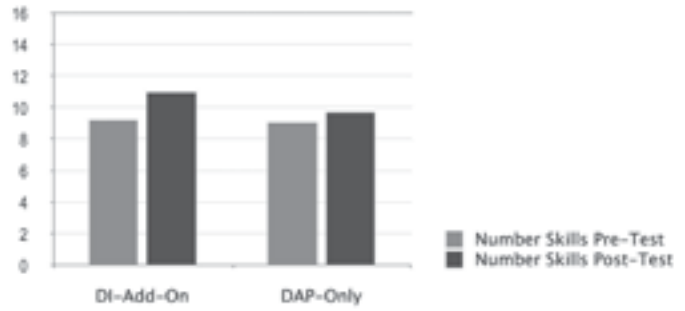
57) = 6.81, p<.05, η2 = .11, observed power = .73. Results of this analysis are summarized in the table below.

Tests of Between-Subjects Effects on Pre-Academic Skills

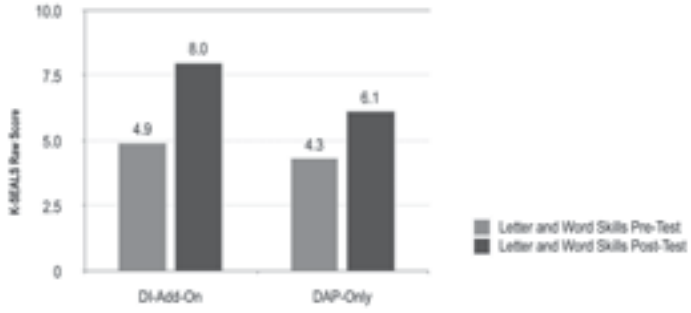
Variable and Source	*df*	*F*	Partial η^2	Observed Power
Number skills post-test				
Between groups	1	5.69*	0.10	0.65
Within groups	57			
Letter and word skills post-test				
Between groups	1	6.81*	0.11	0.73
Within groups	57			

**p<.05.*

Comparison of DI-Add-On vs. DAP-Only for Progress in Number Skills



Comparison of DI-Add-On vs. DAP-Only for Progress in Letter and Word Skills



A 2- way between-subjects multivariate analysis of covariance was performed on two dependent variables that assessed language skills: expressive language skills and receptive language skills. Adjustment was made for the pre-test scores: expressive language skills and receptive language skills prior to the intervention.

With the use of Wilks' criterion, a significant main effect was found for each covariate, approximate F (2, 56) = 22.04, p<.01, observed power = 1.0 for Expressive Language Skills pre-test and approximate F (2, 56) = 4.80, p<.05, observed power = .78 for Receptive Language Skills pre-test on the set of Language Skills dependent variables. Additionally, using Wilks' criterion, a significant main effect was found between groups on the set of dependent variables, approximate F (2, 56) = 5.18, p<.01, observed power = .81. There was a moderately high association between Expressive Language Skills pre-test and the Language Skills dependent variables, partial η2 =.44 and a low association between Receptive Language Skills pre-test and the Language Skills dependent variables, η2= .15. Results of this analysis are summarized in the table below.

MANCOVA Results of DI on Language Skills

Source	*df*	*F*	Partial η^2	Observed Power
Expressive language skills pre-test (covariate)	2	22.04**	0.44	1.0
Receptive language pre-test (covariate)	2	4.80*	0.15	0.78
Group	2	5.18**	0.16	0.81
Error	56			

***p<.01.*
**p<.05.*

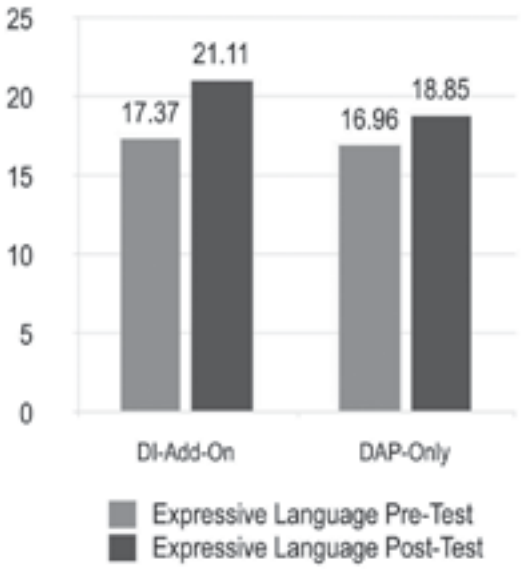
Effects of the intervention on each dependent variable after adjustment for covariates were investigated by univariate tests of between subjects effects. Results of the univariate tests showed a significant difference between groups on both Expressive Language Skills, F (1, 57) = 9.40, p<.01, η2 = .14, observed power = .85 and Receptive Language Skills, F (1, 57) = 8.49, p<.01, η2 = .13, observed power = .82. Results of this analysis are summarized in the table below.

Tests of Between-Subjects Effects on Language Skills

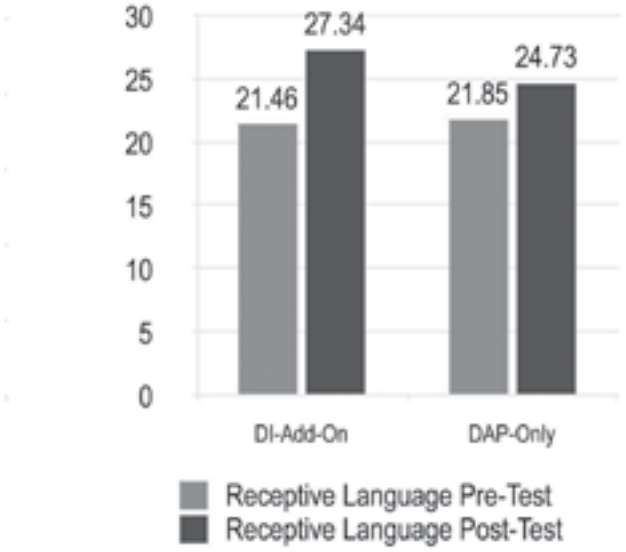
Variable and Source	*df*	*F*	Partial η^2	Observed Power
Expressive language skills post-test				
Between groups	1	9.40**	0.14	0.85
Within groups	57			
Receptive language skills post-test		8.49**	0.13	0.82
Between groups	1			
Within groups	57			

***p<.01.*

Comparison of DI-Add-On vs. DAP-Only for Progress in Expressive Language Skills



Comparison of DI-Add-On vs. DAP-Only for Progress in Receptive Language Skills



A 2- way between-subjects multivariate analysis of covariance was performed on two dependent variables that assessed early literacy skills: initial sounds fluency and letter naming fluency. Adjustment was made for the pre-test scores: initial sounds fluency and letter naming fluency prior to the intervention.

With the use of Pillai's Trace, a significant main effect was found for each covariate, approximate F (2, 56) = 4.02, p<.05, observed power = .70 for Initial Sounds Fluency pre-test and approximate F (2, 56) = 10.33, p<.01, observed power = .98 for Letter Naming Fluency pre-test on the set of Early Literacy Skills dependent variables. Additionally, using Pillai's Trace, a significant main effect was found between groups on the set of dependent variables, approximate F (2, 56) = 3.78, p<.05, observed power = .67. There was a low association between Initial Sounds Fluency pre-test and the Early Literacy Skills dependent variables, partial η2 =.13 and a moderate association between Letter Naming Fluency pre-test and the Early Literacy Skills dependent variables, η2= .27. Results of this analysis are summarized in the table below.

MANCOVA Results of DI on Early Literacy Skills

Source	*df*	*F*	Partial η^2	Observed Power
Initial sounds fluency pre-test (covariate)	2	4.02*	0.13	0.70
Letter naming fluency pre-test (covariate)	2	10.33**	0.27	0.98
Group	2	3.78*	0.12	0.67
Error	56			

***p<.01.*
**p<.05.*

Effects of the intervention on each dependent variable after adjustment for covariates were investigated by univariate tests of between subjects effects. Results of the univariate tests showed a significant difference between groups on Initial Sounds Fluency, F (1, 57) = 5.79, p<.05, η2 = .10, observed power = .66 but not Letter Naming Fluency, F (1, 57) = 3.67, p>.051, η2 = .06, observed power = .47. Results of this analysis are summarized in the table below.

Tests of Between-Subjects Effects on Early Literacy Skills

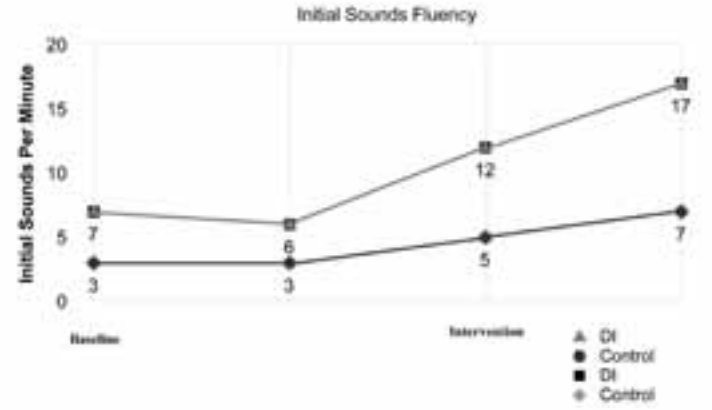
Variable and Source	*df*	*F*	Partial η^2	Observed Power
Initial sounds fluency post-test				
Between groups	1	5.79*	0.10	0.66
Within groups	57			
Letter naming fluency post-test		3.67	0.06	0.47
Between groups	1			
Within groups	57			

**p<.05.*

The average initial sounds fluency score for each Dibels ISF assessment was calculated and graphed for each group. Only children who participated in the study for the entire six months were included in the analysis (n=18). Data were analyzed using visual analysis, percentage of nonoverlapping data points, and effect size.

Four criteria were employed by the experimenter to visually analyze the Dibels data: (a) changes in mean level of performance across phases, (b) changes in level of performance from the end of one phase to the beginning of the next phase, (c) changes in trend or slope from one phase to the next, and (d) the latency of behavior change across phases. The figure below presents the mean initial sounds fluency scores for the DI group and the Control group.

Comparison of initial sounds fluency for both groups across intervention



Changes in means. Across the DI group, the initial sounds fluency mean score was 6.66 (range, 0 to 18.46) during the baseline condition. Across the Control group, the mean initial sounds fluency score was 2.63 (range, 0 to 9.09) during the baseline condition. During the intervention phase, the mean initial sounds fluency score increased for the DI group to a score of 11.67 (range, 0 to 26.25) and increased slightly for the Control group to a score of 5.00 (range, 0 to 14.47).

Changes in level. Visual inspection of the DI group mean initial sounds fluency scores across phases did not show an immediate change in level from the baseline to the first intervention data point. Visual inspection of the Control group mean initial sounds fluency scores across phases did not show an immediate change in level from baseline to the first intervention data point.

Changes in trend. Examination of the regression linear trend line for the DI group and Control group mean initial sounds fluency scores across phases showed systematic increase from week twenty to week twenty-six for both groups. Further examination of the regression linear trend line for both groups indicated that the DI group had a better linear trajectory.

Latency of change. Visual inspection of the DI group mean initial sounds fluency scores across phases did not show an immediate evident change in initial sounds fluency skills between the baseline and the intervention phase. Examination of the graph showed that an evident change in the DI group's mean initial sounds fluency scores occurred in week twenty of the intervention phase. Visual inspection of the Control group mean initial sounds fluency scores across phases showed an evident change in initial sounds fluency skills between the baseline and week twenty-six of the intervention phase.

Percentage of Nonoverlapping Data

To insure careful visual analysis, a metric involving the percentage of nonoverlapping data points was employed. The less overlap, the more effective and reliable the intervention. Visual inspection of the graph showed 67% of the data points were nonoverlapping (above the baseline data point).

Effect Size

To obtain the magnitude of the effect of DI on the initial sounds fluency skills of the subjects, the effect size was calculated using Cohen's d. The effect size for the DI group was .90, indicating a large effect size for the intervention.

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Technical details of results of CIVID analysis for sample with BSSI-3 as both pre and post tests

BSSI-3 SPOKEN SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.187[a]	0.035	0.035	16.702	0.035	148.900	2	8259	0.000
2	.273[b]	0.074	0.074	16.356	0.040	354.093	1	8258	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83070.131	2	41535.065	148.900	.000[a]
	Residual	2303811.048	8259	278.946		
	Total	2386881.179	8261			
2	Regression	177793.056	3	59264.352	221.542	.000[b]
	Residual	2209088.123	8258	267.509		
	Total	2386881.179	8261			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SSPOKEN

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-48.049	15.916		-3.019	0.003
	AGE	0.153	0.018	1.459	8.598	0.000
	AGESQ	-3.789E-05	0.000	-1.294	-7.627	0.000
2	(Constant)	-8.377	15.728		-0.533	0.594
	AGE	0.119	0.018	1.131	6.767	0.000
	AGESQ	-3.235E-05	0.000	-1.105	-6.639	0.000
	T2	8.281	0.440	0.244	18.817	0.000

a. Dependent Variable: SSPOKEN

BSSI-3 READING SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.161[a]	0.026	0.026	12.709	0.026	109.290	2	8259	0.000
2	.272[b]	0.074	0.074	12.390	0.048	431.926	1	8258	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	35306.685	2	17653.342	109.290	.000[a]
	Residual	1334059.389	8259	161.528		
	Total	1369366.074	8261			
2	Regression	101615.106	3	33871.702	220.637	.000[b]
	Residual	1267750.968	8258	153.518		
	Total	1369366.074	8261			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SREADING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.483	12.111		-0.040	0.968
	AGE	0.098	0.014	1.229	7.212	0.000
	AGESQ	-2.410E-05	0.000	-1.087	-6.375	0.000
2	(Constant)	32.710	11.915		2.745	0.006
	AGE	0.069	0.013	0.867	5.187	0.000
	AGESQ	-1.947E-05	0.000	-0.878	-5.273	0.000
	T2	6.928	0.333	0.269	20.783	0.000

a. Dependent Variable: SREADING

BSSI-3 WRITING SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.280[a]	0.078	0.078	8.082	0.078	160.003	2	3764	0.000
2	.336[b]	0.113	0.112	7.930	0.034	146.058	1	3763	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20900.869	2	10450.434	160.003	.000[a]
	Residual	245841.924	3764	65.314		
	Total	266742.793	3766			
2	Regression	30086.483	3	10028.828	159.465	.000[b]
	Residual	236656.309	3763	62.890		
	Total	266742.793	3766			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SWRITING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-315.656	25.641		-12.311	0.000
	AGE	0.404	0.026	4.203	15.786	0.000
	AGESQ	-9.756E-05	0.000	-4.064	-15.265	0.000
2	(Constant)	-257.431	25.618		-10.049	0.000
	AGE	0.348	0.026	3.619	13.620	0.000
	AGESQ	-8.491E-05	0.000	-3.537	-13.353	0.000
	T2	3.894	0.322	0.197	12.085	0.000

a. Dependent Variable: SWRITING

BSSI-3 MATH SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.099[a]	0.010	0.010	8.709	0.010	41.138	2	8259	0.000
2	.243[b]	0.059	0.059	8.491	0.049	430.404	1	8258	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6240.177	2	3120.089	41.138	.000[a]
	Residual	626405.526	8259	75.845		
	Total	632645.703	8261			
2	Regression	37270.908	3	12423.636	172.319	.000[b]
	Residual	595374.795	8258	72.097		
	Total	632645.703	8261			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SMATH

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	25.688	8.299		3.095	0.002
	AGE	0.084	0.009	1.551	9.028	0.000
	AGESQ	-2.319E-05	0.000	-1.539	-8.953	0.000
2	(Constant)	48.394	8.165		5.927	0.000
	AGE	0.064	0.009	1.186	7.042	0.000
	AGESQ	-2.002E-05	0.000	-1.328	-7.914	0.000
	T2	4.740	0.228	0.271	20.746	0.000

a. Dependent Variable: SMATH

BSSI-3 CLASS BEHAVIOR SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.050[a]	0.002	0.002	12.754	0.002	10.267	2	8259	0.000
2	.199[b]	0.040	0.039	12.514	0.037	320.452	1	8258	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3340.245	2	1670.122	10.267	.000[a]
	Residual	1343492.571	8259	162.670		
	Total	1346832.816	8261			
2	Regression	53527.079	3	17842.360	113.927	.000[b]
	Residual	1293305.737	8258	156.612		
	Total	1346832.816	8261			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SCLABHV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	50.247	12.154		4.134	0.000
	AGE	0.059	0.014	0.750	4.348	0.000
	AGESQ	-1.677E-05	0.000	-0.763	-4.421	0.000
2	(Constant)	79.124	12.034		6.575	0.000
	AGE	0.034	0.013	0.432	2.538	0.011
	AGESQ	-1.274E-05	0.000	-0.579	-3.417	0.001
	T2	6.027	0.337	0.236	17.901	0.000

a. Dependent Variable: SCLABHV

BSSI-3 DAILY LIVING SUBSCALE

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14058.733	2	7029.367	41.342	.000[a]
	Residual	1404266.382	8259	170.029		
	Total	1418325.115	8261			
2	Regression	110966.012	3	36988.671	233.641	.000[b]
	Residual	1307359.103	8258	158.314		
	Total	1418325.115	8261			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SDLYLIV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.542	12.426		1.331	0.183
	AGE	0.084	0.014	1.032	6.006	0.000
	AGESQ	-2.156E-05	0.000	-0.955	-5.559	0.000
2	(Constant)	56.669	12.099		4.684	0.000
	AGE	0.049	0.013	0.601	3.606	0.000
	AGESQ	-1.596E-05	0.000	-0.707	-4.257	0.000
	T2	8.376	0.339	0.320	24.741	0.000

a. Dependent Variable: SDLYLIV

Technical details of results of CIVID analysis for sample with ELI as pretest and BSSI-3 as post-test

BSSI-3 SPOKEN SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.183[a]	0.034	0.033	14.965	0.034	33.773	2	1943	0.000
2	.198[b]	0.039	0.038	14.925	0.006	11.392	1	1942	0.001

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15126.755	2	7563.378	33.773	.000[a]
	Residual	435127.804	1943	223.946		
	Total	450254.559	1945			
2	Regression	17664.374	3	5888.125	26.433	.000[b]
	Residual	432590.185	1942	222.755		
	Total	450254.559	1945			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SSPOKEN

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	132.828	29.065		4.570	0.000
	AGE	-0.064	0.040	-0.551	-1.604	0.109
	AGESQ	2.891E-05	0.000	0.730	2.124	0.034
2	(Constant)	147.443	29.309		5.031	0.000
	AGE	-0.075	0.040	-0.645	-1.877	0.061
	AGESQ	2.865E-05	0.000	0.723	2.110	0.035
	T2	3.823	1.133	0.126	3.375	0.001

a. Dependent Variable: SSPOKEN

BSSI-3 READING SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.049[a]	0.002	0.001	13.655	0.002	2.291	2	1943	0.101

a. Predictors: (Constant), AGESQ, AGE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	854.301	2	427.150	2.291	.101[a]
	Residual	362303.979	1943	186.466		
	Total	363158.280	1945			

a. Predictors: (Constant), AGESQ, AGE

b. Dependent Variable: SREADING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	130.034	26.522		4.903	0.000
	AGE	-0.046	0.036	-0.440	-1.260	0.208
	AGESQ	1.701E-05	0.000	0.478	1.369	0.171

a. Dependent Variable: SREADING

BSSI-3 MATH SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.195[a]	0.038	0.037	12.115	0.038	38.362	2	1943	0.000
2	.236[b]	0.056	0.054	12.006	0.018	36.709	1	1942	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11261.649	2	5630.825	38.362	.000[a]
	Residual	285199.239	1943	146.783		
	Total	296460.888	1945			
2	Regression	16552.705	3	5517.568	38.281	.000[b]
	Residual	279908.183	1942	144.134		
	Total	296460.888	1945			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SMATH

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	79.897	23.531		3.395	0.001
	AGE	0.011	0.032	0.114	0.332	0.740
	AGESQ	2.606E-06	0.000	0.081	0.236	0.813
2	(Constant)	101.001	23.576		4.284	0.000
	AGE	-0.005	0.032	-0.054	-0.157	0.875
	AGESQ	2.227E-06	0.000	0.069	0.204	0.838
	T2	5.521	0.911	0.224	6.059	0.000

a. Dependent Variable: SMATH

BSSI-3 CLASS BEHAVIOR SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.185[a]	0.034	0.033	13.647	0.034	34.572	2	1943	0.000
2	.221[b]	0.049	0.047	13.547	0.014	29.590	1	1942	0.000

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12876.656	2	6438.328	34.572	.000[a]
	Residual	361846.374	1943	186.231		
	Total	374723.030	1945			
2	Regression	18307.226	3	6102.409	33.250	.000[b]
	Residual	356415.804	1942	183.530		
	Total	374723.030	1945			

a. Predictors: (Constant), AGESQ, AGE

b. Predictors: (Constant), AGESQ, AGE, T2

c. Dependent Variable: SCLABHV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	71.141	26.505		2.684	0.007
	AGE	0.022	0.036	0.213	0.619	0.536
	AGESQ	-9.848E-07	0.000	-0.027	-0.079	0.937
2	(Constant)	92.521	26.604		3.478	0.001
	AGE	0.007	0.036	0.062	0.180	0.857
	AGESQ	-1.368E-06	0.000	-0.038	-0.111	0.912
	T2	5.593	1.028	0.202	5.440	0.000

a. Dependent Variable: SCLABHV

BSSI-3 DAILY LIVING SUBSCALE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.019[a]	0.000	0.000	13.434	0.000	0.348	2	1943	0.706

a. Predictors: (Constant), AGESQ, AGE

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	125.626	2	62.813	0.348	.706[a]
	Residual	350663.597	1943	180.475		
	Total	350789.223	1945			

a. Predictors: (Constant), AGESQ, AGE

b. Dependent Variable: SDLYLIV

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	104.812	26.092		4.017	0.000
	AGE	-0.009	0.036	-0.089	-0.254	0.800
	AGESQ	3.726E-06	0.000	0.107	0.305	0.760

Technical Details of Regression Analysis of Improvement in Keystone STARS Level on BSSI-3 Post-Test

BSSI-3 Spoken Language

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646(a)	0.417	0.413	13.204
2	.659(b)	0.434	0.428	13.029

a Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA(c)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66449.231	4	16612.308	95.281	.000(a)
	Residual	92754.121	532	174.350		
	Total	159203.352	536			
2	Regression	69058.961	5	13811.792	81.359	.000(b)
	Residual	90144.390	531	169.763		
	Total	159203.352	536			

a Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)
c Dependent Variable: S-SPOKEN 2

Coefficients(a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta	B	Std. Error
1	(Constant)	37.822	4.437		8.525	0.000
	Gender	2.590	1.145	0.075	2.262	0.024
	Ethnicity	1.819	0.401	0.155	4.536	0.000
	Star Level T1 (PKC Entry)	-2.050	0.662	-0.104	-3.099	0.002
	S-SPOKEN 1	0.617	0.037	0.568	16.676	0.000
2	(Constant)	42.868	4.563		9.394	0.000
	Gender	2.276	1.133	0.066	2.009	0.045
	Ethnicity	1.803	0.396	0.153	4.555	0.000
	Star Level T1 (PKC Entry)	1.969	1.215	0.099	1.620	0.106
	S-SPOKEN 1	0.647	0.037	0.595	17.344	0.000
	Star Level T2 (5/2008)	-4.950	1.262	-0.240	-3.921	0.000

a Dependent Variable: S-SPOKEN 2

BSSI-3 Reading

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559(a)	0.312	0.307	8.851
2	.569(b)	0.324	0.318	8.783

a Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA(c)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18938.353	4	4734.588	60.432	.000(a)
	Residual	41679.897	532	78.346		
	Total	60618.250	536			
2	Regression	19656.013	5	3931.203	50.961	.000(b)
	Residual	40962.236	531	77.142		
	Total	60618.250	536			

a Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)
c Dependent Variable: S-READING 2

Coefficients(a)

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta	B	Std. Error
1	(Constant)	51.548	3.341		15.431	0.000
	Gender	1.522	0.766	0.072	1.986	0.048
	Ethnicity	0.911	0.266	0.125	3.421	0.001
	Star Level T1 (PKC Entry)	0.682	0.444	0.056	1.536	0.125
	S-READING 1	0.438	0.031	0.515	14.102	0.000
2	(Constant)	54.927	3.495		15.716	0.000
	Gender	1.389	0.762	0.065	1.823	0.069
	Ethnicity	0.927	0.264	0.128	3.510	0.000
	Star Level T1 (PKC Entry)	2.726	0.802	0.223	3.399	0.001
	S-READING 1	0.445	0.031	0.523	14.397	0.000
	Star Level T2 (5/2008)	-2.548	0.835	-0.200	-3.050	0.002

a Dependent Variable: S-READING 2

BSSI-3 Mathematics

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.529(a)	0.280	0.274	7.068
2	.547(b)	0.299	0.293	6.979

a Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA(c)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10330.900	4	2582.725	51.698	.000(a)
	Residual	26577.759	532	49.958		
	Total	36908.659	536			
2	Regression	11043.804	5	2208.761	45.345	.000(b)
	Residual	25864.856	531	48.710		
	Total	36908.659	536			

a Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)
c Dependent Variable: S-MATHEMATICS 2

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	51.614	3.811		13.545	0.000
	Gender	0.719	0.611	0.043	1.176	0.240
	Ethnicity	0.835	0.214	0.147	3.908	0.000
	Star Level T1 (PKC Entry)	0.174	0.354	0.018	0.492	0.623
	S-MATHEMATICS 1	0.467	0.036	0.480	12.817	0.000
2	(Constant)	56.096	3.941		14.234	0.000
	Gender	0.598	0.604	0.036	0.990	0.323
	Ethnicity	0.867	0.211	0.153	4.104	0.000
	Star Level T1 (PKC Entry)	2.218	0.638	0.233	3.474	0.001
	S-MATHEMATICS 1	0.461	0.036	0.474	12.819	0.000
	Star Level T2 (5/2008)	-2.535	0.663	-0.255	-3.826	0.000

a Dependent Variable: S-MATHEMATICS 2

BSSI-3 Classroom Behavior

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604(a)	0.364	0.359	10.004
2	.617(b)	0.381	0.375	9.878

a Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity
b Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

ANOVA(c)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30498.712	4	7624.678	76.192	.000(a)
	Residual	53237.973	532	100.071		
	Total	83736.685	536			
2	Regression	31928.922	5	6385.784	65.451	.000(b)
	Residual	51807.763	531	97.566		
	Total	83736.685	536			

a Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity
b Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)
c Dependent Variable: S-CLASSROOM BEHAVIOR 2

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	41.854	3.783		11.065	0.000
	Gender	2.673	0.871	0.107	3.069	0.002
	Ethnicity	1.124	0.300	0.132	3.740	0.000
	Star Level T1 (PKC Entry)	-0.630	0.501	-0.044	-1.257	0.209
	S-CLASSROOM BEHAVIOR 1	0.534	0.034	0.550	15.620	0.000
2	(Constant)	45.873	3.880		11.824	0.000
	Gender	2.441	0.862	0.098	2.832	0.005
	Ethnicity	1.137	0.297	0.133	3.833	0.000
	Star Level T1 (PKC Entry)	2.276	0.906	0.159	2.513	0.012
	S-CLASSROOM BEHAVIOR 1	0.553	0.034	0.568	16.200	0.000
	Star Level T2 (5/2008)	-3.623	0.946	-0.242	-3.829	0.000

a Dependent Variable: S-CLASSROOM BEHAVIOR 2

BSSI-3 Daily Living Skills

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.498(a)	0.248	0.243	10.186
2	.515(b)	0.266	0.259	10.078

a Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity
b Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

ANOVA(c)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18231.991	4	4557.998	43.930	.000(a)
	Residual	55198.177	532	103.756		
	Total	73430.168	536			
2	Regression	19501.988	5	3900.398	38.405	.000(b)
	Residual	53928.180	531	101.560		
	Total	73430.168	536			

a Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity
b Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)
c Dependent Variable: S-DAILY LIVING SKILLS 2

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	51.022	3.931		12.979	0.000
	Gender	1.658	0.885	0.071	1.874	0.061
	Ethnicity	1.112	0.304	0.139	3.655	0.000
	Star Level T1 (PKC Entry)	0.638	0.510	0.047	1.250	0.212
	S-DAILY LIVING SKILLS 1	0.436	0.037	0.452	11.885	0.000
2	(Constant)	54.969	4.046		13.585	0.000
	Gender	1.455	0.877	0.062	1.659	0.098
	Ethnicity	1.133	0.301	0.142	3.764	0.000
	Star Level T1 (PKC Entry)	3.368	0.922	0.251	3.651	0.000
	S-DAILY LIVING SKILLS 1	0.451	0.037	0.468	12.353	0.000
	Star Level T2 (5/2008)	-3.406	0.963	-0.243	-3.536	0.000

a Dependent Variable: S-DAILY LIVING SKILLS 2

Table 1. Weighted norm tables for the 36-38 months-old cohort – spoken scores

Raw score	Percentile rank	Z-score	Standardized score
0	6	-1.54	77
1	9	-1.34	80
2	13	-1.14	83
3	17	-0.93	86
4	23	-0.73	89
5	30	-0.53	92
6	37	-0.33	95
7	45	-0.12	98
8	53	0.08	101
9	61	0.28	104
10	69	0.49	107
11	76	0.69	110
12	81	0.89	113
13	86	1.10	116
14	90	1.30	120
15	93	1.50	123

Table 2. Weighted norm tables for the 36-38 months-old cohort – reading scores

Raw score	Percentile rank	Z-score	Standardized score
0	6	-1.53	77
1	10	-1.31	80
2	14	-1.09	84
3	19	-0.87	87
4	26	-0.65	90
5	34	-0.42	94
6	42	-0.20	97
7	51	0.02	100
8	59	0.24	104
9	68	0.46	107
10	75	0.68	110
11	82	0.90	114
12	87	1.12	117
13	91	1.34	120
14	94	1.56	123
15	96	1.78	127
16	98	2.01	130
17	99	2.23	133
18	99	2.45	137

Table 3. Weighted norm tables for the 36-38 months-old cohort – mathematics scores

Raw score	Percentile rank	Z-score	Standardized score
0	11	-1.24	81
1	15	-1.04	84
2	20	-0.85	87
3	26	-0.65	90
4	33	-0.45	93
5	40	-0.25	96
6	48	-0.06	99
7	56	0.14	102
8	63	0.34	105
9	70	0.53	108
10	77	0.73	111
11	82	0.93	114
12	87	1.13	117
13	91	1.32	120
14	94	1.52	123
15	96	1.72	126

Table 4. Weighted norm tables for the 36-38 months-old cohort – classroom behavior scores

Raw score	Percentile rank	Z-score	Standardized score
0	2	-2.14	68
1	3	-1.94	71
2	4	-1.74	74
3	6	-1.54	77
4	9	-1.34	80
5	13	-1.14	83
6	18	-0.93	86
7	23	-0.73	89
8	30	-0.53	92
9	37	-0.33	95
10	45	-0.13	98
11	53	0.07	101
12	61	0.27	104
13	68	0.48	107
14	75	0.68	110
15	81	0.88	113
16	86	1.08	116
17	90	1.28	119
18	93	1.48	122

Table 5. Weighted norm tables for the 36-38 months-old cohort – living skills scores

Raw score	Percentile rank	Z-score	Standardized score
0	2	-2.15	68
1	3	-1.94	71
2	4	-1.73	74
3	6	-1.53	77
4	9	-1.32	80
5	13	-1.12	83
6	18	-0.91	86
7	24	-0.71	89
8	31	-0.50	92
9	38	-0.30	96
10	46	-0.09	99
11	55	0.12	102
12	63	0.32	105
13	70	0.53	108
14	77	0.73	111
15	83	0.94	114
16	87	1.14	117
17	91	1.35	120
18	94	1.55	123

Table 6. Weighted norm tables for the 36-38 months-old cohort – total scores

Raw score	Percentile rank	Z-score	Standardized score
0	3	-1.88	72
1	3	-1.83	72
2	4	-1.79	73
3	4	-1.74	74
4	4	-1.70	75
5	5	-1.65	75
6	5	-1.61	76
7	6	-1.57	77
8	6	-1.52	77
9	7	-1.48	78
10	8	-1.43	79
11	8	-1.39	79
12	9	-1.34	80
13	10	-1.30	81
14	11	-1.25	81
15	11	-1.21	82
16	12	-1.16	83
17	13	-1.12	83
18	14	-1.07	84
19	15	-1.03	85
20	16	-0.98	85
21	17	-0.94	86
22	19	-0.89	87
23	20	-0.85	87
24	21	-0.80	88
25	22	-0.76	89
26	24	-0.71	89
27	25	-0.67	90
28	27	-0.62	91
29	28	-0.58	91
30	30	-0.53	92
31	31	-0.49	93
32	33	-0.44	93
33	35	-0.40	94
34	36	-0.35	95
35	38	-0.31	95
36	40	-0.26	96
37	41	-0.22	97
38	43	-0.17	97
39	45	-0.13	98
40	47	-0.08	99
41	48	-0.04	99
42	50	0.01	100
43	52	0.05	101
44	54	0.10	101
45	56	0.14	102
46	57	0.18	103
47	59	0.23	103
48	61	0.27	104
49	63	0.32	105
50	64	0.36	105
51	66	0.41	106
52	68	0.45	107
53	69	0.50	107
54	71	0.54	108
55	72	0.59	109
56	74	0.63	110
57	75	0.68	110
58	77	0.72	111
59	78	0.77	112
60	79	0.81	112
61	80	0.86	113
62	82	0.90	114
63	83	0.95	114
64	84	0.99	115
65	85	1.04	116
66	86	1.08	116
67	87	1.13	117
68	88	1.17	118
69	89	1.22	118
70	90	1.26	119
71	90	1.31	120
72	91	1.35	120
73	92	1.40	121
74	93	1.44	122
75	93	1.49	122
76	94	1.53	123
77	94	1.58	124
78	95	1.62	124
79	95	1.67	125
80	96	1.71	126

Table 7. Weighted norm tables for the 39-41 months-old cohort – spoken scores

Raw score	Percentile rank	Z-score	Standardized score
0	4	-1.70	74
1	7	-1.48	78
2	10	-1.26	81
3	15	-1.05	84
4	20	-0.83	88
5	27	-0.61	91
6	35	-0.39	94
7	43	-0.17	97
8	52	0.05	101
9	61	0.27	104
10	69	0.49	107
11	76	0.70	111
12	82	0.92	114
13	87	1.14	117
14	91	1.36	120
15	94	1.58	124

Table 8. Weighted norm tables for the 39-41 months-old cohort – reading scores

Raw score	Percentile rank	Z-score	Standardized score
0	6	-1.56	77
1	9	-1.35	80
2	13	-1.13	83
3	18	-0.92	86
4	24	-0.71	89
5	31	-0.49	93
6	39	-0.28	96
7	47	-0.06	99
8	56	0.15	102
9	64	0.36	105
10	72	0.58	109
11	79	0.79	112
12	84	1.01	115
13	89	1.22	118
14	92	1.43	122
15	95	1.65	125
16	97	1.86	128
17	98	2.08	131
18	99	2.29	134

Table 9. Weighted norm tables for the 39-41 months-old cohort – mathematics scores

Raw score	Percentile rank	Z-score	Standardized score
0	9	-1.36	80
1	12	-1.16	83
2	17	-0.96	86
3	22	-0.76	89
4	29	-0.56	92
5	36	-0.37	95
6	43	-0.17	97
7	51	0.03	100
8	59	0.23	103
9	66	0.43	106
10	73	0.62	109
11	79	0.82	112
12	85	1.02	115
13	89	1.22	118
14	92	1.42	121
15	95	1.61	124

Table 10. Weighted norm tables for the 39-41 months-old cohort – classroom behavior scores

Raw score	Percentile rank	Z-score	Standardized score
0	2	-2.01	70
1	3	-1.81	73
2	5	-1.62	76
3	8	-1.42	79
4	11	-1.22	82
5	15	-1.03	85
6	20	-0.83	88
7	26	-0.63	90
8	33	-0.44	93
9	41	-0.24	96
10	48	-0.04	99
11	56	0.15	102
12	64	0.35	105
13	71	0.55	108
14	77	0.74	111
15	83	0.94	114
16	87	1.14	117
17	91	1.33	120
18	94	1.53	123

Table 11. Weighted norm tables for the 39-41 months-old cohort – living skills scores

Raw score	Percentile rank	Z-score	Standardized score
0	1	-2.21	67
1	2	-2.00	70
2	4	-1.79	73
3	6	-1.57	76
4	9	-1.36	80
5	12	-1.15	83
6	17	-0.94	86
7	23	-0.73	89
8	30	-0.52	92
9	38	-0.31	95
10	46	-0.10	98
11	54	0.11	102
12	63	0.32	105
13	70	0.53	108
14	77	0.74	111
15	83	0.95	114
16	88	1.16	117
17	92	1.37	121
18	94	1.58	124

Table 12. Weighted norm tables for the 39-41 months-old cohort – total scores

Raw score	Percentile rank	Z-score	Standardized score
0	3	-1.93	71
1	3	-1.89	72
2	3	-1.84	72
3	4	-1.80	73
4	4	-1.75	74
5	4	-1.71	74
6	5	-1.66	75
7	5	-1.62	76
8	6	-1.57	76
9	6	-1.52	77
10	7	-1.48	78
11	8	-1.43	78
12	8	-1.39	79
13	9	-1.34	80
14	10	-1.30	81
15	11	-1.25	81
16	11	-1.21	82
17	12	-1.16	83
18	13	-1.12	83
19	14	-1.07	84
20	15	-1.03	85
21	16	-0.98	85
22	17	-0.94	86
23	19	-0.89	87
24	20	-0.84	87
25	21	-0.80	88
26	23	-0.75	89
27	24	-0.71	89
28	25	-0.66	90
29	27	-0.62	91
30	28	-0.57	91
31	30	-0.53	92
32	31	-0.48	93
33	33	-0.44	93
34	35	-0.39	94
35	36	-0.35	95
36	38	-0.30	95
37	40	-0.26	96
38	42	-0.21	97
39	43	-0.17	98
40	45	-0.12	98
41	47	-0.07	99
42	49	-0.03	100
43	51	0.02	100
44	52	0.06	101
45	54	0.11	102
46	56	0.15	102
47	58	0.20	103
48	60	0.24	104
49	61	0.29	104
50	63	0.33	105
51	65	0.38	106
52	66	0.42	106
53	68	0.47	107
54	70	0.51	108
55	71	0.56	108
56	73	0.61	109
57	74	0.65	110
58	76	0.70	110
59	77	0.74	111
60	78	0.79	112
61	80	0.83	112
62	81	0.88	113
63	82	0.92	114
64	83	0.97	115
65	84	1.01	115
66	86	1.06	116
67	87	1.10	117
68	87	1.15	117
69	88	1.19	118
70	89	1.24	119
71	90	1.29	119
72	91	1.33	120
73	92	1.38	121
74	92	1.42	121
75	93	1.47	122
76	93	1.51	123
77	94	1.56	123
78	95	1.60	124
79	95	1.65	125
80	95	1.69	125
81	96	1.74	126
82	96	1.78	127
83	97	1.83	127
84	97	1.87	128

Table 13. Weighted norm tables for the 42-44 months-old cohort – spoken scores

Raw score	Percentile rank	Z-score	Standardized score
0	3	-1.88	72
1	5	-1.66	75
2	8	-1.43	79
3	11	-1.21	82
4	16	-0.98	85
5	22	-0.76	89
6	30	-0.53	92
7	38	-0.31	95
8	47	-0.08	99
9	56	0.14	102
10	64	0.37	106
11	72	0.59	109
12	79	0.82	112
13	85	1.05	116
14	90	1.27	119
15	93	1.50	122

Table 14. Weighted norm tables for the 42-44 months-old cohort – reading scores

Raw score	Percentile rank	Z-score	Standardized score
0	4	-1.70	74
1	7	-1.48	78
2	10	-1.27	81
3	15	-1.05	84
4	20	-0.83	88
5	27	-0.61	91
6	35	-0.39	94
7	43	-0.17	97
8	52	0.05	101
9	61	0.27	104
10	69	0.49	107
11	76	0.71	111
12	82	0.93	114
13	87	1.15	117
14	91	1.37	120
15	94	1.59	124
16	96	1.80	127
17	98	2.02	130
18	99	2.24	134

Table 15. Weighted norm tables for the 42-44 months-old cohort – mathematics scores

Raw score	Percentile rank	Z-score	Standardized score
0	7	-1.49	78
1	10	-1.27	81
2	14	-1.06	84
3	20	-0.85	87
4	26	-0.64	90
5	33	-0.43	94
6	41	-0.22	97
7	50	-0.01	100
8	58	0.20	103
9	66	0.41	106
10	73	0.62	109
11	80	0.84	113
12	85	1.05	116
13	90	1.26	119
14	93	1.47	122
15	95	1.68	125

Table 16. Weighted norm tables for the 42-44 months-old cohort – classroom behavior scores

Raw score	Percentile rank	Z-score	Standardized score
0	1	-2.48	63
1	1	-2.25	66
2	2	-2.03	70
3	4	-1.80	73
4	6	-1.58	76
5	9	-1.35	80
6	13	-1.13	83
7	18	-0.90	86
8	25	-0.68	90
9	32	-0.45	93
10	41	-0.23	97
11	50	0.00	100
12	59	0.22	103
13	67	0.44	107
14	75	0.67	110
15	81	0.89	113
16	87	1.12	117
17	91	1.34	120
18	94	1.57	124

Table 17. Weighted norm tables for the 42-44 months-old cohort – living skills scores

Raw score	Percentile rank	Z-score	Standardized score
0	0	-2.63	61
1	1	-2.38	64
2	2	-2.14	68
3	3	-1.89	72
4	5	-1.65	75
5	8	-1.40	79
6	12	-1.16	83
7	18	-0.91	86
8	25	-0.67	90
9	34	-0.42	94
10	43	-0.18	97
11	53	0.07	101
12	62	0.31	105
13	71	0.56	108
14	79	0.80	112
15	85	1.05	116
16	90	1.29	119
17	94	1.54	123
18	96	1.78	127

Table 18. Weighted norm tables for the 42-44 months-old cohort – total scores

Raw score	Percentile rank	Z-score	Standardized score
0	1	-2.22	67
1	2	-2.17	67
2	2	-2.12	68
3	2	-2.07	69
4	2	-2.02	70
5	2	-1.97	70
6	3	-1.92	71
7	3	-1.87	72
8	3	-1.82	73
9	4	-1.77	73
10	4	-1.73	74
11	5	-1.68	75
12	5	-1.63	76
13	6	-1.58	76
14	6	-1.53	77
15	7	-1.48	78
16	8	-1.43	79
17	8	-1.38	79
18	9	-1.33	80
19	10	-1.28	81
20	11	-1.23	82
21	12	-1.18	82
22	13	-1.13	83
23	14	-1.08	84
24	15	-1.03	84
25	16	-0.98	85
26	17	-0.93	86
27	19	-0.89	87
28	20	-0.84	87
29	22	-0.79	88
30	23	-0.74	89
31	25	-0.69	90
32	26	-0.64	90
33	28	-0.59	91
34	29	-0.54	92
35	31	-0.49	93
36	33	-0.44	93
37	35	-0.39	94
38	37	-0.34	95
39	38	-0.29	96
40	40	-0.24	96
41	42	-0.19	97
44	48	-0.05	99
45	50	0.00	100
46	52	0.05	101
47	54	0.10	102
48	56	0.15	102
49	58	0.20	103
50	60	0.25	104
51	62	0.30	105
52	64	0.35	105
53	66	0.40	106
54	67	0.45	107
55	69	0.50	107
56	71	0.55	108
57	72	0.60	109
58	74	0.65	110
59	76	0.70	110
60	77	0.75	111
61	79	0.79	112
62	80	0.84	113
63	81	0.89	113
64	83	0.94	114
65	84	0.99	115
66	85	1.04	116
67	86	1.09	116
68	87	1.14	117
69	88	1.19	118
70	89	1.24	119
71	90	1.29	119
72	91	1.34	120
73	92	1.39	121
74	92	1.44	122
75	93	1.49	122
76	94	1.54	123
77	94	1.58	124
78	95	1.63	125
79	95	1.68	125
80	96	1.73	126
81	96	1.78	127
82	97	1.83	127
83	97	1.88	128
84	97	1.93	129

Table 19. Weighted norm tables for the 45-47 months-old cohort – spoken scores

Raw score	Percentile rank	Z-score	Standardized score
0	2	-2.01	70
1	4	-1.79	73
2	6	-1.56	77
3	9	-1.33	80
4	13	-1.11	83
5	19	-0.88	87
6	26	-0.65	90
7	33	-0.43	94
8	42	-0.20	97
9	51	0.02	100
10	60	0.25	104
11	68	0.48	107
12	76	0.70	111
13	82	0.93	114
14	88	1.16	117
15	92	1.38	121

Table 20. Weighted norm tables for the 45-47 months-old cohort – reading scores

Raw score	Percentile rank	Z-score	Standardized score
0	4	-1.76	74
1	6	-1.55	77
2	9	-1.34	80
3	13	-1.13	83
4	18	-0.92	86
5	24	-0.72	89
6	31	-0.51	92
7	38	-0.30	96
8	46	-0.09	99
9	55	0.12	102
10	63	0.33	105
11	71	0.54	108
12	77	0.75	111
13	83	0.96	114
14	88	1.17	118
15	92	1.38	121
16	94	1.59	124
17	96	1.79	127
18	98	2.00	130

Table 21. Weighted norm tables for the 45-47 months-old cohort – mathematics scores

Raw score	Percentile rank	Z-score	Standardized score
0	5	-1.69	75
1	7	-1.47	78
2	10	-1.26	81
3	15	-1.05	84
4	20	-0.83	87
5	27	-0.62	91
6	34	-0.41	94
7	42	-0.19	97
8	51	0.02	100
9	59	0.23	103
10	67	0.45	107
11	75	0.66	110
12	81	0.87	113
13	86	1.09	116
14	90	1.30	119
15	93	1.51	123

Table 22. Weighted norm tables for the 45-47 months-old cohort – classroom behavior scores

Raw score	Percentile rank	Z-score	Standardized score
0	1	-2.40	64
1	1	-2.18	67
2	2	-1.97	70
3	4	-1.75	74
4	6	-1.54	77
5	9	-1.32	80
6	13	-1.11	83
7	19	-0.89	87
8	25	-0.68	90
9	32	-0.46	93
10	40	-0.25	96
11	49	-0.03	100
12	57	0.18	103
13	65	0.40	106
14	73	0.61	109
15	80	0.83	112
16	85	1.04	116
17	90	1.26	119
18	93	1.47	122

Table 23. Weighted norm tables for the 45-47 months-old cohort – living skills scores

Raw score	Percentile rank	Z-score	Standardized score
0	1	-2.47	63
1	1	-2.25	66
2	2	-2.03	70
3	3	-1.81	73
4	6	-1.59	76
5	8	-1.37	79
6	12	-1.15	83
7	18	-0.93	86
8	24	-0.71	89
9	31	-0.49	93
10	39	-0.27	96
11	48	-0.05	99
12	57	0.16	102
13	65	0.38	106
14	73	0.60	109
15	80	0.82	112
16	85	1.04	116
17	90	1.26	119
18	93	1.48	122

Table 24. Weighted norm tables for the 45-47 months-old cohort – total scores

Raw score	Percentile rank	Z-score	Standardized sc
0	1	-2.28	66
1	1	-2.23	67
2	1	-2.18	67
3	2	-2.13	68
4	2	-2.09	69
5	2	-2.04	69
6	2	-1.99	70
7	3	-1.94	71
8	3	-1.90	72
9	3	-1.85	72
10	4	-1.80	73
11	4	-1.75	74
12	4	-1.70	74
13	5	-1.66	75
14	5	-1.61	76
15	6	-1.56	77
16	7	-1.51	77
17	7	-1.46	78
18	8	-1.42	79
19	9	-1.37	79
20	9	-1.32	80
21	10	-1.27	81
22	11	-1.23	82
23	12	-1.18	82
24	13	-1.13	83
25	14	-1.08	84
26	15	-1.03	84
27	16	-0.99	85
28	17	-0.94	86
29	19	-0.89	87
30	20	-0.84	87
31	21	-0.79	88
32	23	-0.75	89
33	24	-0.70	90
34	26	-0.65	90
35	27	-0.60	91
36	29	-0.56	92
37	31	-0.51	92
38	32	-0.46	93
39	34	-0.41	94
40	36	-0.36	95
41	38	-0.32	95
42	39	-0.27	96
43	41	-0.22	97

44	43	-0.17	97
45	45	-0.12	98
46	47	-0.08	99
47	49	-0.03	100
48	51	0.02	100
49	53	0.07	101
50	55	0.11	102
51	56	0.16	102
52	58	0.21	103
53	60	0.26	104
54	62	0.31	105
55	64	0.35	105
56	66	0.40	106
57	67	0.45	107
58	69	0.50	107
59	71	0.55	108
60	72	0.59	109
61	74	0.64	110
62	75	0.69	110
63	77	0.74	111
64	78	0.79	112
65	80	0.83	112
66	81	0.88	113
67	82	0.93	114
68	84	0.98	115
69	85	1.02	115
70	86	1.07	116
71	87	1.12	117
72	88	1.17	118
73	89	1.22	118
74	90	1.26	119
75	91	1.31	120
76	91	1.36	120
77	92	1.41	121
78	93	1.46	122
79	93	1.50	123
80	94	1.55	123
81	95	1.60	124
82	95	1.65	125
83	95	1.69	125
84	96	1.74	126

Table 25. Weighted norm tables for the 48-50 months-old cohort – spoken scores

Raw score	Percentile rank	Z-score	Standardized score
0	0	-2.78	58
1	1	-2.47	63
2	2	-2.16	68
3	3	-1.85	72
4	6	-1.54	77
5	11	-1.24	81
6	18	-0.93	86
7	27	-0.62	91
8	38	-0.31	95
9	50	-0.01	100
10	62	0.30	105
11	73	0.61	109
12	82	0.92	114
13	89	1.22	118
14	94	1.53	123
15	97	1.84	128

Table 26. Weighted norm tables for the 48-50 months-old cohort – reading scores

Raw score	Percentile rank	Z-score	Standardized score
0	3	-1.85	72
1	5	-1.63	76
2	8	-1.41	79
3	12	-1.19	82
4	17	-0.97	85
5	23	-0.75	89
6	30	-0.53	92
7	38	-0.31	95
8	46	-0.09	99
9	55	0.13	102
10	64	0.35	105
11	72	0.57	109
12	79	0.79	112
13	84	1.01	115
14	89	1.23	118
15	93	1.45	122
16	95	1.67	125
17	97	1.89	128
18	98	2.11	132

Table 27. Weighted norm tables for the 48-50 months-old cohort – mathematics scores

Raw score	Percentile rank	Z-score	Standardized score
0	2	-2.02	70
1	4	-1.78	73
2	6	-1.54	77
3	10	-1.29	81
4	15	-1.05	84
5	21	-0.81	88
6	29	-0.57	92
7	37	-0.32	95
8	47	-0.08	99
9	56	0.16	102
10	66	0.40	106
11	74	0.64	110
12	81	0.89	113
13	87	1.13	117
14	91	1.37	121
15	95	1.61	124

Table 28. Weighted norm tables for the 48-50 months-old cohort – classroom behavior scores

Raw score	Percentile rank	Z-score	Standardized score
0	0	-2.99	55
1	0	-2.72	59
2	1	-2.46	63
3	1	-2.20	67
4	3	-1.93	71
5	5	-1.67	75
6	8	-1.41	79
7	13	-1.14	83
8	19	-0.88	87
9	27	-0.62	91
10	36	-0.36	95
11	46	-0.09	99
12	57	0.17	103
13	67	0.43	107
14	76	0.70	110
15	83	0.96	114
16	89	1.22	118
17	93	1.49	122
18	96	1.75	126

Table 29. Weighted norm tables for the 48-50 months-old cohort – living skills scores

Raw score	Percentile rank	Z-score	Standardized score
0	0	-2.86	57
1	0	-2.61	61
2	1	-2.36	65
3	2	-2.10	68
4	3	-1.85	72
5	6	-1.60	76
6	9	-1.34	80
7	14	-1.09	84
8	20	-0.84	87
9	28	-0.58	91
10	37	-0.33	95
11	47	-0.08	99
12	57	0.17	103
13	67	0.43	106
14	75	0.68	110
15	82	0.93	114
16	88	1.19	118
17	93	1.44	122
18	95	1.69	125

Table 30. Weighted norm tables for the 48-50 months-old cohort – total scores

Raw score	Percentile rank	Z-score	Standardized score
0	0	-2.88	57
1	0	-2.82	58
2	0	-2.76	59
3	0	-2.70	59
4	0	-2.64	60
5	0	-2.59	61
6	1	-2.53	62
7	1	-2.47	63
8	1	-2.41	64
9	1	-2.35	65
10	1	-2.29	66
11	1	-2.23	67
12	2	-2.17	67
13	2	-2.11	68
14	2	-2.05	69
15	2	-1.99	70
16	3	-1.93	71
17	3	-1.87	72
18	4	-1.81	73
19	4	-1.75	74
20	5	-1.69	75
21	5	-1.63	76
22	6	-1.57	76
23	7	-1.51	77
24	7	-1.45	78
25	8	-1.39	79
26	9	-1.34	80
27	10	-1.28	81
28	11	-1.22	82
29	12	-1.16	83
30	14	-1.10	84
31	15	-1.04	84
32	16	-0.98	85
33	18	-0.92	86
34	20	-0.86	87
35	21	-0.80	88
36	23	-0.74	89
37	25	-0.68	90
38	27	-0.62	91
39	29	-0.56	92
40	31	-0.50	92
41	33	-0.44	93
42	35	-0.38	94
43	37	-0.32	95
44	40	-0.26	96
45	42	-0.20	97
46	44	-0.14	98
47	47	-0.09	99
48	49	-0.03	100
49	51	0.03	101
50	54	0.09	101
51	56	0.15	102
52	58	0.21	103
53	61	0.27	104
54	63	0.33	105
55	65	0.39	106
56	67	0.45	107
57	70	0.51	108
58	72	0.57	109
59	74	0.63	109
60	75	0.69	110
61	77	0.75	111
62	79	0.81	112
63	81	0.87	113
64	82	0.93	114
65	84	0.99	115
66	85	1.05	116
67	87	1.11	117
68	88	1.16	117
69	89	1.22	118
70	90	1.28	119
71	91	1.34	120
72	92	1.40	121
73	93	1.46	122
74	94	1.52	123
75	94	1.58	124
76	95	1.64	125
77	96	1.70	126
78	96	1.76	126
79	97	1.82	127
80	97	1.88	128
81	97	1.94	129
82	98	2.00	130
83	98	2.06	131
84	98	2.12	132

Equating from ELI scores to BSSI-3 scores

ELI Total Score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
9	0	14	1.41421
10	0	16	1.41421
11	0	16	1.41421
12	0	16	1.41421
13	1	16	1.41421
14	4	16	1.41421
15	7	26	1.41421
16	10	27	2
17	13	28	2.44949
18	16	29	1.41421
19	19	30	1.41421
20	22	31	1.41421
21	25	31	1.41421
22	28	36	2.44949
23	31	39	2
24	34	43	1.1726
25	37	44	2.82843
26	40	45	1.5411
27	43	49	4.47214
28	46	57	1.38778
29	49	68	2.3184
30	52	70	2.37171
31	55	71	1.5396
32	58	75	4.69041
33	61	79	1.69967
34	64	82	5.09903
35	67	83	2.73861
36	70	85	5.83097
37	73	86	1.84592
38	76	87	1.88562
39	79	88	0.92296
40	82	90	2.80624
41	85	92	1.96261
42	88	94	2.05481
43	91	95	3.16227
44	94	96	1.26491
45	97	98	3.4821
46	100	101	2.37269
47	103	103	1.76777
48	106	104	2.49444
49	109	105	0.91962
50	112	107	2
51	115	111	1.87083
52	118	114	1.53883
53	121	115	1.97247
54	124	116	1.2693
55	127	120	1.55435
56	130	126	4.58257
57	133	131	2.72165
58	136	132	1.98038
59	139	135	4.06202
60	142	139	1.72511
61	145	141	2.88033
62	148	142	2.86744
63	151	144	1.74356
64	154	146	1.72974
65	157	148	2.99383
66	160	152	1.78886
67	163	153	1.52752
68	166	156	2.40767
69	169	158	1.89315
70	172	162	2.37171
71	175	165	3.09122
72	178	166	2.23257
73	181	169	1.86762
74	184	172	10.67722
75	187	175	1.86333
76	190	176	1.50462
77	193	181	2.53722
78	196	184	2.50312
79	199	189	3.55903
80	202	197	10.29572
81	205	200	4.73021
82	209	205	5.13563
83	212	215	3.12694
84	215	238	8.5439

ELI Spoken Language score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
0	0	1	0.43301
1	0	2	1.22474
2	3	5	1.08866
3	8	8	1.30526
4	13	12	1.65552
5	17	20	1.38564
6	22	26	0.64576
7	27	28	4.4017
8	31	30	0.72198
9	36	33	1.5396
10	40	41	1.35618
11	45	45	0.91706
12	50	48	1.02956
13	54	51	1.36083
14	59	55	1.65545
15	64	66	2.72969

ELI Reading score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
1	0	0	0.33333
2	0	1	0.33333
3	0	2	0.36665
4	0	3	0.51587
5	0	4	0.52058
6	1	5	0.44852
7	3	7	0.40697
8	6	7	0.40047
9	8	8	0.28087
10	10	9	0.45816
11	13	10	0.40958
12	15	12	0.4709
13	18	14	0.57446
14	20	16	0.63936
15	23	18	1.26035
16	25	21	0.95984
17	28	23	1.48495
18	30	32	7.77465

ELI Math score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
1	0	0	0.35528
2	0	1	0.35528
3	0	2	0.28641
4	0	2	0.27243
5	0	4	0.42226
6	3	5	0.43212
7	5	6	0.33676
8	7	6	0.31577
9	9	7	0.24742
10	12	9	0.50953
11	14	11	0.44745
12	16	12	0.5282
13	19	14	1.15109
14	21	17	0.67943
15	23	25	5.07544

ELI Classroom Behavior score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
0	0	1	0.70711
1	0	2	0.70711
2	1	3	0.70711
3	5	7	0.70711
4	8	8	0.7698
5	11	12	1.27657
6	15	17	0.72966
7	18	21	1.14543
8	22	23	1.03861
9	25	25	1.6817
10	28	27	1.95256
11	32	30	0.78038
12	35	36	1.05549
13	38	40	0.63814
14	42	42	0.93572
15	45	43	1.44481
16	48	45	0.78794
17	52	47	0.98752
18	55	55	3.42261

ELI Daily Living Skills score	Equated to BSSI-3 (linear)	Equated to BSSI-3 (equipercentile)	Standard error of equipercentile
2	0	3	1.41421
3	0	6	1.41421
4	1	8	2
5	4	9	1
6	7	13	0.49065
7	10	16	0.55694
8	13	17	0.97628
9	16	19	0.54935
10	20	21	0.43188
11	23	23	0.46318
12	26	26	0.80269
13	29	29	0.49579
14	32	30	0.7181
15	36	32	0.78214
16	39	35	0.67042
17	42	38	0.69689
18	45	46	4.6228

Technical Details of Hierarchical Linear Modeling Analysis Results

For BSSI-3 Reading Subscale Scores as outcome variable

Final estimation of fixed effects
(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	Approx. T-ratio	d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	65.864019	2.766688	23.806	95	0.000
WPEARLYI, G01	-1.145966	1.770680	-0.647	95	0.519
QUALITYP, G02	-3.155155	1.082980	-2.913	95	0.005
LEADERSH, G03	2.380921	2.742811	0.868	95	0.388
MODESUM, G04	1.379393	0.601517	2.293	95	0.024
STRATSUM, G05	-0.900443	0.349390	-2.577	95	0.012
TOPICSUM, G06	-0.095253	0.334336	-0.285	95	0.776
TOPICLEN, G07	0.036169	0.136308	0.265	95	0.791
For PREREADI slope, B1					
INTRCPT2, G10	0.385559	0.026945	14.309	102	0.000

Final estimation of variance components:

Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1, U0	18.24902	333.02678	43	141.12595	0.000
PREREADI slope, U1	0.16949	0.02873	50	122.17067	0.000
level-1, R	7.81039	61.00217			

For BSSI-3 Math Subscale Scores as outcome variable

Final estimation of fixed effects
(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	Approx. T-ratio	d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	67.064289	2.939836	22.812	95	0.000
WPEARLYI, G01	-2.054491	1.583735	-1.297	95	0.198
QUALITYP, G02	-1.506797	0.905946	-1.663	95	0.099
LEADERSH, G03	3.065629	2.277543	1.346	95	0.182
MODESUM, G04	1.334889	0.384539	3.471	95	0.001
STRATSUM, G05	-0.147738	0.228702	-0.646	95	0.520
TOPICSUM, G06	-0.098056	0.249390	-0.393	95	0.695
TOPICLEN, G07	-0.065002	0.108524	-0.599	95	0.550
For PREMATH slope, B1					
INTRCPT2, G10	0.381339	0.028581	13.342	1514	0.000

Final estimation of variance components:

Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1, U0	3.00151	9.00906	95	423.62569	0.000
level-1, R	6.10476	37.26811			

For BSSI-3 Daily Living Skills Subscale Scores as outcome variable

Final estimation of fixed effects
(with robust standard errors)

Fixed Effect	Coefficient	Standard Error	Approx. T-ratio	d.f.	P-value
For INTRCPT1, B0					
INTRCPT2, G00	75.887648	2.946844	25.752	95	0.000
WPEARLYI, G01	0.397659	2.006900	0.198	95	0.844
QUALITYP, G02	-2.012505	1.305766	-1.541	95	0.126
LEADERSH, G03	0.307098	2.935030	0.105	95	0.917
MODESUM, G04	1.561078	0.692738	2.253	95	0.026
STRATSUM, G05	-0.324740	0.423178	-0.767	95	0.445
TOPICSUM, G06	0.343878	0.403068	0.853	95	0.396
TOPICLEN, G07	-0.240553	0.168108	-1.431	95	0.156
For PREDLYLI slope, B1					
INTRCPT2, G10	0.280684	0.030432	9.223	102	0.000

Final estimation of variance components:

Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value
INTRCPT1, U0	20.80251	432.74437	39	199.27121	0.000
PREDLYLI slope, U1	0.21406	0.04582	46	210.32226	0.000
level-1, R	7.98943	63.83101			

INTERMEDIATE SUMMATIVE ANALYSES

Chapter 5 Statistical Analyses

Analysis of the Impact of Pre-K Counts on 3-year-old Children-Paired Sample T-tests

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Selected ELI Spoken	30.6772	1986	18.19331	0.40825
	Selected BSSI Spoken	48.5670	1986	17.92323	0.40219
Pair 2	Selected ELI Reading	7.2578	1986	5.89753	0.13234
	Selected BSSI Reading	18.3333	1986	11.26626	0.25281
Pair 3	Selected ELI Math	6.1903	1986	6.14124	0.13781
	Selected BSSI Math	16.8555	1986	11.16628	0.25056
Pair 4	Selected ELI Classroom behavior	29.9537	1986	13.30135	0.29847
	Selected BSSI Classroom behavior	43.0856	1986	14.87824	0.33386
Pair 5	Selected ELI Living skills	23.1234	1986	10.14268	0.22760
	Selected BSSI Living skills	36.2754	1986	12.71819	0.28539
Pair 6	Selected ELI Total Raw score	94.0665	1986	47.98935	1.07685
	Selected BSSI Total Raw score	166.1269	1986	62.35453	1.39920

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	Selected ELI Spoken - Selected BSSI Spoken	-17.88973	18.51019	0.41536	-18.70431	-17.07515	-43.071	1985	0.000
Pair 2	Selected ELI Reading - Selected BSSI Reading	-11.07553	10.53574	0.23642	-11.53918	-10.61188	-46.848	1985	0.000
Pair 3	Selected ELI Math - Selected BSSI Math	-10.66516	10.46261	0.23477	-11.12559	-10.20473	-45.427	1985	0.000
Pair 4	Selected ELI Classroom behavior - Selected BSSI Classroom behavior	-13.13192	15.06101	0.33796	-13.79472	-12.46913	-38.857	1985	0.000
Pair 5	Selected ELI Living skills - Selected BSSI Living skills	-13.15206	12.88457	0.28912	-13.71908	-12.58505	-45.490	1985	0.000
Pair 6	Selected ELI Total Raw score - Selected BSSI Total Raw score	-72.06042	58.71823	1.31760	-74.64445	-69.47640	-54.691	1985	0.000

Analysis of the Impact of Pre-K Counts on 3-year-old Children-Regression Analyses

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
	R Square Change	F Change	df1	df2	Sig. F Change	R Square Change	F Change	df1	df2
1	.471(a)	0.222	0.221	15.77154	0.222	272.137	2	1912	0.000
2	.596(b)	0.355	0.354	14.35961	0.133	395.486	1	1911	0.000

a Predictors: (Constant), Selected ELI Spoken, sex

b Predictors: (Constant), Selected ELI Spoken, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	135383.603	2	67691.801	272.137	.000(a)
	Residual	475593.638	1912	248.741		
	Total	610977.241	1914			
2	Regression	216932.133	3	72310.711	350.685	.000(b)
	Residual	394045.108	1911	206.198		
	Total	610977.241	1914			

a Predictors: (Constant), Selected ELI Spoken, sex

b Predictors: (Constant), Selected ELI Spoken, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Spoken

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	33.617	0.767		43.844	0.000
	sex	2.467	0.729	0.069	3.384	0.001
	Selected ELI Spoken	0.450	0.020	0.456	22.335	0.000
2	(Constant)	17.660	1.064		16.604	0.000
	sex	2.542	0.664	0.071	3.829	0.000
	Selected ELI Spoken	0.487	0.018	0.493	26.406	0.000
	Time interval between pre and post test	1.274	0.064	0.367	19.887	0.000

a Dependent Variable: Selected BSSI Spoken

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	R Square Change	F Change	df1	df2
1	.378(a)	0.143	0.142	10.41926	0.143	158.944	2	1912	0.000
2	.524(b)	0.275	0.274	9.58303	0.132	349.245	1	1911	0.000

a Predictors: (Constant), Selected ELI Reading, sex

b Predictors: (Constant), Selected ELI Reading, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34510.244	2	17255.122	158.944	.000(a)
	Residual	207568.438	1912	108.561		
	Total	242078.682	1914			
2	Regression	66582.997	3	22194.332	241.678	.000(b)
	Residual	175495.685	1911	91.834		
	Total	242078.682	1914			

a Predictors: (Constant), Selected ELI Reading, sex

b Predictors: (Constant), Selected ELI Reading, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Reading

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	12.901	0.425		30.370	0.000
	sex	0.545	0.486	0.024	1.121	0.262
	Selected ELI Reading	0.712	0.041	0.372	17.230	0.000
2	(Constant)	3.234	0.648		4.989	0.000
	sex	0.590	0.447	0.026	1.320	0.187
	Selected ELI Reading	0.766	0.038	0.400	20.098	0.000
	Time interval between pre and post test	0.797	0.043	0.365	18.688	0.000

a Dependent Variable: Selected BSSI Reading

Model Summary

Model					Change Statistics				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	R Square Change	F Change	df1	df2
1	.382(a)	0.146	0.145	10.31614	0.146	163.813	2	1912	0.000
2	.571(b)	0.326	0.325	9.17105	0.179	508.267	1	1911	0.000

a Predictors: (Constant), Selected ELI Math, sex

b Predictors: (Constant), Selected ELI Math, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34866.844	2	17433.422	163.813	.000(a)
	Residual	203480.282	1912	106.423		
	Total	238347.126	1914			
2	Regression	77616.263	3	25872.088	307.605	.000(b)
	Residual	160730.863	1911	84.108		
	Total	238347.126	1914			

a Predictors: (Constant), Selected ELI Math, sex

b Predictors: (Constant), Selected ELI Math, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Math

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	12.403	0.397		31.281	0.000
	sex	0.460	0.477	0.021	0.965	0.335
	Selected ELI Math	0.689	0.039	0.379	17.734	0.000
2	(Constant)	1.100	0.613		1.795	0.073
	sex	0.492	0.424	0.022	1.160	0.246
	Selected ELI Math	0.780	0.035	0.429	22.429	0.000
	Time interval between pre and post test	0.924	0.041	0.426	22.545	0.000

a Dependent Variable: Selected BSSI Math

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	R Square Change	F Change	df1	df2
1	.447(a)	0.200	0.199	13.29792	0.200	239.257	2	1912	0.000
2	.524(b)	0.275	0.274	12.66369	0.075	197.312	1	1911	0.000

a Predictors: (Constant), Selected ELI Classroom behavior, sex

b Predictors: (Constant), Selected ELI Classroom behavior, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	84617.927	2	42308.964	239.257	.000(a)
	Residual	338108.094	1912	176.835		
	Total	422726.021	1914			
2	Regression	116260.630	3	38753.543	241.652	.000(b)
	Residual	306465.391	1911	160.369		
	Total	422726.021	1914			

a Predictors: (Constant), Selected ELI Classroom behavior, sex

b Predictors: (Constant), Selected ELI Classroom behavior, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Classroom behavior

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	27.455	0.776		35.377	0.000
	sex	3.779	0.617	0.127	6.125	0.000
	Selected ELI Classroom behavior	0.456	0.023	0.408	19.662	0.000
2	(Constant)	17.857	1.007		17.741	0.000
	sex	3.892	0.588	0.131	6.622	0.000
	Selected RE Classroom behavior	0.469	0.022	0.419	21.189	0.000
	Time interval between pre and post test	0.790	0.056	0.274	14.047	0.000

a Dependent Variable: Selected BSSI Classroom behavior

Model Summary

Model					Change Statistics				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	R Square Change	F Change	df1	df2
1	.391(a)	0.153	0.152	11.72849	0.153	172.559	2	1912	0.000
2	.554(b)	0.307	0.305	10.61440	0.154	423.431	1	1911	0.000

a Predictors: (Constant), Selected ELI Living skills, sex

b Predictors: (Constant), Selected ELI Living skills, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47473.679	2	23736.840	172.559	.000(a)
	Residual	263009.863	1912	137.557		
	Total	310483.543	1914			
2	Regression	95179.718	3	31726.573	281.600	.000(b)
	Residual	215303.824	1911	112.666		
	Total	310483.543	1914			

a Predictors: (Constant), Selected ELI Living skills, sex

b Predictors: (Constant), Selected ELI Living skills, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Living skills

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	24.481	0.695		35.235	0.000
	sex	2.560	0.542	0.100	4.722	0.000
	Selected ELI Living skills	0.457	0.027	0.364	17.090	0.000
2	(Constant)	12.543	0.856		14.660	0.000
	sex	2.689	0.491	0.106	5.481	0.000
	Selected ELI Living skills	0.483	0.024	0.384	19.937	0.000
	Time interval between pre and post test	0.970	0.047	0.393	20.577	0.000

a Dependent Variable: Selected BSSI Living skills

Model Summary

Model					Change Statistics				
	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change	R Square Change	F Change	df1	df2
1	.457(a)	0.209	0.208	55.37413	0.209	252.926	2	1912	0.000
2	.642(b)	0.412	0.411	47.75670	0.203	659.593	1	1911	0.000

a Predictors: (Constant), Selected ELI Total Raw score, sex

b Predictors: (Constant), Selected ELI Total Raw score, sex, Time interval between pre and post test

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1551093.134	2	775546.567	252.926	.000(a)
	Residual	5862755.521	1912	3066.295		
	Total	7413848.655	1914			
2	Regression	3055427.230	3	1018475.743	446.562	.000(b)
	Residual	4358421.425	1911	2280.702		
	Total	7413848.655	1914			

a Predictors: (Constant), Selected ELITotal Raw score, sex

b Predictors: (Constant), Selected ELI Total Raw score, sex, Time interval between pre and post test

c Dependent Variable: Selected BSSI Total Raw score

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	108.030	2.928		36.902	0.000
	sex	9.410	2.575	0.076	3.654	0.000
	Selected ELI Total Raw score	0.569	0.027	0.438	21.164	0.000
2	(Constant)	39.659	3.669		10.809	0.000
	sex	9.684	2.221	0.078	4.360	0.000
	Selected ELI Total Raw score	0.620	0.023	0.477	26.649	0.000
	Time interval between pre and post test	5.462	0.213	0.452	25.683	0.000

a Dependent Variable: Selected BSSI Total Raw score

Analysis of the Impact of Pre-K Counts on Children with Risks/Delays

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score	86.43	1349	8.353	0.227
	BSSI-3 Post Test Spoken Language Standard Score	98.16	1349	15.039	0.409
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score	79.76	1349	9.582	0.261
	BSSI-3 Post Test Reading Standard Score	93.15	1349	12.097	0.329
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score	91.07	1349	6.180	0.168
	BSSI-3 Post Test Mathematics Standard Score	97.71	1349	8.360	0.228
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	89.79	1349	9.330	0.254
	BSSI-3 Post Test Classroom Behavior Standard Score	98.04	1349	11.102	0.302
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score	79.81	1349	8.335	0.227
	BSSI-3 Post Test Daily Living Skills Standard Score	93.42	1349	12.196	0.332
Pair 6	BSSI-3 Pre/Post Total Quotient Score	80.23	1349	7.015	0.191
	BSSI-3 Post Test Total Standard Score	94.90	1349	12.361	0.337

Paired Samples Statistics

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score - BSSI-3 Post Test Spoken Language Standard Score	-11.723	14.331	0.390	-12.489	-10.958	-30.045	1348	0.000
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score - BSSI-3 Post Test Reading Standard Score	-13.399	12.380	0.337	-14.060	-12.738	-39.752	1348	0.000
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score - BSSI-3 Post Test Mathematics Standard Score	-6.638	8.381	0.228	-7.086	-6.191	-29.092	1348	0.000
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-8.247	10.736	0.292	-8.820	-7.673	-28.213	1348	0.000
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score - BSSI-3 Post Test Daily Living Skills Standard Score	-13.603	13.314	0.362	-14.314	-12.892	-37.526	1348	0.000
Pair 6	BSSI-3 Pre/Post Total Quotient Score - BSSI-3 Post Test Total Standard Score	-14.672	11.708	0.319	-15.298	-14.047	-46.029	1348	0.000

Analysis of the Impact of Pre-K Counts on Children with Challenging Behavior

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score	85.42	506	11.772	0.523
	BSSI-3 Post Test Spoken Language Standard Score	95.22	506	14.781	0.657
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score	79.84	506	13.011	0.578
	BSSI-3 Post Test Reading Standard Score	91.61	506	13.366	0.594
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score	90.89	506	7.493	0.333
	BSSI-3 Post Test Mathematics Standard Score	96.81	506	8.722	0.388
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	79.09	506	6.298	0.280
	BSSI-3 Post Test Classroom Behavior Standard Score	92.08	506	11.123	0.494
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score	78.99	506	17.288	0.769
	BSSI-3 Post Test Daily Living Skills Standard Score	90.63	506	13.848	0.616
Pair 6	BSSI-3 Pre/Post Total Quotient Score	77.13	506	9.707	0.432
	BSSI-3 Post Test Total Standard Score	91.36	506	12.636	0.562

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score - BSSI-3 Post Test Spoken Language Standard Score	-9.792	15.018	0.668	-11.104	-8.481	-14.667	505	0.000
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score - BSSI-3 Post Test Reading Standard Score	-11.769	12.889	0.573	-12.894	-10.643	-20.540	505	0.000
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score - BSSI-3 Post Test Mathematics Standard Score	-5.919	8.460	0.376	-6.658	-5.180	-15.737	505	0.000
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-12.994	10.972	0.488	-13.952	-12.036	-26.641	505	0.000
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score - BSSI-3 Post Test Daily Living Skills Standard Score	-11.640	20.950	0.931	-13.470	-9.811	-12.499	505	0.000
Pair 6	BSSI-3 Pre/Post Total Quotient Score - BSSI-3 Post Test Total Standard Score	-14.231	12.841	0.571	-15.353	-13.110	-24.930	505	0.000

Analysis of the Impact of Pre-K Counts on Four-Year-Old Children At-risk for Classroom Behavior

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	74.86	245	5.069	0.324
	BSSI-3 Post Test Classroom Behavior Standard Score	90.59	245	11.992	0.766

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	t			
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-15.735	12.031	0.769	-17.249	-14.221	-20.471	244	0.000

Analysis of the Impact of Pre-K Counts on Four-Year-Old Children with Delayed Classroom Behavior

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	71.43	147	3.655	0.301
	BSSI-3 Post Test Classroom Behavior Standard Score	88.10	147	12.336	1.017

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-16.667	12.932	1.067	-18.775	-14.559	-15.626	146	0.000

Analysis of the Impact of Pre-K Counts on Three-Year-Old Children At-risk for Classroom Behavior

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	98.00	208	12.919	0.896
	BSSI-RE Pre-Test Classroom Behavior Standard Score	79.24	208	4.771	0.331

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-RE Pre-Test Classroom Behavior Standard Score	18.764	12.693	0.880	17.029	20.500	21.321	207	0.000

Analysis of the Impact of Pre-K Counts on Three-Year-Old Children with Delayed Classroom Behavior

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	94.14	64	12.804	1.600
	BSSI-RE Pre-Test Classroom Behavior Standard Score	73.17	64	4.018	0.502

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-RE Pre-Test Classroom Behavior Standard Score	20.969	13.060	1.633	17.706	24.231	12.844	63	0.000

Analysis of the Impact of Pre-K Counts for All Childre

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score	99.30	4101	15.373	0.240
	BSSI-3 Post Test Spoken Language Standard Score	108.23	4101	17.407	0.272
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score	93.23	4101	13.580	0.212
	BSSI-3 Post Test Reading Standard Score	100.13	4101	11.116	0.174
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score	99.19	4101	8.794	0.137
	BSSI-3 Post Test Mathematics Standard Score	102.64	4101	8.378	0.131
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	100.01	4101	12.753	0.199
	BSSI-3 Post Test Classroom Behavior Standard Score	103.98	4101	12.465	0.195
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score	93.01	4101	13.970	0.218
	BSSI-3 Post Test Daily Living Skills Standard Score	99.89	4101	11.178	0.175
Pair 6	BSSI-3 Pre/Post Total Quotient Score	95.71	4101	14.010	0.219
	BSSI-3 Post Test Total Standard Score	103.88	4101	13.264	0.207

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score - BSSI-3 Post Test Spoken Language Standard Score	-8.933	15.164	0.237	-9.397	-8.469	-37.726	4100	0.000
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score - BSSI-3 Post Test Reading Standard Score	-6.900	11.676	0.182	-7.257	-6.542	-37.842	4100	0.000
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score - BSSI-3 Post Test Mathematics Standard Score	-3.443	7.821	0.122	-3.682	-3.204	-28.192	4100	0.000
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-3.966	12.419	0.194	-4.346	-3.586	-20.452	4100	0.000
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score - BSSI-3 Post Test Daily Living Skills Standard Score	-6.882	13.861	0.216	-7.307	-6.458	-31.797	4100	0.000
Pair 6	BSSI-3 Pre/Post Total Quotient Score - BSSI-3 Post Test Total Standard Score	-8.171	12.011	0.188	-8.539	-7.804	-43.569	4100	0.000

Comparison of Outcomes for Pre-K Counts Children vs. ECI Children

Group Statistics

	Project	N	Mean	Std. Deviation	Std. Error Mean
S-Quotient Score 1	ECI	2000	103.81	12.251	0.274
	PreK	2000	102.41	13.065	0.292
S-SPOKEN 1	ECI	2000	113.12	17.850	0.399
	PreK	2000	106.39	16.590	0.371
S-READING 1	ECI	2000	99.33	10.798	0.241
	PreK	2000	98.89	11.582	0.259
S-WRITING 1	ECI	2000	98.40	7.444	0.166
	PreK	1135	99.97	8.618	0.256
S-MATHEMATICS 1	ECI	2000	102.16	7.552	0.169
	PreK	2000	102.34	8.018	0.179
S-CLASSROOM BEHAVIOR 1	ECI	2000	101.92	11.962	0.267
	PreK	2000	103.30	11.853	0.265
S-DAILY LIVING SKILLS 1	ECI	2000	99.79	10.911	0.244
	PreK	2000	98.80	11.668	0.261

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Upper	Lower
S-Quotient Score 1	Equal variances assumed	12.703	0.000	3.506	3998	0.000	1.404	0.401	0.619	2.189
	Equal variances not assumed			3.506	3981.570	0.000	1.404	0.401	0.619	2.189
S-SPOKEN 1	Equal variances assumed	12.355	0.000	12.351	3998	0.000	6.730	0.545	5.662	7.798
	Equal variances not assumed			12.351	3976.797	0.000	6.730	0.545	5.662	7.798
S-READING 1	Equal variances assumed	12.048	0.001	1.250	3998	0.211	0.443	0.354	-0.252	1.137
	Equal variances not assumed			1.250	3978.498	0.211	0.443	0.354	-0.252	1.137
S-WRITING 1	Equal variances assumed	9.286	0.002	-5.352	3133	0.000	-1.569	0.293	-2.144	-0.994
	Equal variances not assumed			-5.141	2085.558	0.000	-1.569	0.305	-2.168	-0.971
S-MATHEMATICS 1	Equal variances assumed	6.425	0.011	-0.721	3998	0.471	-0.178	0.246	-0.660	0.305
	Equal variances not assumed			-0.721	3983.801	0.471	-0.178	0.246	-0.660	0.305
S-CLASSROOM BEHAVIOR 1	Equal variances assumed	2.236	0.135	-3.658	3998	0.000	-1.378	0.377	-2.116	-0.639
	Equal variances not assumed			-3.658	3997.668	0.000	-1.378	0.377	-2.116	-0.639
S-DAILY LIVING SKILLS 1	Equal variances assumed	23.333	0.000	2.778	3998	0.005	0.993	0.357	0.292	1.693
	Equal variances not assumed			2.778	3980.133	0.005	0.993	0.357	0.292	1.693

Chapter 6 Statistical Analyses

Analysis of PKC Program Quality Improvement

Ranks

		N	Mean Rank	Sum of Ranks
BSSI-3 Pre/Post: Star Level at end of PKC project - BSSI-3 Pre/Post Test: Star Level at entry into PKC project	Negative Ranks	0(a)	0.00	0.00
	Positive Ranks	868(b)	434.50	377146.00
	Ties	2234(c)		
	Total	3102		

a BSSI-3 Pre/Post: Star Level at end of PKC project < BSSI-3 Pre/Post Test: Star Level at entry into PKC project
b BSSI-3 Pre/Post: Star Level at end of PKC project > BSSI-3 Pre/Post Test: Star Level at entry into PKC project
c BSSI-3 Pre/Post: Star Level at end of PKC project = BSSI-3 Pre/Post Test: Star Level at entry into PKC project

Test Statistics

	BSSI-3 Pre/Post: Star Level at end of PKC project - BSSI-3 Pre/Post Test: Star Level at entry into PKC project
Z	-27.652(a)
Asymp. Sig. (2-tailed)	0.000

a Based on negative ranks.
b Wilcoxon Signed Ranks Test

Analysis of Improvement in PKC Program Quality on Child Outcomes

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646(a)	0.417	0.413	13.204
2	.659(b)	0.434	0.428	13.029

a Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity
b Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	66449.231	4	16612.308	95.281	.000(a)
	Residual	92754.121	532	174.350		
	Total	159203.352	536			
2	Regression	69058.961	5	13811.792	81.359	.000(b)
	Residual	90144.390	531	169.763		
	Total	159203.352	536			

a Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity

b Predictors: (Constant), S-SPOKEN 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

c Dependent Variable: S-SPOKEN 2

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	37.822	4.437		8.525	0.000
	Gender	2.590	1.145	0.075	2.262	0.024
	Ethnicity	1.819	0.401	0.155	4.536	0.000
	Star Level T1 (PKC Entry)	-2.050	0.662	-0.104	-3.099	0.002
	S-SPOKEN 1	0.617	0.037	0.568	16.676	0.000
2	(Constant)	42.868	4.563		9.394	0.000
	Gender	2.276	1.133	0.066	2.009	0.045
	Ethnicity	1.803	0.396	0.153	4.555	0.000
	Star Level T1 (PKC Entry)	1.969	1.215	0.099	1.620	0.106
	S-SPOKEN 1	0.647	0.037	0.595	17.344	0.000
	Star Level T2 (5/2008)	-4.950	1.262	-0.240	-3.921	0.000

a Dependent Variable: S-SPOKEN 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.559(a)	0.312	0.307	8.851
2	.569(b)	0.324	0.318	8.783

a Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity

b Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18938.353	4	4734.588	60.432	.000(a)
	Residual	41679.897	532	78.346		
	Total	60618.250	536			
2	Regression	19656.013	5	3931.203	50.961	.000(b)
	Residual	40962.236	531	77.142		
	Total	60618.250	536			

a Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity

b Predictors: (Constant), S-READING 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

c Dependent Variable: S-READING 2

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	51.548	3.341		15.431	0.000
	Gender	1.522	0.766	0.072	1.986	0.048
	Ethnicity	0.911	0.266	0.125	3.421	0.001
	Star Level T1 (PKC Entry)	0.682	0.444	0.056	1.536	0.125
	S-READING 1	0.438	0.031	0.515	14.102	0.000
2	(Constant)	54.927	3.495		15.716	0.000
	Gender	1.389	0.762	0.065	1.823	0.069
	Ethnicity	0.927	0.264	0.128	3.510	0.000
	Star Level T1 (PKC Entry)	2.726	0.802	0.223	3.399	0.001
	S-READING 1	0.445	0.031	0.523	14.397	0.000
	Star Level T2 (5/2008)	-2.548	0.835	-0.200	-3.050	0.002

a Dependent Variable: S-READING 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.529(a)	0.280	0.274	7.068
2	.547(b)	0.299	0.293	6.979

a Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity

b Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10330.900	4	2582.725	51.698	.000(a)
	Residual	26577.759	532	49.958		
	Total	36908.659	536			
2	Regression	11043.804	5	2208.761	45.345	.000(b)
	Residual	25864.856	531	48.710		
	Total	36908.659	536			

a Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity

b Predictors: (Constant), S-MATHEMATICS 1, Gender, Star Level T1 (PKC Entry), Ethnicity, Star Level T2 (5/2008)

c Dependent Variable: S-MATHEMATICS 2

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	51.614	3.811		13.545	0.000
	Gender	0.719	0.611	0.043	1.176	0.240
	Ethnicity	0.835	0.214	0.147	3.908	0.000
	Star Level T1 (PKC Entry)	0.174	0.354	0.018	0.492	0.623
	S-MATHEMATICS 1	0.467	0.036	0.480	12.817	0.000
2	(Constant)	56.096	3.941		14.234	0.000
	Gender	0.598	0.604	0.036	0.990	0.323
	Ethnicity	0.867	0.211	0.153	4.104	0.000
	Star Level T1 (PKC Entry)	2.218	0.638	0.233	3.474	0.001
	S-MATHEMATICS 1	0.461	0.036	0.474	12.819	0.000
	Star Level T2 (5/2008)	-2.535	0.663	-0.255	-3.826	0.000

a Dependent Variable: S-MATHEMATICS 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.604(a)	0.364	0.359	10.004
2	.617(b)	0.381	0.375	9.878

a Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity

b Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	30498.712	4	7624.678	76.192	.000(a)
	Residual	53237.973	532	100.071		
	Total	83736.685	536			
2	Regression	31928.922	5	6385.784	65.451	.000(b)
	Residual	51807.763	531	97.566		
	Total	83736.685	536			

a Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity

b Predictors: (Constant), S-CLASSROOM BEHAVIOR 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

c Dependent Variable: S-CLASSROOM BEHAVIOR 2

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	41.854	3.783		11.065	0.000
	Gender	2.673	0.871	0.107	3.069	0.002
	Ethnicity	1.124	0.300	0.132	3.740	0.000
	Star Level T1 (PKC Entry)	-0.630	0.501	-0.044	-1.257	0.209
	S-CLASSROOM BEHAVIOR 1	0.534	0.034	0.550	15.620	0.000
2	(Constant)	45.873	3.880		11.824	0.000
	Gender	2.441	0.862	0.098	2.832	0.005
	Ethnicity	1.137	0.297	0.133	3.833	0.000
	Star Level T1 (PKC Entry)	2.276	0.906	0.159	2.513	0.012
	S-CLASSROOM BEHAVIOR 1	0.553	0.034	0.568	16.200	0.000
	Star Level T2 (5/2008)	-3.623	0.946	-0.242	-3.829	0.000

a Dependent Variable: S-CLASSROOM BEHAVIOR 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.498(a)	0.248	0.243	10.186
2	.515(b)	0.266	0.259	10.078

a Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity

b Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18231.991	4	4557.998	43.930	.000(a)
	Residual	55198.177	532	103.756		
	Total	73430.168	536			
2	Regression	19501.988	5	3900.398	38.405	.000(b)
	Residual	53928.180	531	101.560		
	Total	73430.168	536			

a Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity

b Predictors: (Constant), S-DAILY LIVING SKILLS 1, Star Level T1 (PKC Entry), Gender, Ethnicity, Star Level T2 (5/2008)

c Dependent Variable: S-DAILY LIVING SKILLS 2

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	51.022	3.931		12.979	0.000
	Gender	1.658	0.885	0.071	1.874	0.061
	Ethnicity	1.112	0.304	0.139	3.655	0.000
	Star Level T1 (PKC Entry)	0.638	0.510	0.047	1.250	0.212
	S-DAILY LIVING SKILLS 1	0.436	0.037	0.452	11.885	0.000
2	(Constant)	54.969	4.046		13.585	0.000
	Gender	1.455	0.877	0.062	1.659	0.098
	Ethnicity	1.133	0.301	0.142	3.764	0.000
	Star Level T1 (PKC Entry)	3.368	0.922	0.251	3.651	0.000
	S-DAILY LIVING SKILLS 1	0.451	0.037	0.468	12.353	0.000
	Star Level T2 (5/2008)	-3.406	0.963	-0.243	-3.536	0.000

a Dependent Variable: S-DAILY LIVING SKILLS 2

Analysis of Child Outcomes by Program Quality Level

Group Statistics

	StarLevelT2_Combined	N	Mean	Std. Deviation	Std. Error Mean
BSSI-3 Post Test Spoken Language Standard Score	Low Quality	1241	107.24	18.169	0.516
	High Quality	1288	109.11	17.923	0.499
BSSI-3 Post Test Reading Standard Score	Low Quality	1241	99.57	11.057	0.314
	High Quality	1288	100.80	11.631	0.324
BSSI-3 Post Test Mathematics Standard Score	Low Quality	1241	101.51	8.398	0.238
	High Quality	1288	103.13	8.623	0.240
BSSI-3 Post Test Classroom Behavior Standard Score	Low Quality	1241	102.38	12.542	0.356
	High Quality	1288	103.14	11.776	0.328
BSSI-3 Post Test Daily Living Skills Standard Score	Low Quality	1241	98.26	11.919	0.338
	High Quality	1288	100.74	11.311	0.315

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Upper	Lower
BSSI-3 Post Test Spoken Language Standard Score	Equal variances assumed	0.113	0.737	-2.601	2527	0.009	-1.867	0.718	-3.274	-0.460
	Equal variances not assumed			-2.601	2520.495	0.009	-1.867	0.718	-3.275	-0.459
BSSI-3 Post Test Reading Standard Score	Equal variances assumed	1.143	0.285	-2.717	2527	0.007	-1.227	0.452	-2.112	-0.341
	Equal variances not assumed			-2.719	2526.543	0.007	-1.227	0.451	-2.112	-0.342
BSSI-3 Post Test Mathematics Standard Score	Equal variances assumed	1.945	0.163	-4.755	2527	0.000	-1.610	0.339	-2.274	-0.946
	Equal variances not assumed			-4.757	2526.708	0.000	-1.610	0.338	-2.274	-0.946
BSSI-3 Post Test Classroom Behavior Standard Score	Equal variances assumed	3.005	0.083	-1.562	2527	0.118	-0.756	0.484	-1.704	0.193
	Equal variances not assumed			-1.560	2501.985	0.119	-0.756	0.484	-1.705	0.194
BSSI-3 Post Test Daily Living Skills Standard Score	Equal variances assumed	8.535	0.004	-5.382	2527	0.000	-2.486	0.462	-3.392	-1.580
	Equal variances not assumed			-5.376	2506.971	0.000	-2.486	0.462	-3.393	-1.579

Analysis of Child Outcomes in SPECS Random Study

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score	102.50	24	12.511	2.554
	BSSI-3 Post Test Spoken Language Standard Score	111.25	24	13.043	2.662
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score	96.88	24	10.406	2.124
	BSSI-3 Post Test Reading Standard Score	103.96	24	7.068	1.443
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score	103.54	24	8.272	1.689
	BSSI-3 Post Test Mathematics Standard Score	104.38	24	6.479	1.323
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score	105.00	24	7.661	1.564
	BSSI-3 Post Test Classroom Behavior Standard Score	107.71	24	7.799	1.592
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score	97.50	24	10.000	2.041
	BSSI-3 Post Test Daily Living Skills Standard Score	103.75	24	6.635	1.354
Pair 6	BSSI-3 Pre/Post Total Quotient Score	101.21	24	10.384	2.120
	BSSI-3 Post Test Total Standard Score	108.17	24	8.830	1.802

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Upper	Lower			
Pair 1	BSSI-3 Pre/Post Test Spoken Language Standard Score - BSSI-3 Post Test Spoken Language Standard Score	-8.750	10.347	2.112	-13.119	-4.381	-4.143	23	0.000
Pair 2	BSSI-3 Pre/Post Test Reading Standard Score - BSSI-3 Post Test Reading Standard Score	-7.083	9.659	1.972	-11.162	-3.005	-3.593	23	0.002
Pair 3	BSSI-3 Pre/Post Test Mathematics Standard Score - BSSI-3 Post Test Mathematics Standard Score	-0.833	7.614	1.554	-4.048	2.382	-0.536	23	0.597
Pair 4	BSSI-3 Pre/Post Test Classroom Behavior Standard Score - BSSI-3 Post Test Classroom Behavior Standard Score	-2.708	7.799	1.592	-6.002	0.585	-1.701	23	0.102
Pair 5	BSSI-3 Pre/Post Test Daily Living Skills Standard Score - BSSI-3 Post Test Daily Living Skills Standard Score	-6.250	9.584	1.956	-10.297	-2.203	-3.195	23	0.004
Pair 6	BSSI-3 Pre/Post Total Quotient Score - BSSI-3 Post Test Total Standard Score	-6.958	8.159	1.665	-10.403	-3.513	-4.178	23	0.000

Chapter 7 Statistical Analyses

Analysis of Outcomes by Pre-K Counts Extent of Partnership Elements

Group Statistics

	Partnership Group	N	Mean	Std. Deviation	Std. Error Mean
BSSI-3 Post Test Spoken Language Standard Score	Low Partnership	2289	106.96	18.065	0.378
	High Partnership	1625	109.74	16.349	0.406
BSSI-3 Post Test Reading Standard Score	Low Partnership	2289	98.87	11.489	0.240
	High Partnership	1625	101.66	10.431	0.259
BSSI-3 Post Test Mathematics Standard Score	Low Partnership	2289	101.31	8.426	0.176
	High Partnership	1625	104.30	8.032	0.199
BSSI-3 Post Test Classroom Behavior Standard Score	Low Partnership	2289	102.78	12.601	0.263
	High Partnership	1625	105.58	12.020	0.298
BSSI-3 Post Test Daily Living Skills Standard Score	Low Partnership	2289	98.11	11.260	0.235
	High Partnership	1625	102.13	10.552	0.262
BSSI-3 Post Test Total Standard Score	Low Partnership	2289	102.18	13.428	0.281
	High Partnership	1625	105.97	12.727	0.316

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Upper	Lower
BSSI-3 Post Test Spoken Language Standard Score	Equal variances assumed	21.614	0.000	-4.924	3912	0.000	-2.775	0.564	-3.880	-1.670
	Equal variances not assumed			-5.007	3691.062	0.000	-2.775	0.554	-3.861	-1.688
BSSI-3 Post Test Reading Standard Score	Equal variances assumed	19.952	0.000	-7.789	3912	0.000	-2.795	0.359	-3.499	-2.092
	Equal variances not assumed			-7.918	3685.532	0.000	-2.795		-3.487	-2.103
BSSI-3 Post Test Mathematics Standard Score	Equal variances assumed	5.776	0.016	-11.117	3912	0.000	-2.980	0.268	-3.506	-2.455
	Equal variances not assumed			-11.208	3595.231	0.000	-2.980	0.266	-3.502	-2.459
BSSI-3 Post Test Classroom Behavior Standard Score	Equal variances assumed	0.280	0.597	-6.979	3912	0.000	-2.799	0.401	-3.585	-2.012
	Equal variances not assumed			-7.035	3593.853	0.000	-2.799	0.398	-3.579	-2.019
BSSI-3 Post Test Daily Living Skills Standard Score	Equal variances assumed	14.697	0.000	-11.312	3912	0.000	-4.026	0.356	-4.724	-3.328
	Equal variances not assumed			-11.437	3628.070	0.000	-4.026	0.352	-4.716	-3.336
BSSI-3 Post Test Total Standard Score	Equal variances assumed	7.422	0.006	-8.876	3912	0.000	-3.784	0.426	-4.620	-2.948
	Equal variances not assumed			-8.957	3606.397	0.000	-3.784	0.422	-4.612	-2.955

Programmatic variables examination

1. Professional Degree of Mentor
2. Years of Experience of Mentor
3. Estimated Average Number of Coaching Sessions/Month
4. Estimated Average Coaching Time/Month
5. Estimated Average Number of Persons Coached/Month
6. Estimated Average Number of Coaching Goals Set
7. Estimated Average Number of Coaching Goals Achieved
8. Estimated Average Number of Communication Modes Used
    a. Estimated Number of Communication Modes Used: Face to Face Meetings
    b. Estimated Number of Communication Modes Used: Phone Calls
    c. Estimated Number of Communication Modes Used: Written Reports
    d .Estimated Number of Communication Modes Used: Email
    e. Estimated Number of Communication Modes Used: Online Messaging
    f. Estimated Number of Communication Modes Used: Other 1, Specify
    g. Estimated Number of Communication Modes Used: Other 2, Specify
    h. Estimated Number of Communication Modes Used: Other 3, Specify
    i. Estimated Number of Communication Modes Used: Other 4, Specify
9. Estimated Average Number of Coaching Strategies Used
    a. Estimated Number of Coaching Strategies Used: Observation of classroom/setting
    b. Estimated Number of Coaching Strategies Used: Demonstration/modeling specific skills
    c. Estimated Number of Coaching Strategies Used: Goal-planning
    d. Estimated Number of Coaching Strategies Used: Formal in-site workshop training
    e. Estimated Number of Coaching Strategies Used: Verbal feedback
    f. Estimated Number of Coaching Strategies Used: Written feedback
    g. Estimated Number of Coaching Strategies Used: Other 3, Specify
    h. Estimated Number of Coaching Strategies Used: Other 4, Specify
    i. Estimated Number of Coaching Strategies Used: Other 5, Specify
10. Estimated Average Number of Program Quality Topics Coached
    a. Estimated Number of Program Quality Topics Used: Space Furnishings/Display
    b. Estimated Number of Program Quality Topics Used: Learning Activities
    c. Estimated Number of Program Quality Topics Used: Listening/Talking with Infants and Toddlers
    d. Estimated Number of Program Quality Topics Used: Language and Reasoning with Preschoolers
    e. Estimated Number of Program Quality Topics Used: Basic care for infants/toddler
    f. Estimated Number of Program Quality Topics Used: Personal care for preschoolers
    g. Estimated Number of Program Quality Topics Used: Social Development
    h. Estimated Number of Program Quality Topics Used: Adult needs
    i. Estimated Number of Program Quality Topics Used: Teacher/child interactions
    j. Estimated Number of Program Quality Topics Used: Child/child interactions

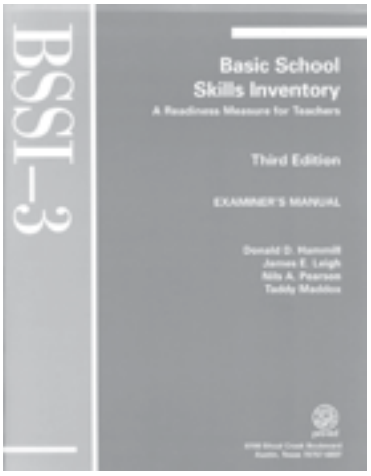
k. Estimated Number of Program Quality Topics Used: Parent/child interactions
l. Estimated Number of Program Quality Topics Used: Communication with parents
m. Estimated Number of Program Quality Topics Used: Promoting parent involvement
n. Estimated Number of Program Quality Topics Used: Program structure
o. Estimated Number of Program Quality Topics Used: Use of SPECS "Child letters" from BSSI
p. Estimated Number of Program Quality Topics Used: Exception children
q. Estimated Number of Program Quality Topics Used: Linkages to community services
r. Estimated Number of Program Quality Topics Used: Resources
s. Estimated Number of Program Quality Topics Used: Promoting acceptance of diversity
t. Time Spent on Program Quality Topic 1
u. Time Spent on Program Quality Topic 2
v. Time Spent on Program Quality Topic 3
w. Time Spent on Program Quality Topic 4
x. Time Spent on Program Quality Topic 5
y. Time Spent on Program Quality Topic 6
z. Time Spent on Program Quality Topic 7
aa. Time Spent on Program Quality Topic 8
bb. Time Spent on Program Quality Topic 9
cc. Time Spent on Program Quality Topic 10
dd. Time Spent on Program Quality Topic 11
ee. Time Spent on Program Quality Topic 12
ff. Time Spent on Program Quality Topic 13
gg. Time Spent on Program Quality Topic 14
hh. Time Spent on Program Quality Topic 15
ii. Time Spent on Program Quality Topic 16
jj. Time Spent on Program Quality Topic 17
kk. Time Spent on Program Quality Topic 18
ll. Time Spent on Program Quality Topic 19

11. Estimated Number of Mentoring Objectives
    a. Estimated Number of Mentoring Objectives Used: Accreditation/Quality Enhancement
    b. Estimated Number of Mentoring Objectives Used: Leadership/Supervision/Professional Development
    c. Estimated Number of Mentoring Objectives Used: Administrative Policies and Procedures
    d. Estimated Number of Mentoring Objectives Used: Inclusion of Children with Special Needs
    e. Estimated Number of Mentoring Objectives Used: Other, Specify
12. Site Developed Working Partnership with School District
13. Site Developed Working Partnership with Head Start
14. Site Developed Working Partnership with Early Intervention
15. Site Developed Working Partnership with Child Care

16. Working Partnership Total
17. Site Developed Parental Involvement
18. Site Developed Quality Program Design Using: Early Learning Standards
19. Site Developed Quality Program Design Using: Accountability Block Grant Guidance
20. Site Developed Quality Program Design Using: Keystone Stars Performance Standards
21. Site Developed Quality Program Design Using: Head Start Performance Standards
22. Quality Program Design Total
23. Site Developed Leadership Network with Public School
24. Site Developed Leadership Network with Head Start
25. Site Developed Leadership Network with Early Intervention
26. Site Developed Leadership Network with Child Care
27. Site Developed Leadership Network with Community Representative
28. Leadership Network Total
29. Site Developed Community Engagement
30. Site Developed Sustainability
31. Partnership Rubric Total Score

APPENDIX B

B



Basic School Skills Inventory (BSSI)

- Learning readiness skills for children
- Authentic teacher observational ratings
- Ages: 48-108 months (Pre-3rd grade)
- 6 Domains: Spoken language; Reading; Writing; Math; Behavior; Daily living
- Standard and T-Scores (100/15; 50/10)
- Functional skills/benchmarks for learning
- Graduated scoring: 0, 1, 2, 3 (mastery)
- Norms = 1,800 children; 10 states
- PRO-ED

BSSI Subscale Samples

Spoken Language

- Uses complete sentences when talking
- Listens to and retells a story in sequence
- Initiates and maintains conversations with others

Reading

- Recognizes upper/lower case letters
- Names letters when sounds are spoken
- Has basic site vocabulary of 5 words

BSSI Subscale Samples

Writing

- Writes from left to right
- Writes first name without a model
- Writes single letters when asked (b, h, m, t, a, e)

Mathematics

- Counts objects in set of fewer than 10
- Counts aloud from 1-20
- Understands concepts of 1st, 2nd, 3rd

BSSI Subscale Samples

Classroom Behavior

- Makes friends easily
- Takes turns
- Uses teacher feedback to improve learning
- Can attend to activity for 5 minutes

Daily Living Skills

- Enters and exits school by self
- Assumes responsibility for own belongings

BSSI Rating Scale

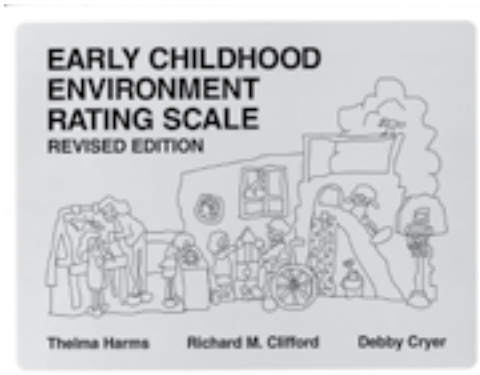
When completing the BSSI, a four-point observation rubric is used to classify and rate each early learning competency:

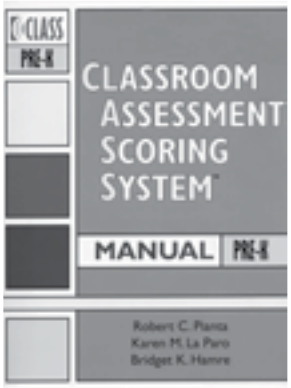
0 (Does not perform)

1 (Beginning to perform)

2 (Performs most of the time)

3 (Performance indicates mastery)





SCORE SHEET – EXPANDED VERSION

Early Childhood Environment Rating Scale - Revised - Two-Factor Model

Adapted from original ECERS-R score sheet by: Thelma Harms, Richard M. Clifford, and Debby Cryer

Observer: _____ Observer Code: ___ ___ ___

Center/School: _____ Center Code: ___ ___ ___

Room: _____ Room Code: ___ ___

Teacher(s): _____ Teacher Code: ___ ___

Date of Observation: __ __ / __ __ / __ __ (m m d d y y)

Number of children with identified disabilities: ___ ___

Check type(s) of disability: ☐ physical/sensory ☐ cognitive/language ☐ social/emotional ☐ other: _____

Birthdates of children enrolled: youngest __ __ / __ __ / __ __ (m m d d y y)

oldest __ __ / __ __ / __ __ (m m d d y y)

Time				
# of staff present				
# of children present				

Highest number center allows in class at one time: ___ ___

Highest number of children present during observation: ___ ___

Time observation began: ___ ___ : ___ ___ ☐ AM ☐ PM

Time observation ended: ___ ___ : ___ ___ ☐ AM ☐ PM

Time interview began: ___ ___ : ___ ___ ☐ AM ☐ PM

Time interview ended: ___ ___ : ___ ___ ☐ AM ☐ PM

FACTOR #1: MATERIALS/ACTIVITIES

3. Furnishings for Relaxation 1 2 3 4 5 6 7

5.1 Total time – cozy area: _____

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	S 5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	

S = substantial portion of the day

5. Space for privacy 1 2 3 4 5 6 7

5.2 Total time – space for privacy: _____

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
	3.2 ☐ ☐	S 5.2 ☐ ☐	7.2 ☐ ☐

S = substantial portion of the day

15. Books & pictures 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	S 5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	
		5.4 ☐ ☐	
		5.5 ☐ ☐	

5.1 Total time – books and pictures = _____ 5.5 Informal reading observed? (y / n)

5.1 Wide selection (tally): fantasy _____

science _____ factual _____ cultures _____

people _____ abilities _____ animals _____

5.4 Violence? _____

Also see Item 26, 5.1 and 5.1, and Item 28, 5.1 and 5.1

19. Fine Motor 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	S 5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	

5.1 Total time – fine motor activities = _____

5.1 Types of fine motor material (list 3 to 5 of each):

- Small building materials _____
- Art: _____
- Manipulatives _____
- Puzzles _____

20. Art 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N NA
1.1 ☐ ☐	3.1 ☐ ☐	S 5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
			7.3 ☐ ☐ ☐

S = substantial portion of the day

5.1 Total time – art materials = _____

5.1 Types of art materials (list 3 to 5 of each):

- **drawing** (required) _____
- paints _____
- 3-D _____
- collage _____ • tools _____

22. Blocks 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐
		S 5.4 ☐ ☐	

S = substantial portion of the day

5.4 Total time – block area = _____

7.1 Types of blocks (√=observed):

__ unit
__ large hollow
__ homemade
__ other: _____

24. Dramatic play 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
	3.2 ☐ ☐	S 5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐
		5.4 ☐ ☐	7.4 ☐ ☐

S = substantial portion of the day

5.1 Gender-specific dress-up clothing (list):

	Male	Female
1.		
2.		
3.		

5.3 Themes represented in props (name at least two):

5.2 Total time – dramatic play = _____

25. Nature/science 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
	3.2 ☐ ☐	S 5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	
		5.4 ☐ ☐	

S = substantial portion of the day

5.1 Types of nature/science materials (list 3 to 5 of each):

- Collections of natural objects _____
- Living things _____
- Books, games, toys _____
- Activities _____

5.2 Total time – nature/science: _____

26. Math/number 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	S 5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	
		5.4 ☐ ☐	

S = substantial portion of the day

5.1 Types of math/number materials (list 3 to 5 of each):

- Counting _____
- Written numbers _____
- Measuring _____
- Comparing quantities _____
- Shapes _____

5.2 Total time – math/number: _____

A. Factor #1 (Items 1-9) Score __ __ B. Number of items scored __ __ Factor #1 MATERIALS/ACTIVITIES Average score (A ÷ B) __.__ __

FACTOR #2: LANGUAGE/INTERACTION

17. Using language to develop reasoning skills 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐

3.1, 5.1 Examples of logical relationships:

5.2 Examples of child's explanations:

18. Informal use of language 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐		5.3 ☐ ☐	
		5.4 ☐ ☐	

5.3 Examples of staff expanding on children's ideas:

7.2 Examples of staff questioning for longer answers:

30. General supervision of children 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
	3.3 ☐ ☐	5.3 ☐ ☐	
		5.4 ☐ ☐	

31. Discipline 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐	5.3 ☐ ☐	7.3 ☐ ☐

32. Staff-child interactions 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐		5.3 ☐ ☐	

33. Interactions among children 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
1.3 ☐ ☐	3.3 ☐ ☐		

36. Group time 1 2 3 4 5 6 7

Y N	Y N	Y N	Y N
1.1 ☐ ☐	3.1 ☐ ☐	5.1 ☐ ☐	7.1 ☐ ☐
1.2 ☐ ☐	3.2 ☐ ☐	5.2 ☐ ☐	7.2 ☐ ☐
		5.3 ☐ ☐	7.3 ☐ ☐

A. Factor #2 (Items 10-16) Score __ __ B. Number of items scored __ __ Factor #2 LANGUAGE/INTERACTION Average score (A ÷ B) __.__ __

Schedule

Planned **Observed**

Substantial Portion of the Day Calculations

Time center opens: __ __ : __ __ ☐AM ☐PM

Time center closes: __ __ : __ __ ☐AM ☐PM

Total hours of operation = ___ hrs ___ mins

Substantial portion of the day = ___ hrs ___ mins

REFERENCE CHART

hours	s. portion	hours	s. portion
4	1:20	8	2:40
4½	1:30	8½	2:50
5	1:40	9	3:00
5½	1:50	9½	3:10
6	2:00	10	3:20
6½	2:10	10½	3:30
7	2:20	11	3:40
7½	2:30	11½	3:50
		12	4:00

3. Furnishings for relaxation and comfort

Total time = _____ hrs _____ mins

24. Dramatic play

Total time = _____ hrs _____ mins

5. Space for privacy

Total time = _____ hrs _____ mins

25. Nature/science

Total time = _____ hrs _____ mins

15. Books and pictures

Total time = _____ hrs _____ mins

26. Math/numbers

Total time = _____ hrs _____ mins

19. Fine motor

Total time = _____ hrs _____ mins

20. Art

Total time = _____ hrs _____ mins

22. Block area

Total time = _____ hrs _____ mins

CLASS Observation Log

Begin and End Time						
Scheduled Activity						
Total # of children						
Activity						
Materials						
Methods – (Ex. large group, small group, one on one, teacher directed, child directed,						
# of different modalities: visual, auditory, kinesthetic (Indicate "E" for effective and "I" for ineffective)						
# of children **actively** engaged						
# of children **passively** engaged						
# of children **disengaged**						
% of effective modalities						
% of ineffective modalities						
% of time teacher actively facilitates						
% of time teacher does not actively facilitate						
Opportunity for child participation						

CLASS Preschool Manual

Instructional Learning Formats

Low (1)	Low (2)	Mid (3)	Mid (4)	Mid (5)	High (6)	High (7)
Utilization of Materials						
The teacher does not use methods, materials, and/or activities to promote awareness, exploration, inquiry, and/or utilization.		The teacher sometimes facilitates awareness, exploration, inquiry, and utilization of materials and information but does not consistently do so.			The teacher maximizes students' ability to learn and enhances students' learning by facilitating awareness, exploration, inquiry, and utilization of materials.	

Low (1)	Low (2)	Mid (3)	Mid (4)	Mid (5)	High (6)	High (7)
Student Engagement						
The students do not appear interested or engaged in the activities.		As a function of teacher's efforts, students may be engaged and/ or volunteering during periods of time, but at other times their interest wanes and they are not focused on the activity or lesson.			As a function of the teacher's efforts, students appear consistently interested and engaged.	

Low (1)	Low (2)	Mid (3)	Mid (4)	Mid (5)	High (6)	High (7)
Teacher Facilitation						
The teacher does not actively facilitate student's engagement but merely provides activities and materials or dull instruction.		At times the teacher is an active facilitator of activities (e.g., asking questions, participating) but at other times she merely provides activities and materials for the students.			The teacher actively facilitates students' engagement in activities through questioning and enthusiastic presentation and/or participation.	

Low (1)	Low (2)	Mid (3)	Mid(4)	Mid (5)	High (6)	High (7)
Modalities (modalities vs. no modalities and effective vs. not effective)						
The teacher does not use a variety of modalities for presenting information.		The teacher may use a variety of materials and present through a variety of modalities but her use of them is not consistently effective or interesting to the students.			The teacher presents information through a variety of modalities including auditory, visual, and movement.	

Student Engagement

Low (1)	Low (2)	Mid (3)	Mid (4)	Mid (5)	High (6)	High (7)
Active vs Passive Engagement						
The majority of students appear distracted or disengaged.		The majority of students are passively engaged, listening to or watching the teacher.			Most students are actively engaged – frequently volunteering information or insights, responding to teacher prompts, and/or actively manipulating materials.	

Low (1)	Low (2)	Mid (3)	Mid (4)	Mid (5)	High (6)	High (7)
Sustained Engagement						
Low engagement levels are sustained over activities and lessons.		Some students are engaged but others are engaged for only parts of the activity or lesson.			High engagement is sustained throughout different activities and lessons.	

PRE K COUNTS

SPECS Scaling Progress in Early Childhood Settings

PRE-K COUNTS

SPECS MENTORING MONITOR

Quantitative and Qualitative Record of Mentoring & Coaching Toward Program Quality in Early Childhood Settings

Please use the list to the right to identify the two or three digit location number of the locations affected by this mentoring. Please type all the numbers in the box bellow. Numbers should be seperated by comma, for example: 123, 456, 789, 101, 102. You may need to use the scroll bar to find the classrooms in your site.

Classrooms Affected by Mentoring

Pre-K Counts Grantee:	
Pre-K Counts Program:	
Name of Mentee:	
Mentoring Period Start Date:	
Mentoring Period End Date:	
Date Monitor Completed:	
Person Providing Mentoring:	
Professional Degree of Mentor:	
Years of Experience of Mentor:	

Before Mentoring: [Select number indicating your best estimate of effort needed]

Instructions: Based on your knowledge beforehand of the mentee, how much mentoring and coaching effort do you believe will be needed to improve caregiver behavior and program quality?

After Mentoring: [Enter number indicating your best estimate of completed mentoring effort or select the applicable options] *Please mark all that apply*

Types of mentoring and coaching you provided

- ☐ Direct mentoring to the director of the program
- ☐ Direct mentoring to the teacher/provider
- ☐ Indirect guidance to the teacher via the director

Number of coaching sessions	
Number of coaching hours	
Number of persons coached	
Number of coaching goals set	
Number of coaching goals achieved	
Communication Modes used	0

- ☐ Face-to-face meetings
- ☐ Phone calls
- ☐ Written reports
- ☐ E-mail
- ☐ Online messaging (chatroom, Instant messenger)
- ☐ Other 1, Specify:
- ☐ Other 2, Specify:
- ☐ Other 3, Specify:
- ☐ Other 4, Specify:

Mentoring Strategies used 0

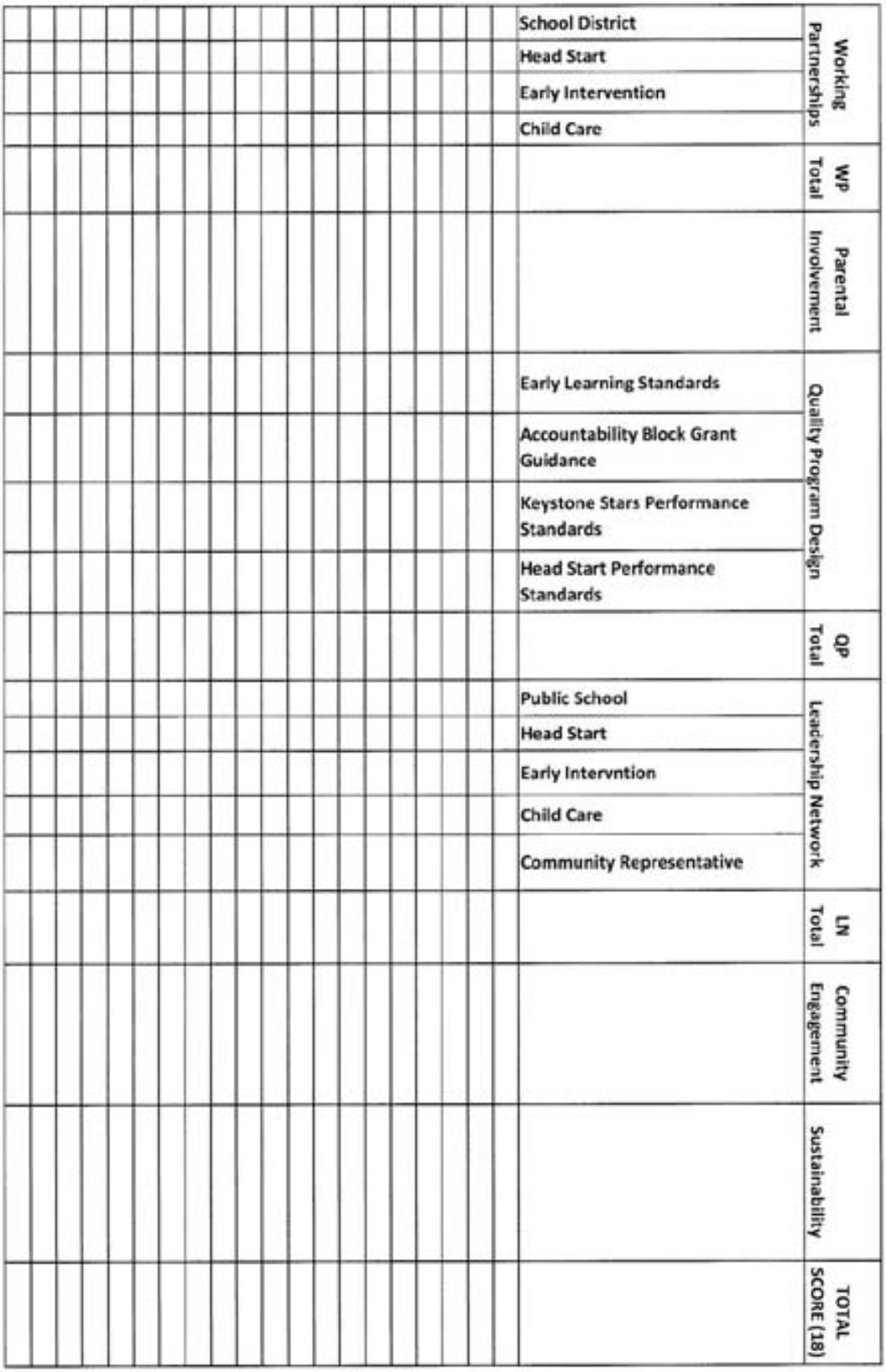
- ☐ Observation of classroom/setting
- ☐ Demonstration/modeling specific skills
- ☐ Goal-planning
- ☐ Formal on-site workshop training
- ☐ Verbal feedback
- ☐ Written feedback
- ☐ Other 3, Specify:
- ☐ Other 4, Specify:
- ☐ Other 5, Specify:

Program quality topics 0

- ☐ Space Furnishings/Display
- ☐ Learning Activities
- ☐ Listening/Talking with Infants & Toddlers
- ☐ Language/Reasoning (early literacy) with Preschoolers
- ☐ Basic Care for Infants/Toddlers
- ☐ Personal Care for Preschoolers
- ☐ Social Development
- ☐ Adult Needs
- ☐ Teacher/Child Interactions
- ☐ Child/Child Interactions
- ☐ Parent/Child Interactions
- ☐ Communication with Parents
- ☐ Promoting Parent Involvement
- ☐ Program Structure
- ☐ Use of SPECS "child letters" from BSSI
- ☐ Exceptional Children
- ☐ Linkages to Community Services
- ☐ Resources
- ☐ Promoting Acceptance of Diversity

Major objectives 0

- ☐ Accreditation/quality enhancement: Keystone Stars; NAEYC
- ☐ Leadership/supervision/professional development
- ☐ Administrative policies & procedures
- ☐ Inclusion of children with special needs
- ☐ Other, Specify:



PRE-KINDERGARTEN PROGRAM PARTNERSHIP RUBRIC

Working Partnerships	WP Total	Parental Involvement	Quality Program Design	QP Total	Leadership Network	LN Total	Community Engagement	Sustainability	TOTAL SCORE (18)
School District			Early Learning Standards		Public School				
Head Start			Accountability Block Grant Guidance		Head Start				
Early Intervention			Keystone Stars Performance Standards		Early Intervntion				
Child Care			Head Start Performance Standards		Child Care				
					Community Representative				

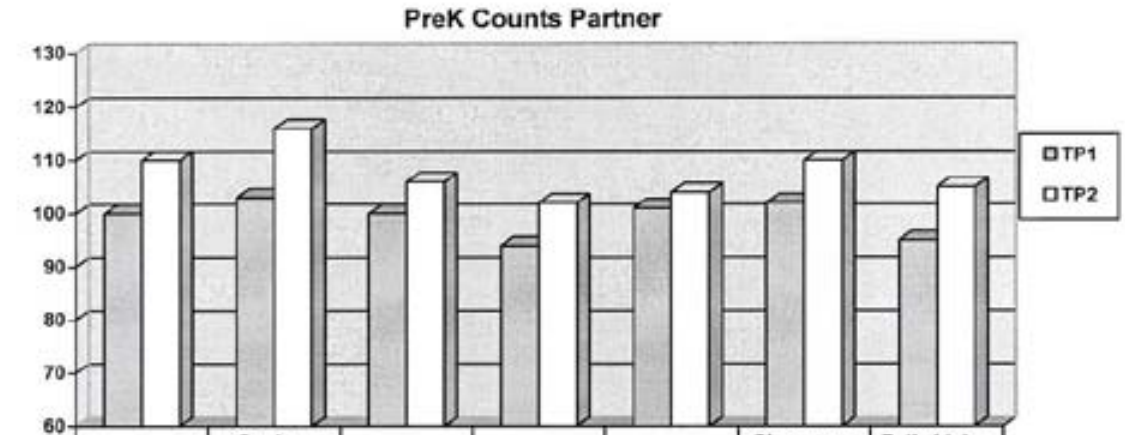
APPENDIX C

SPECS
Scaling Progress in Early Childhood Settings
PRE-K COUNTS

TO: Pre-K Counts Partner
FROM: Stephen J. Bagnato and SPECS team
RE: Children's Early Learning Progress Report Card
DATE: October 3, 2007

Our team is privileged to work with your innovative early learning initiative for *Pennsylvania Pre-K Counts*. You and your teachers have accomplished much difficult but beneficial work in promoting the developmental progress and early learning competencies of the young children in your region.

Summarized succinctly below in the graph/table and the bullets are the progress results for your children on the *Basic School Skills Inventory (BSSI)* since their entrance into Pre-K Counts. Descriptive data only are presented by mean standard scores in each early learning skill area for your group of children. Children's competencies are considered average for their age (based on national norms) if their standard score falls between 90 and 110.



	Overall	Spoken Language	Reading	Writing	Math	Classroom Behavior	Daily Living Skills
TP1	100	103	100	94	101	102	95
TP2	110	116	106	102	104	110	105

- Overall pattern of child progress exceeded expectancies.
- Strongest gains are apparent in spoken language, writing, classroom behavior, and daily living skills.
- Some children progressed from showing mild-moderate delays to no delays in developmental functioning by the second assessment.

(Child's Name)
My (Date) BSSI-3
(Site, Location, Space)

Dear People Who Care About Me,

I like it when you take the time to watch me grow. Here are some things you saw when I was ( ) months-old on my BSSI-3 assessment. You could use the blank space beside each skill to check off what I've already learned since then and what we can work on together.

Thank you very, very much,
(Child's Name)

I've Learned How To:

__ use verbal reasoning or problem solving skills
__ hold a book in proper position
__ manage my time well
__ use good judgment in dealing with problems

I'm Learning How To:

__ use complete sentences when talking
__ use words that are appropriate for my age
__ say the letters of the alphabet in the correct order
__ recognize lowercase and capital letters when their names are given to me
__ read aloud numbers 1 through 10 presented out of order
__ assign the correct number to a set of objects
__ check my assignments before turning them in
__ provide assistance or tutoring to other children when asked
__ tell time within 5 minutes from a watch or clock face
__ use a dictionary on my own

Next I'll Be Learning How To:

__ provide missing numbers in a consecutive series (e.g., 4 5 _ 7)

A Summary of Skills on the BSSI-3

Developmental Area	On Target	Needs Help	Needs Extra Help
Overall Development	✪		
Spoken Language Skills	✪		
Reading Skills	✪		
Writing Skills		✪	
Math Skills	✪		
Classroom Behavior Skills	✪		
Daily Living Skills	✪		

(Child's Name)
My (date) BSSI-RE
(Site, Location, Space)

Dear People Who Care About Me,

I like it when you take the time to watch me grow. Here are some things you saw when I was ( ) months-old on my BSSI:RE assessment. You could use the blank space beside each skill to check off what I've already learned since then and what we can work on together.

Thank you very, very much,
(Child's Name)

I've Learned How To:

__ choose a book during an activity or free time
__ sit and listen to a story being read aloud for a few minutes

I'm Learning How To:

__ sing simple songs or recite nursery rhymes or prayers from memory
__ describe what I'm doing when asked
__ follow simple directions
__ cooperate in simple group games
__ use a spoon or fork when I'm eating
__ do simple tasks when asked

I'm Just Beginning To Learn How To:

__ ask questions beginning with "who", "what", and "where"
__ speak in short and complete sentences
__ know what a familiar picture or symbol means
__ recognize own name
__ recognize a circle and a triangle
__ tell the total number of items up to five when I'm asked
__ take turns with reminders
__ share toys without being asked
__ do new things on my own with little help
__ tell my first and last name when asked

Next I'll Be Learning How To:

__ draw a shape or letter that can be recognized
__ count aloud up to ten

Things to talk about:

_____
_____
_____

APPENDIX D

PROFESSIONAL PROFILE

STEPHEN J. BAGNATO, Ed.D., NCSP is a Developmental School Psychologist and Professor of Pediatrics and Psychology at the University of Pittsburgh School of Medicine. Dr. Bagnato holds joint appointments in Psychology-in-Education/Applied Developmental Psychology and Clinical/Developmental Psychology at the University. He is Director of the Early Childhood Partnerships program at Children's Hospital of Pittsburgh of UPMC and core interdisciplinary leadership team faculty member for The UCLID Center at the University of Pittsburgh.

In 1986, Dr. Bagnato received the Braintree Hospital national brain injury research award for his research on the impact of interdisciplinary intervention for young children with acquired and congenital brain injuries; **in 2001, he was recipient of the University of Pittsburgh Chancellor's Distinguished Public Service Award for the innovation and community impact of his consultation and research programs in Early Childhood Partnerships; and in 2008, Dr. Bagnato received the Penn State University Excellence in Education Alumni Award for his career of innovative national and international work in education and psychology. For the period of 2009-2014, Dr. Bagnato has been recently appointed to Governor Rendell's Pennsylvania Early Learning Council, a task force to influence early childhood intervention policy and practices through systems integration efforts among education, public welfare, and health**.

Dr. Bagnato specializes in authentic curriculum-based assessment and applied program evaluation research for infants, toddlers, preschoolers, and families at developmental risk and with neurodevelopmental disabilities and neurobehavioral disorders. He has published over 120 applied research studies and professional articles in early childhood care and education, early intervention, early childhood special education, school psychology, neurodevelopmental disabilities, and developmental neuropsychology.

Dr. Bagnato is Director of **Early Childhood Partnerships (ECP--www.uclid.org)** a community-based consultation, training, technical assistance, and research collaborative between Children's Hospital and The UCLID Center at the University of Pittsburgh with community partners. ECP consists of six core "partnership" programs: (1) SPECS Program Evaluation Research Team (Scaling Progress in Early Childhood Settings): authentic measurement of the efficacy and outcomes of high-quality early childhood intervention programs; (2) The HealthyCHILD School-linked Developmental Healthcare Partnership: a field-validated RTI/R&R model using a mobile developmental healthcare team and a prevention-intervention continuum to meet the complex needs of preschoolers with acute and chronic medical conditions, developmental delays/disabilities, and challenging behaviors in-vivo in early childhood classrooms (e.g., Head Start, early intervention, ECE); (3) TRACE Center for Excellence in Early Childhood Assessment: research on the evidence-base for promising early intervention assessment practices to guide policy changes for improved professional practices; (4) COMET—Center on Mentoring for Effective Teaching: research on the impact of mentoring to improve Head Start and ECI teacher practices; (5) Center to Investigate Violence and Injury in Communities (CIVIC): epidemiological research: (6) Early Childhood Research Systems: innovative observational assessment procedures and database management of standards and assessment links.

For over 10 years, Dr. Bagnato and his ECP program have been funded by the Heinz Endowments to conduct longitudinal research on the impact and outcomes of high-quality early childhood intervention programs on nearly 15,000 high-risk children in 30 school districts and regions across Pennsylvania (e.g., Early Childhood Initiative; Pre-K Counts).Dr. Bagnato is a Fellow of the American Psychological Association (APA) in Division 16 and past or current journal editorial board member for

Journal of School Psychology, School Psychology Review, School Psychology Quarterly, Journal of Psychoeducational Assessment, Journal of Early Intervention, Topics in Early Childhood Special Education, Infants and Young Children, Journal of Early Childhood and Infant Psychology, Child Assessment News, and Early Childhood Research Quarterly.

Dr. Bagnato received the 1995-1996 Best Research Article Award from Division 16 of APA for his "national study on the social and treatment invalidity of intelligence testing in early childhood intervention". He is co-author of the professional "best practice" policy statements and standards on early childhood assessment, evaluation, and early intervention for The National Association of School Psychologists, and the Division for Early Childhood of the Council for Exceptional Children.

Dr. Bagnato is in demand to provide consultation on early childhood intervention "best practices", challenging and atypical behaviors, authentic assessment in early childhood, and authentic program outcomes evaluation research. In addition, he collaborates internationally with ATLANTIS: a joint US-EU grant on the design of a universal, web-based curriculum in early childhood intervention for pre-service education of interdisciplinary professionals.

Dr. Bagnato's published books and instruments include: The recently published assessment text, Authentic Assessment for Early Childhood Intervention: Best Practices (Guilford, 2007); the upcoming 4th edition of the widely used resource text, Linking Authentic Assessment and Early Intervention: Best Measures for Best Practices (2009; Paul Brookes); and the Temperament and Atypical Behavior Scale (TABS): Early Childhood Indicators of Developmental Dysfunction (1999; Paul Brookes).

PROFESSIONAL PROFILE

Dr. Hoi K. Suen is Distinguished Professor of Educational Psychology at the Pennsylvania State University in the United States. His areas of specialization include psychometrics, educational assessment, and evaluation. He is the author of several books and about 150 book chapters, journal articles and technical reports and about 130 professional conference presentations on issues related to instrument development, behavioral assessment, performance assessment, educational testing, and evaluation.

Dr. Suen served or is serving as a psychometric/assessment and analysis consultant to over 50 different public and private organizations, including various state departments of education, international and national testing/certification agencies, health organizations, universities, military organizations, and private corporations in the U.S., South Korea, Australia, Saudi Arabia and China. Additionally, he has served or is serving as a Guest Editor, Consulting Editor, Editorial Board member or reviewer for about 40 research journals and numerous professional conferences. He has also delivered over 40 invited addresses and colloquia; and has conducted numerous training workshops throughout the U.S. and in several other countries.

Dr. Suen's current research interests include consequences of high-stakes testing, lessons from the historical civil service exam system of China, validity theories and methods, program evaluation, and psychometric methods for extremely high-stakes testing. See HYPERLINK "http://suen.educ.psu.edu" http://suen.educ.psu.edu for full vita.

PROFESSIONAL PROFILE

Jennifer L. Salaway, Ph.D., NCSP, is a Senior Research Psychologist with the Early Childhood Partnerships program at the University of Pittsburgh School of Medicine. Dr. Salaway is also a nationally certified school psychologist. Dr. Salaway completed a collaborative predoctoral internship at Children's Hospital of Pittsburgh of UPMC, the UCLID Center at the University of Pittsburgh, and the Watson Institute. Her clinical experience includes neuropsychological assessment; functional assessment and interdisciplinary teamwork; early childhood assessment, intervention, and consultation; and early literacy and language instructional support and intervention planning for young children at-risk.

Dr. Salaway's dissertation research examined the efficacy of a direct instruction add-on intervention to a developmentally appropriate practice curriculum for high-risk young children. Her research experience involves program evaluation of a range of early childhood and school-aged programs, including a federally-funded Early Reading First program; 21st Century Community Learning Center program; and various Head Start programs in Southwestern Pennsylvania. Dr. Salaway's research interests include early childhood assessment, early education, intervention, and prevention for young children.

Dr. Salaway currently serves on the editorial board for Psychology in the Schools, and is an ad hoc reviewer for the Journal of Educational Research. She has presented her research at both national and international conferences (Annual National Convention of the National Association of School Psychologists and Annual International Conference on Young Children with Special Needs and Their Families). Dr. Salaway contributed to the content development of the Recognition and Response website for the National Center for Learning Disabilities, and recently co-authored a chapter in the Oxford Handbook of School Psychology.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early childhood partnerships

Dr. Bagnato and his Early Childhood Partnerships team received the following distinguished research and service awards for the quality, impact, and value of their service and research work with community partners across Pennsylvania and the tri-state region since 1994; over 75 community partners provided the nomination for these awards :

- **2001 University of Pittsburgh Chancellor's Distinguished Public Service Award**
- **2008 Penn State University Alumni Excellence in Education Award**
- **2009 Official Appointment to the Pennsylvania Early Learning Council by Governor Rendell**

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In particular, SPECS extends much appreciation to Marge Petruska, Senior Program Director, Children, Youth & Families program of the Heinz Endowments for her vision, creativity over the years, and commitment to quality and rigor in both research and practice in early care and education.

Early Childhood Partnerships

FORGING INNOVATIVE UNIVERSITY-COMMUNITY LINKAGES FOR CHILDREN & PROFESSIONALS IN AUTHENTIC SETTINGS

Visit **www. earlychildhoodpartnerships.org**
to explore ECP core programs and to download the SPECS for PKC report and related research reports or contact Dr. Stephen J. Bagnato directly at bagnatos@pitt.edu

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