GETTING IT RIGHT: USING IMPLEMENTATION RESEARCH TO IMPROVE OUTCOMES IN EARLY CARE AND EDUCATION

CHAPTER SUMMARIES

You can download the complete publication — *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education* — by clicking this link: https://www.fcd-us.org/assets/2020/06/GettingitRight_UsingImplementationResearchtoImproveOutcomesinECE_2020.pdf

WHAT DOES RESEARCH TELL US ABOUT EFFECTIVENESS AND IMPLEMENTATION OF ECE PROGRAMS ACROSS THE BIRTH-TO-EIGHT CONTINUUM?

Emphasis on evidence-based instructional content and strategies tied to children's specific skills helps achieve higher program quality and better outcomes

Margaret Burchinal, Ph.D., University of North Carolina at Chapel Hill, and Dale C. Farran, Ph.D., Vanderbilt University

In *What Does Research Tell Us About ECE Programs?*, Margaret Burchinal and Dale C. Farran summarize the extensive research relating early care and education (ECE) quality to children's short- and long-term development. In discussing the factors that limit current ECE programs and policies from promoting better outcomes, they find that the field often focuses on current measures of global ECE quality despite very modest associations with child outcomes. Their interpretation of the research suggests focusing on program models that concentrate on specific instructional content and strategies to promote children's school readiness skills related to language, executive functioning, and self-regulation. Such a program approach is likely to be more successful in supporting the long-term development of all children.

More knowledge is needed about the effect of context on outcomes

A large body of ECE research has answered important questions about the quality of ECE programs and their impact on young children's development. However, research has not fully examined the implementation of programs or policies to determine how components, contexts, fidelity, and target populations relate to child outcomes. Only some research has asked whether specific program elements or quality indicators relate to child outcomes differently for children from diverse racial/ethnic, socioeconomic, and linguistic backgrounds, or even whether different aspects of the ECE experience promote varying child outcomes.

Structural Quality ➡ Process Quality ➡ Children's Outcomes

All ECE models assume that process quality—the interactions between caregivers and children—determines the impact of early learning and development.[1] The models also assume that structural quality is necessary to support process quality. Structural quality indicators include the caregivers' education and training, wages and benefits, the ratio of children to caregivers, the number of children in a setting, program leadership and administration, and parental involvement.[2] Research indicates that process quality is higher when structural quality is higher.

Specific aspects of ECE quality enhance children's early development

Preschoolers showed very modest but significant gains in academic and social skills when they experienced more frequent, warm, and responsive interactions with caregivers.[3] In addition, evidence suggests that preschool-age children with more opportunities to engage in age-appropriate activities with a range of varied materials demonstrated gains in language and social skills.[4]

Stronger impacts were found for studies of intensive curricula with scope and sequence

Numerous ECE curricula have been developed and evaluated. Collectively, they demonstrate that a focus on teaching practices and aligned professional development can have substantial impacts on child development across a number of developmental domains. Evidence-based curricula, when combined with aligned training or coaching, were related to larger gains in children's literacy skills.

Quality measures may need to focus more on the frequency and quality of intentional teaching

Recently, several measures have shown promise for expanding the measurement of ECE quality. They involve behavioral counts rather than ratings, and they vary in terms of whether the unit of observation is the teacher or multiple children in the classroom. For example, Connor et al. (2011)[5] developed an integrated system involving child monitoring, classroom observation, and instruction that has been shown to substantially improve reading skills in early elementary school; a preschool version is in the works.

Inadequate attention is paid to some school readiness skills

Promoting academic skills became the primary focus of ECE because evidence showed that children who entered with much lower levels of academic skills were much more likely to fail in school. As a result, the immediate impact of ECE programs tends to be on academic skills, rather than language, executive functioning, or social skills. However, studies have shown that the skills most consistently related to "school readiness" were language,[6] general

knowledge,[7] and self-regulation, and executive functioning skills.[8] Doing more to promote general knowledge, language, executive functioning, self-regulation may give children skills that improve their academic and social outcomes during the school years.

Preschool program characteristics affect quality of outcomes

Preschool programs operate in ways that may make it difficult to meet expectations regarding child outcomes. They typically follow the school model of offering up to six hours of care per day for up to nine months per year. The opportunities for learning during those six hours are limited by the time required for naps, toileting, and meals, and in the worst programs, children spend much of their time transitioning among activities.[9] Many preschool programs focus on large-group, didactic instruction that is not developmentally appropriate for preschoolers.[10]

Poor teacher training and compensation have negative impacts

Pre-service preparation for ECE teachers, including college and certification programs, is a matter of deep concern. Problems include a lack of focus on producing ECE teachers, and a lack of consistency and rigor in courses, teaching staff, and certification requirements.[11] We lack evidence that in-service training programs are effective, despite huge expenditures on professional development and technical assistance.

The low salaries of preschool teachers in both community settings and several state-funded programs limit ECE quality by determining who becomes and remains a preschool teacher

Wages are low because parents typically pay for community-based ECE, and most parents cannot afford to pay the higher fees that would allow for higher wages for teachers. Consequently, it is difficult to recruit and retain highly qualified ECE teachers, which constrains ECE quality in community-based organizations and publicly funded programs.[12]

Additional issues that must be addressed so that all children succeed in school and beyond

More attention needs to be paid to the continuity of care from preschool through third grade.[13] Another area is identifying which school-readiness skills promote long-term development and which ECE practices promote those skills. Last but not least, current policies rely primarily on center-based preschool programs that begin at ages three to four to address income and racial achievement gaps, despite clear evidence that a child's first three years are critical for building these foundational skills. By two to three years of age, we already see large gaps in language and cognitive skills between children from low-income and higher-income families and between children of color and white children.[14]

This summary is based on Chapter 1 — *What Does Research Tell Us About ECE Programs?* — which can be found on page 13 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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GETTING IT RIGHT: USING IMPLEMENTATION RESEARCH TO IMPROVE OUTCOMES IN EARLY CARE AND EDUCATION
CHAPTER 2 SUMMARY | JUNE 2020

Current systemic constraints sustain the gap between ideal and current practice and limit child outcomes

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In *What Are Reasonable Expectations for ECE Program Effectiveness?*, Jeanne Brooks-Gunn and Sarah Lazzeroni set a framework for reasonable expectations of early childhood education (ECE) program effectiveness given the great variability in quality, resources, duration, and children served. While comprehensive, high-quality ECE programs hold the promise of large effects for children at risk and very high returns on investment, the authors put forward what can be reasonably expected from programs under present conditions as policymakers and practitioners manage systemic changes to achieve ideal quality and outcomes.

Great expectations

Much is expected of ECE programs, particularly for children within families at risk who often arrive at kindergarten with a significant achievement gap relative to their more advantaged peers. A large body of research shows that high-quality ECE programs can prevent or reduce these gaps, which are often difficult and costly to remediate in K-12 education. As a result, parents, policymakers, and the general public want to invest in ECE, and they are likely to expect the effects demonstrated in widely known, small-scale experimental programs of the highest quality.

Setting expectations to current realities

Unfortunately, most current programs do not meet ideal quality standards due to a variety of systemic conditions. This does not mean that current programs fail to produce valuable effects, only that the field must manage expectations and evaluate measurements of value to reflect current conditions. Until systematic changes are realized that ensure high quality and achieve the highest outcomes for children, the gap between ideal and current practice and its effect in limiting child outcomes must be acknowledged. Both researchers and policymakers are working within a realm in which expectations for program and child outcomes must be managed due to current constraints in program investment and infrastructure support, service model comprehensiveness, and duration.

Full-time, targeted programs with high teacher quality are likely to see beneficial program effects

Program effects should be understood in today's context in which comparisons of children with no preschool versus preschool experience are difficult to do because there is no clean "control" group, since most children are in some type of care. Thus, program effects are most likely to be seen in communities that do not have preschool slots for all four-year-olds, where a significant portion of children are being cared for by kith and kin, or where there is an age-based cut-off for enrollment. The field should see modest program effects for four-year-olds whose teachers receive continuous professional development, a BA or additional training, adequate wages, and training on well-defined curricula. Additionally, all ECE programs should offer full-day programming and strive for relatively low teacher turnover.

A new metric for effectiveness: One-third of a standard deviation or more

The authors establish reasonable estimates of effectiveness through the use of current ECE evaluation literature by looking at the long-term effects on well-being among three- and four-year-olds served in center-based settings. They suggest an expectation of one-third of a standard deviation or more based on the best ECE evaluation results to date. The effects are mostly to be seen in measures of language, literacy, mathematics, cognition, and perhaps executive function (attention, memory, inhibition). The expected return on investment should be 2:1.

Effects will diminish if not supported by improvements in early elementary education

The authors warn that having a robust effect size is important given an expected reduction in effect sizes throughout the elementary school years. Without additional services or improvements to early elementary school, the effect of ECE will fall to one-half of its initial size by the end of third or fourth grade. Therefore, an effect size of one-half will become one-quarter, and an effect size of one-third would become one-sixth. Effect sizes that are lower than one-third are very unlikely to be sustained into the late elementary school years without systemic changes.

Don't expect magic without improvements in preschool and early elementary education

No matter how wonderful a preschool program might be, one year of even the highest-quality services is not enough for children to succeed. Improvements must be made in the quality and the quantity of education at both the preschool and elementary school levels—not to mention the rest of K-12 schooling. More time in quality education settings—such as full-day pre-K and kindergarten and after-school and summer programs during elementary school—may also be necessary.

This summary is based on Chapter 2 — *What Are Reasonable Expectations for ECE Program Effectiveness?* — which can be found on page 37 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

Social determinants of early learning: A research to practice framework for reducing inequities and disparities

Iheoma U. Iruka, Ph.D., HighScope Educational Research Foundation

In *Using a Social Determinants of Early Learning Framework to Eliminate Educational Disparities and Opportunity Gaps*, Iheoma U. Iruka surfaces social policies and factors that maintain inequities and ensure early learning disparities. These structural factors limit resources and supports that directly impact children's outcomes, especially for low-income and minoritized children and their families. She argues that to truly address early learning inequities and disparities, we must recognize systems that invisibly maintain and perpetuate inequities (and conversely privilege) from housing to education. For early childhood education (ECE) programs to meet their goals, the field must engage in more thoughtful, meaningful, and racially responsive research focused on understanding the causes and solutions for learning disparities and gaps. This will require the ECE research community to take an equity perspective that includes diverse voices and perspectives, especially those from minoritized communities, to examine how social and structural determinants impact children's outcomes.

Making good on the promise of better outcomes for all children

The return on investment and effectiveness of early learning programs were primarily established with Black children; however, they are still likely to experience low-quality early learning programs and perform more poorly than their White peers on almost every marker of learning and optimal development. These gaps are also experienced by other minoritized children as model programs have been moved to scale. As a result, they are likely to experience the intractable cycle of racism and discrimination, which has not been fully fleshed out and examined in ECE research.

Look at macrostructures that impact systems and child outcomes

Although researchers may be interested in micro-level factors such as classrooms and families, we need a critical examination of how macrostructures and policies may impact these micro-level systems and, subsequently, children's outcomes. The "color-blind" approach to research by "controlling" for race, ethnicity, language, and gender must be minimized because it undermines experiences based on these social markers, many of which are social determinants of early learning outcomes.

Adapt the Social Determinants of Health framework into Social Determinants of Early Learning (SDoEL)

For ECE to truly address early learning disparities at the systems level, it must adopt a Social Determinants of Health framework (SDoH) to early learning. The Centers for Disease Control and Prevention defines social determinants of health as the complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors. Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities. Iruka adapts this framework into a SDoEL lens through which ECE researchers can see the effects of macrostructures on minoritized child outcomes.

Figure 2. Social Determinants of Early Learning.

Source: Centers for Disease Control and Prevention
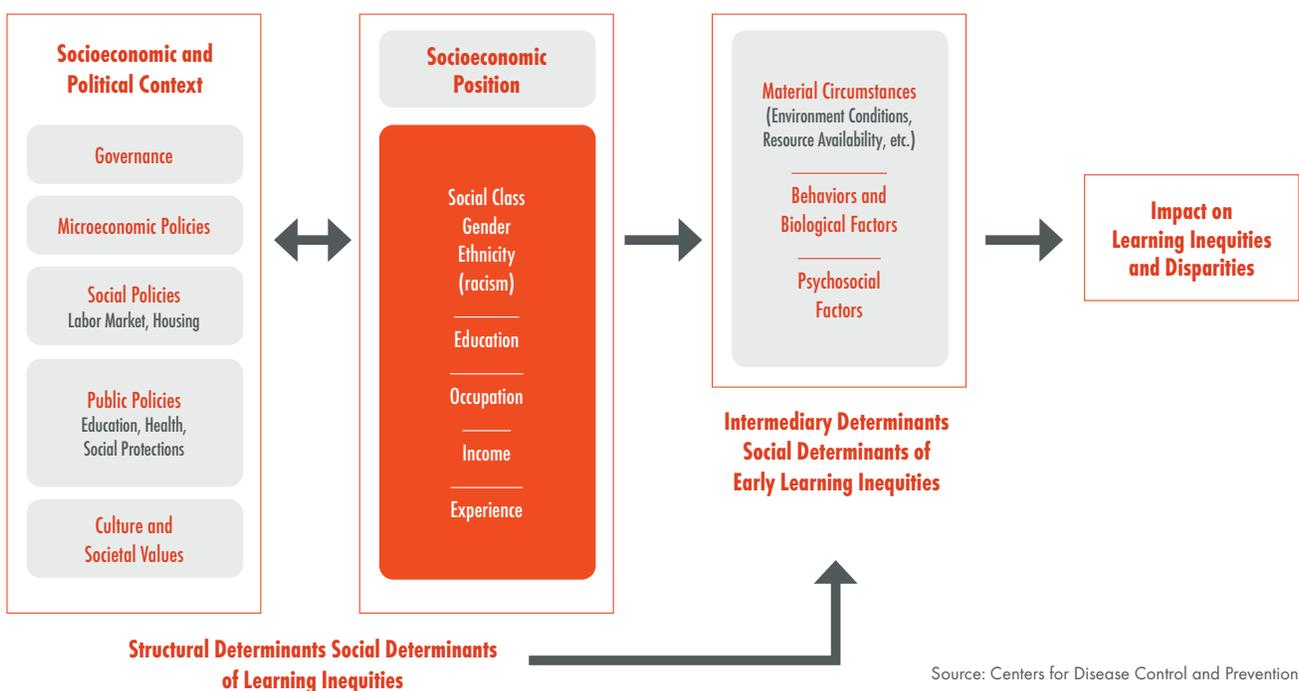
As the chart above shows, socioeconomic and political contexts—such as social policies about housing and education—lead to individuals' socioeconomic position—education, income, or occupation—which then impacts their resources and living conditions, greatly reducing children's opportunities to thrive.

Social Determinants of Early Learning strengthen early education and can address disparities

To maximize the benefits of homes and communities and buffer children from negative factors, ECE and classroom environments, and systems can serve as a place-based conduit and centralizing institution to ensure that children receive early learning opportunities that take into account the structural determinants impacting their learning.

Using the SDoEL framework in research can address issues of inequity in educational practice

Iruka calls for setting a research-practice-policy agenda for ECE programs and systems to deliver on the promise of early childhood programs for all children, providing the following recommendations:

- **Consider issues of racism and discrimination using the SDoEL framework.** For too long, most ECE research has indicated that many children of color and children from low-income households are not prepared for school and need early care and education programs. Unfortunately, most of the research has been done from a deficit perspective, without consideration for the social determinants that lead to the disparities witnessed even after interventions. In addition to examining how ECE can be promotive for minoritized and marginalized children, research needs to examine how structures and policies promote or hinder families' and communities' ability to thrive and promote children's learning. Research can also help determine what standards are needed to ensure that all children can equitably thrive, rather than standards based solely on Eurocentric ideals of what is good and appropriate. A sole focus on what is occurring in the classroom without understanding how macrosystems and policies impact it does not help to increase the impact of ECE, hence the importance of the SDoEL framework to guide research studies.

- **Engage in cross-sector collaboration with the SDoEL framework.** Structural features work in concert to impinge on the abilities and processes of families and communities, including policies that increase poverty and reduce economic mobility, housing, and education patterns that maintain low-income segregation, and limited transportation options that limit one's ability to find and maintain employment. The root causes of these disparities and inequities often lie in historical and contemporary policies and structures, and some of them are vestiges of U.S. institutional racism. These root causes have not been prioritized or studied in ECE research. There is a need for cross-sector collaboration that examines the full range of health, social and economic supports that are effective for children and their families, such as understanding how health systems and family systems interact with ECE systems to promote positive and optimal child development and learning.

- **Use the SDoEL framework to understand ECE workforce challenges and their impacts on outcomes.**
Rather than focusing solely on the challenges experienced by children in programs and schools, we also need to
pay attention to the challenges experienced by ECE professionals, which affect the quality of services and early
learning opportunities provided to children. The ECE workforce is impacted by the same systems that lead to early
learning disparities. Many ECE professionals, particularly those working in community-based programs, are living
at or below the poverty level and seek social benefits and services similar to the families they serve. This can affect
the quality of their interactions with children and the instruction they provide in the classroom, as well as turnover,
which has also been associated with quality. Poverty and stress are more likely to impact ECE professionals who
are members of historically marginalized groups, and, by extension, children of color and those from low-income
households. This may mean advocating for more resources for programs, as well as economic resources for ECE
professionals, to ensure that social determinants are not being perpetuated throughout the system.

- **Integrate Critical Race Theory (CRT) and Culturally Responsive Pedagogy (CRP) in early learning systems
and programs.** It is critical that early education systems, programs, and educators eliminate racism and inequities
in structures and processes. Because the lives and learning styles of children of color are often marginalized,
early learning program leaders and educators could fruitfully examine the extent to which programs, schools,
and systems can better incorporate CRT and CRP in their standards, assessments, curricula, learning environment
structures, policies, accountability systems, quality indicators, etc. Important questions include: Whose standards are
we using, and what is the evidence and relevance for underserved and marginalized children? For example, does
emotional support look the same across different communities? How does bias look in observational assessments?

- **Consider the quality of inputs and structures in implementation.** At present, advantaged families can
access programs and schools that provide high-quality, personalized instruction with highly educated, stable, and
cognitively stimulating educators. On the other hand, publicly funded programs and schools are subject to federal
and local policies and funding, as well as standards that may not take into account the needs of communities and
families or the available resources or capacities. Most early learning programs cannot afford the highest quality
staff, or the resources needed to ensure that quality is sustained over time, especially with their relatively high
turnover rates. Although we have evidence-based curricula, there is no general pedagogy about how best to teach
and support young children, especially children with diverse needs, learning styles, and experiences. Early learning
standards and expectations vary across and within states, creating further challenges about what it takes to create
and maintain a high-quality early learning system and program. Even the measures and systems created don't
provide precision about the actual quality of a program and what it might take to increase it. Implementation of
high-quality early learning should focus not only on classroom instruction, but also on the infrastructure that supports
processes, including leadership, funding, standards and regulation, data, and partnership across early childhood
programs. We should pay attention to how these factors create barriers to or disincentives for equitable early
learning opportunities.

All children deserve to have an equitable opportunity to thrive from the start

Iruka concludes by reminding researchers that the "color-blind" approach to research of "controlling" for race, ethnicity, language, and gender must be minimized because it undermines experiences based on these social markers. The solution to pernicious disparities and inequities must be thoughtful, with attention to history and with collaboration from multiple disciplines. She urges scholars to undertake interdisciplinary ECE research that engages multiple sectors—education, health, social work, and workforce development—and disciplines, such as neurobiology, public health, urban planning, economics, medicine, and implementation science.

This summary is based on Chapter 3 — *Using a Social Determinants of Early Learning Framework to Eliminate Educational Disparities and Opportunity Gaps* — which can be found on page 63 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*
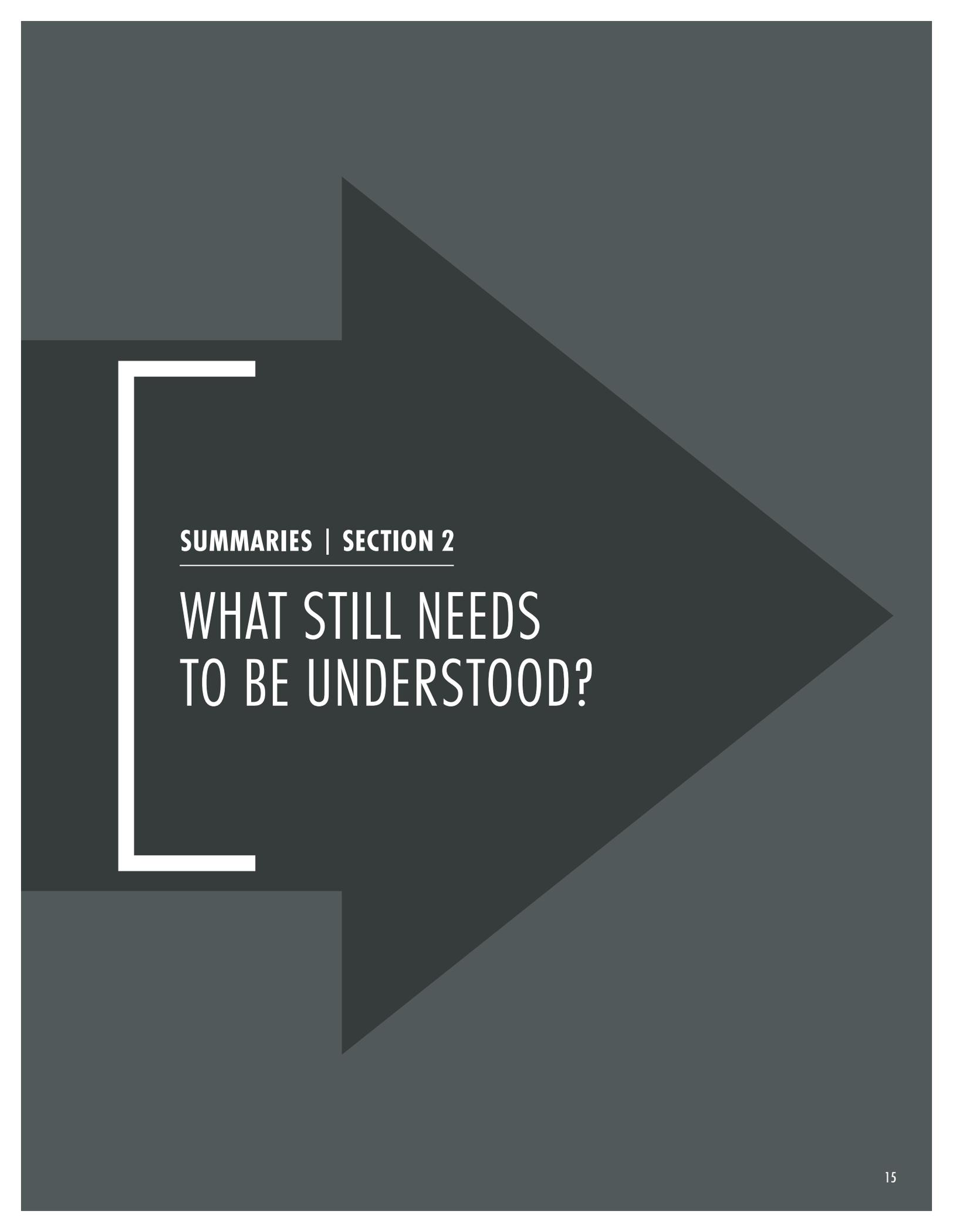
SUMMARIES | SECTION 2

WHAT STILL NEEDS TO BE UNDERSTOOD?

Listening, encouraging children's critical thinking, supporting positive environments, and engaging children makes for better classroom practice and child outcomes

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In *Making Prekindergarten Classrooms Better Places for Children's Development*, Dale C. Farran illuminates four prekindergarten classroom elements that lead to better child outcomes: listening to children, teacher/child interactions that encourage critical thinking, positive classroom environments, and children's active engagement in learning. These aspects of classroom functioning often fall outside current quality ratings, curriculum assessments, and standards. Farran points to the need to recognize, analyze, and measure these critical interactions between children and teachers, as they can impact outcomes more than current standards and measures do.

Delivering on the promise of quality early childhood education

Early childhood education is widely seen as a compensatory resource for children born into families of economic, social and educational disadvantage. High-quality experimental programs have shown both short- and long-term benefits for children. Public investment in scaling programs has mainly concentrated on learning standards, curriculum, and credentials that emphasize compensatory education directed at improving academic skills. However, this faith in standards and academic-oriented instruction obscures the importance of critical classroom elements outside of curricula and the structural features of classrooms.

Compensatory education obfuscates the care every child needs for success

In general, private childcare programs are more concerned with "care" and being of service to parents, while public programs are more concerned with compensatory education to remediate presumed deficits in children's preparation for school. Emphasis on compensatory education often leads to a greater focus on academic preparation in public prekindergarten programs. This can have the unfortunate consequence of increased reliance on didactic instruction that may not lead to long-term child success.[1]

Structural characteristics of programs don't automatically translate to outcomes

Structural characteristics are the easiest to regulate and monitor. For example, benchmarks specified by the National Institute for Early Education Research (NIEER), which many states use in expanding state-funded prekindergarten programs, historically emphasized these regulatory features. None of these benchmarks included in such quality frameworks relate to child outcomes either collectively or separately.[2]

Curricula don't automatically create quality or outcomes

By itself, no curriculum is likely to effectively or sufficiently drive the kinds of classroom practices that matter most for young children. One reason is that curricula do not change fundamental classroom practices. While teachers may enact very different activities, their interactions with their students, the amount of positive feedback they give, and even the amount of time they spend talking and listening to children may be equivalent across different curricular conditions.[3] Those interactive elements are the classroom practices linked to beneficial child outcomes.

Measuring teaching process characteristics may be more important

Research reviews consistently find little relation between global measures of classroom quality and child development over the prekindergarten year. Experimental and descriptive work is being done in prekindergarten classrooms to identify more specific behavioral practices as an alternative to such global ratings.[4] Many of the practices identified are components of global classroom observation assessment instruments, but this new research disaggregates them from an overall rating of a dimension. These new approaches often involve counting certain behaviors rather than ratings. A record of the frequency of actual behaviors may offer professional development coaches a clearer way to understand how to help teachers improve their practices.

Illuminating practices important for children's growth

A four-year partnership between the Peabody Research Institute at Vanderbilt University and the Metro Nashville Public School system developed an observation system that yielded important information about practices that mattered most for young children's growth during prekindergarten and even into kindergarten and first grade.[5] Highly trained and reliable observers remained in classrooms for the full day, taking data throughout the day, several times a year. Teachers and coaches in the school system now call practices determined to be important for children's growth the "Magic 8". Four areas among the eight have been investigated and found promising in several other studies:

- **Teachers listening to children matters more than talking.** Rather than trying to improve the global nature of a preschool classroom through such classroom observation measures, professional development efforts provided to early educators should focus most intensively on helping them to execute the precise behaviors that engage children in productive conversations. The amount of time teachers spend listening to children is the stronger predictor of children's growth. Teachers listen to children only about 14% of the time and talk 70% of the time, on average. The more listening teachers do, the more children gain in various domains, both academic and social.

- **Instructional quality is important beyond basic skills.** Productive conversations, especially asking questions and listening to children's answers, are related to the quality of instruction. Encouraging critical thinking through inferential teacher-student interactions may be one of the most important experiences children need to have to be successful.[6] Children from low-income families are more likely to experience didactic teaching in prekindergarten classrooms, characterized by "known-answer" questions.[7]

- **Positive classroom climates promote learning.** A positive learning environment is especially important for young, vulnerable children who may be having their first experience in a formal setting—for example, children living in high-risk circumstances, who typically experience a higher than average number of adverse childhood experiences (ACEs). To promote resiliency in such children, the classroom must promote a sense of belonging, with caring and nurturing adults.[8] A highly negative classroom can actually function as an additional adverse experience, contributing to rather than buffering the cumulative stress that results in long-term negative health and social outcomes.

- **Children's active engagement in learning is key.** Engagement should not be confused with compliance. Children can be quiet and non-disruptive without being engaged. When children are actively involved in learning, they can even be noisy in a productive way. When young children are engaged, they are excited and highly attentive to the learning activity. Engagement is intertwined with all the other components described so far. For example, the level of positive emotional support in a classroom predicts children's level of classroom engagement.[9] Children are most engaged when teachers are positively affirming and when children are within a peer group, and least engaged during whole group instruction. Discovery learning is most likely to engage children's attention and keep them focused and involved. Setting up situations where children can be productively engaged in interesting activities requires a different set of actions by teachers as well as a mindset reversal from the current understanding of learning.

Incorporate these new approaches into preschool expansion

These practices should be linked both to the mastery of basic skills and to developing lasting dispositions to learning that will not fade. Focus should be placed on specifying classroom interactions demonstrated to be most important for children, primarily through behavioral counts instead of ratings. As prekindergarten programs expand, it becomes increasingly important to have a system that can be readily used by coaches, early childhood directors and principals to assure that children's experiences in these settings are positive and likely to produce long-term benefits.

This summary is based on Chapter 4 — *Making Prekindergarten Classrooms Better Places for Children's Development* — which can be found on page 89 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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GETTING IT RIGHT: USING IMPLEMENTATION RESEARCH TO IMPROVE OUTCOMES IN EARLY CARE AND EDUCATION
CHAPTER 5 SUMMARY | JUNE 2020

Improving child outcomes through effective professional development for early childhood educators

Robert C. Pianta, Ph.D., University of Virginia, and Bridget K. Hamre, Ph.D., Teachstone

In *Improving Quality and Impact Through Workforce Development and Implementation Systems*, Robert C. Pianta and Bridget K. Hamre point to the need for systematic improvements in professional development (PD) systems to provide children with effective education across early childhood settings. Though professional development is widely used as a strategy to improve child outcomes, it is hampered by varying standards across states, less than effective coaches, and gaps between how implementation science says it should work and how it is practiced. Professional development provided with greater intention and integration, is more effective and offers a unified quality experience for children across settings and teachers.

More uniform quality outcomes for children require uniform quality improvements in educator professional development

Pianta and Hamre assert that the field cannot improve quality and impact the early care and education sector simply through renewed appreciation for workforce development. Research points to a clear need for refinement in PD systems from program design, implementation, and through improvement plans. PD systems should also reflect the knowledge and skills: 1) tied to practices that foster positive child outcomes and 2) spanning the birth through third grade continuum. These systems must select and disseminate proven-effective models of professional development, and include incentives, data, and certification regimes that allow PD models to be scaled with fidelity.

Great intentions, misalignment, and missed opportunities

Teachers rarely experience PD that reflects specificity and alignment to practice. The predominant form of PD is a one-hour workshop only tangentially connected to teachers' everyday practice and known to be ineffective. This disconnect slows improvement in young children's learning even when a number of early childhood workforce PD models have demonstrated benefits for teachers and children—mainly because successful translation of knowledge is spotty and weak.

Great progress can be made through redesigned workforce development

Pianta and Hamre assert that redesigned PD is the key to making good on investments made in access to early childhood education over many decades. Great gains can be made by systematically closing the gaps for using, applying, and implementing knowledge. Research has generated considerable new knowledge and a wide range of tools for classroom use, such as curricula, assessments, and coaching models. When targeted and made available to teachers in practice-aligned PD supports, students can make considerable gains—at times on the order of half a standard deviation, and higher in some subgroups.

Charting the essential features of PD that improve teaching and learning

The authors envision a future of individualized PD pathways, stackable credentials, state registries, and even increased compensation for early educators through continuing refinement of PD models to deliver relevant knowledge of and training in practice-focused skills. They provide a set of touchstone features to help policymakers and practitioners actualize that potential as they work on intentional PD systems. Recommendations include:

- **Creating systems that support high-fidelity improvements and scale up effective PD.** To improve the quality and impact of programs at scale through workforce development, the field must explicitly specify the enabling architecture—higher education, incentives, standards, training and implementation protocols, quality control procedures, and certifications that shape the actions of various people in the system (teachers, purveyors, and programs) to produce high engagement and focused learning.

- **Focusing on teacher skills and relevant knowledge.** Consider the PD target and the system in which it will be implemented—for example, using reliable and valid classroom observation assessment systems that focus on teachers' support for children's social and emotional skills to guide coaching. Such systems should include other PD supports, such as college courses and a video-based coaching model that have demonstrated positive impacts on teaching practice and student outcomes.

- **Using a clear and focused PD model and ensuring sufficient intensity and duration.** Effective PD models are based on evidence linking practices to specific child outcomes. These include a focus on students' skill targets and developmental progressions; improving teachers' skillful use of instructional and social interactions to promote student engagement and learning; and fostering teachers' skills and knowledge to effectively implement curricula and appropriately engage children. Research further shows that greater intensity and duration of PD consistently lead to improvements in teachers' practice.

- **Providing necessary supports for the PD workforce.** Success depends in large part on the people who train and coach teachers. This means hiring, training, and supporting the PD workforce. Successful coaches know coaching models, possess general coaching and consultation skills, and understand early childhood development and teaching.

- **Using data to target and improve PD.** Ask the right questions of data by linking it to the workforce and intended child outcomes, and develop or provide the technical skills to collect, maintain, analyze, and interpret data.

- **Link workforce development systems and incentive structures.** States have tightened the link between PD hours and impact to require teachers, directors, and/or coaches to articulate clear PD plans and then evaluate them. Registry systems are being developed that codify individual teachers' records of acquired PD and perhaps even the competencies they attain, which means greater capability to identify and encourage effective PD as well as to tie those experiences to accrued competence and certifications.

- **Certify PD providers.** Setting standards and certifications will reduce the wide variation in the skills and impacts of those who provide PD to teachers and programs. Almost half of states have developed PD tracking systems, but none have effectiveness metrics or standard certifications and training.

This summary is based on Chapter 5 — *Improving Quality and Impact Through Workforce Development and Implementation Systems* — which can be found on page 109 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

GETTING IT RIGHT: USING IMPLEMENTATION RESEARCH TO IMPROVE OUTCOMES IN EARLY CARE AND EDUCATION
CHAPTER 6 SUMMARY | JUNE 2020

The benefits of early bilingualism and effective early learning strategies

Linda M. Espinosa, Ph.D., University of Missouri-Columbia

In *Addressing Equity in the ECE Classroom: Equal Access and High Quality for Dual Language Learners*, Linda M. Espinosa discusses research outlining the benefits of early bilingualism. She also presents strategies that all early childhood education (ECE) teachers can implement to support dual language learners' (DLL) improved outcomes through the acquisition of English, while also maintaining their home language. Directions for future implementation research are provided to help fully understand factors that influence early bilingualism, the attendant cognitive, linguistic, and social advantages, and effective practices for instructing and assessing DLLs.

A pressing need to improve early learning for dual language learners

Statistics show the increasing linguistic diversity of U.S. children and families. The growth of DLLs means that many ECE settings, such as Head Start and state prekindergarten programs, now serve large numbers of families and children who primarily speak languages other than English. Unfortunately, ECE teachers who speak more than one language remain in short supply at only about 15% of the workforce. To design effective educational approaches for DLLs, we must first understand what typical development and school readiness looks like for these children, what factors contribute to their growth and learning, and what teaching practices and classroom conditions best support their achievement.

Reducing achievement gaps among DLLs

The substantial and persistent achievement gap between DLLs and native English speakers is of concern to researchers, educators, and policymakers. DLLs perform significantly below their English monolingual peers at kindergarten entry and have much lower reading and math scores at third grade. Many are classified as long-term English learners (LTELs) during upper grades, with little access to the general curriculum and a higher probability of dropping out of school. Evidence suggests this need not be the case.

Rejecting the deficit approach to dual language learning

Much research has led to a "deficit perspective" that views DLLs as having less potential and fewer academic abilities than their monolingual English peers because of their lack of English proficiency. Yet, the scientific consensus is that children who become fully proficient in both their home language and English are likely to reap benefits in cognitive, social, academic, and professional outcomes, and to be protected from brain decline at older ages. Therefore, we should understand the benefits of early bilingualism and view the development of DLLs through the powerful advantages of having more than one language.

Current research on early bilingual development

A report by the National Academy of Sciences, Engineering, and Medicine, *Fostering the Educational Success of Children and Youth Learning English*, offers four interrelated conclusions central to improving educational outcomes for DLLs. First, all children are capable of learning more than one language from the earliest months of life and benefit from early exposure to multiple languages. Second, high levels of proficiency in both the home language and English are linked to the best academic and social outcomes. Third, the earlier a child is exposed to a second language, the greater her chances for full bilingualism. Fourth, home language loss is currently the norm for DLLs, particularly once they enter English-speaking ECE settings, which undermines the possibility of full bilingualism and may place the child at risk for unhealthy family relations, including estrangement from their cultural heritage.

Doing things differently to achieve better outcomes

We must define and put into practice: effective program language models, specific instructional practices that scaffold language interactions for DLLs, instruments and methods for ongoing assessment, and ECE teacher qualifications. Fortunately, scientific knowledge about how a young child learns a second language and what constitutes "best practice" in ECE for DLLs has expanded greatly during the past decade.

Recommended program features for reducing achievement gaps

Research has identified ECE program features and instructional practices that promote school readiness and help reduce the achievement gap between DLLs and their English monolingual peers at kindergarten entry. These include:

- Home language preservation should be considered a priority for all ECE programs.

- Early proficiency in both the home language and English at kindergarten entry is critical.

- Sufficient exposure to both languages is important to reap the benefits of bilingualism.

- Recognize the critical importance of oral language and vocabulary development for young DLLs.

- DLLs require additional instructional supports to promote the best educational outcomes, including the use of the child's home language, explicit vocabulary instruction, opportunities to participate in small groups, interaction with peers, and culturally responsive and emotionally supportive classrooms.

Increasing the qualifications of ECE professionals who work with DLLs

Currently few states require ECE teachers who work with young DLLs to have specialized training or coursework focused on meeting their needs. We need an expanded perspective that recognizes their strengths and potential for cognitive, linguistic, and social advantages. The challenges to including this expanded perspective and DLL-specific knowledge into the complex system of ECE preservice and professional development, although significant, must be addressed through diversification of higher education faculty and ECE workforce development.

Directions for future research

Despite substantial research on the capacity of all children to successfully become bilingual, there are still many gaps in our knowledge, below are questions that remain to be answered:

Instruction

- Which instructional strategies are most effective with different populations of DLLs from a range of linguistic backgrounds, i.e., when the languages represented are highly diverse and dissimilar to English; when the proportion of DLLs ranges from few to mostly DLLs; when DLLs have a range of prior English exposure and proficiency?

- How do different language models—e.g., 90-10, 80-10, or 50-50—impact the acquisition of English during the ECE years?

- At what age should young DLLs attending ECE programs be exposed to English, and what is the ideal amount of early exposure?

- What characteristics of teacher-child interactions support improved school readiness?

- How do differential language proficiencies at school entry affect the learning trajectories of DLLs over the course of K-12 education?

- What are the most effective accommodations for and educational enhancements that promote early balanced bilingualism and academic success?

Assessment

- What are the best assessment tools and procedures to accurately capture the strengths and needs of children who speak more than one language? What combination of formal and informal assessments is needed for developmental screening, measuring progress, and accountability?

- How can we develop a profile of normative development for DLLs from a wide range of linguistic and sociocultural backgrounds that guides educational decisions such as whether a child has a developmental disability, is "ready for school," or is making sufficient progress?

Implementation Research

- What are the most effective ECE teacher preparation and professional development models for teachers serving DLLs?

- What are the core elements and necessary supports for effective implementation of dual language program models, e.g., 50-50, 90-10, and 80-20?

- What are the necessary conditions in communities, programs, staff, and schools for successful implementation of a preschool bilingual program?

- What are the barriers to implementing a preschool bilingual language model?

This summary is based on Chapter 6 — *Addressing Equity in the ECE Classroom: Equal Access and High Quality for Dual Language Learners* — which can be found on page 131 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

Boston Public Schools: Lessons learned in scaling high-quality public early childhood education

Jason Sachs, Ed.D., Early Childhood Education at Boston Public Schools

In *Vignette: Building a High-Quality Program—the Boston Public Schools Experience*, Jason Sachs, who established and continues to lead the expansion of the Boston Public Schools system's Prekindergarten-2nd grade program, relates his and his staffs' experience in building an equitable, high-quality early childhood education (ECE) system that produces measurable outcomes. Sachs talks about the keys to success: committed city leadership; a focus on the child; resourcing staff, principals, teachers and paraprofessionals to do their best work; developing strategic plans; and using data for evaluation that feeds continuous improvement.

Visionary and consistent public leadership facilitates progress

In 2005, Mayor Thomas Manino and Superintendent Thomas Payzant decided it was time to deliver preschool to four-year-olds after the district cut the programs in the 1990's to fund full-day kindergarten. Together, they decided to create a universal prekindergarten program overnight that was to be delivered in the Boston Public Schools (BPS) and would be free for all parents. Sachs was hired, and the Department of Early Childhood (DEC) was created. The mayor and the superintendent had each been in his position for almost a decade and provided steady leadership and support, which turned out to be very important in the success of the program, especially when early evaluations showed the need for improvement.

Basic facts about the BPS early childhood program

The program is delivered in the Boston Public Schools for free to all parents based on a lottery system, with teachers paid on the same scale as K-12 teachers and subject to the same educational and certification requirements, such as earning a master's degree within five years. The classrooms in K1—the pre-K program for four-year-olds—are the same as any other grade in the district, except there is a full-time paraprofessional in every classroom. Staff to student ratio is 1:11, and the program runs a normal BPS school day and year, serving roughly 55% of all four-year-olds in the city with a waitlist of well over 1,000. BPS pays for the services out of its own budget at a cost of around $10,000 per pupil, with the building, principal, and support teams already in place. The true cost is more like $17,000 a year.

Clear goals on quality and quality support

The entire system is built around the goal of ensuring that principals, teachers, paraprofessionals, and school-support staff have the knowledge, skills, and resources they need to provide a high-quality early education experience for all students. The expectation is that all children will become internally driven, self-motivated learners and will be able to read, write and communicate effectively by third grade.

Building systems takes strategy, patience, persistence, and adaptation over time

To build systems, you need a strategy and to plan in a three- to five-year arc, knowing that you are going to have to make tactical shifts along the way. The choices you make should be strategic: what's needed and what is achievable. For example, it took DEC six years to implement a kindergarten curriculum across the district and almost nine years to meaningfully link that curriculum to families. It was not until its 12th year that DEC was able to introduce a formative assessment system based on observation and documentation.

Align around specific goals, keep the work grounded in the classroom, and provide the resources for collaboration

The DEC team has grown from two to 24 people overseeing the citywide ECE program and has curriculum oversight for preschool through 2nd grade. Eighty percent of the staff are program developers, i.e., coaches. Having the majority of staff in classrooms keeps DEC grounded in the real impact of its work. Schools and classrooms are dynamic places, and the impact of our professional development and coaching competes with school and district priorities. Hence, having coaches lead most of the work, keeps it grounded in what is both needed and realistic. In addition to coaching duties, staff are allowed to spend up to 20% of their time on a goal that they feel will effect change, such as linking curriculum to families, incorporating "beautiful stuff" into the curriculum, or connecting with outside partnerships. Many of the innovations and strategies of the department come from staff members embracing their passions in this way.

Coaching and Professional Development

Coaching is most effective when the teacher wants to change, and when the strategies used are differentiated based on a teacher's knowledge level and the school's or program's support of change. This breaks down into three categories: teachers who need to be evaluated out; teachers who can grow with coaching through bi-weekly visits; and high-flying teachers who just need less coaching or attend seminars with peers. DEC also works carefully on the specificity of coaching goals, such as good early childhood practice versus curriculum knowledge transference, the latter being much clearer and easier to coach and measure through fidelity scores.

Look for specific experience and qualities in coaches

BPS hires coaches who represent the early childhood field—teachers from community-based programs, former district literacy coaches, directors, and former principals. Candidates must demonstrate depth of knowledge, possess an understanding of the population served, and convey the importance of early literacy. The interview process looks at the applicants' expertise, passion, and understanding of schools and BPS students, as well as how they make change happen, specifically in practice and instruction.

Focus coaching on what produces outcomes for all children

The lion's share of professional development focuses on first setting the table—getting teachers to understand their curriculum and the "whys" underneath it, and then getting them to reflect about who they are teaching and how to differentiate their instruction. Although there is a focus on curriculum fidelity, it is viewed as "a tool, not a rule." Strong teachers will make adjustments along the way to meet the diverse needs of their classrooms. It is critical to get them to make choices based on what facilitates learning versus what is easier to manage.

Identify classrooms based on supply, demand, and capacity (develop selection criteria)

From 2005 to 2010, BPS grew from serving roughly 400 students in 30 diverse, inclusive classrooms to serving over 2,500 four-year-olds in over 150 classrooms in more than 70 elementary schools. BPS developed criteria for classroom selection that included elements such as supply and demand, quality of facilities, and school capacity (enough kindergarten seats to absorb preschool children).

Create a strategic plan

Creating a strategic plan with an embedded holistic theory of change is critical. Prioritizing how time should be spent and identifying effective strategies help to build consensus and direction for the staff, as well as informing research questions and studies.

Research and evaluation: Using data to create change

BPS uses a longtime research partner to collect and analyze data that is then used to improve practices and student outcomes. Negative evaluations lead to quick adjustments and re-evaluation; however, Sachs credits committed city leadership for tolerating setbacks and facilitating improvements. Classroom observational data is used to identify systematic weaknesses across classrooms and target professional development accordingly. Data is also used to link children's learning to their program experiences. BPS is particularly concerned about "fadeout" in student gains from

pre-K to third grade. Evaluations show that BPS's impact is significant, yet instructional quality data reveal that first through third grade instruction needs improvement, much like preschool and kindergarten did in 2006. Therefore, BPS has moved much of its focus to improving instruction in first through third grade. Sachs finds the following key lessons in data collection and evaluation as part of a continuous quality improvement system:

Natural tensions occur in a research-practice partnership

Rigor and timeliness often conflict; careful studies can take years while policy and practice decisions are often made in a matter of weeks or months.

- **Planning matters.** It is critical to examine implementation rigorously whether a program is ready or not before new changes have time to take root. A strategic research plan makes clear which data should be used for continuous quality improvement and how, as well as how the research and data fit together.

- **What you don't do is as important as what you do.** DEC collects less data than many programs do, particularly teacher-collected data. The philosophy is that teachers should focus on teaching. There is very little rigorous evidence that teacher-collected data provides reliable, valid data or that it changes teachers' practice.

- **Data helps you work smarter.** Improving preschool nationally requires research to more carefully pilot program components and collect data to pinpoint specific, practical barriers to program quality improvement.

Select and/or design district "Focus" P-2nd grade curriculum

BPS is constantly working on curriculum design, evaluation, and continuous improvement. Even if you run a high-quality pre-K program with strong results, you will lose momentum in student gains if the curriculum does not keep pace with the students.

Use NAEYC Accreditation as a driver to set quality at the school level

One of the first thresholds of quality was to move BPS schools to accreditation—mainly because it was incentivized by the state, but also because it put a focus on quality and provided a structure to get there. Although the requirement was not truly mandated, it was used as a tool to improve quality at the district level. This is a good example of how state policies can align to help improve programs.

Create pre-K models for community-based programs

BPS has created a "connective" system with community-based organizations (CBOs), allowing programs to develop meaningful pathways for students where information from teacher to teacher, director to principals, and overall communication to family improves. This is an opportunity for schools and CBOs to become more interdependent on one another, especially as BPS further expands programming into CBO settings.

Degrees are necessary for present and future services

While the early childhood education community has debated the need for degrees, Sachs sees them as essential for creating mixed delivery systems in both public school and CBO settings that deliver high quality with equity. Formally linking public schools and early education programs will not only improve compensation, professional development, and supports, but it will also provide much more opportunity to create meaningful linkages with programs serving children 3 and under and transform public education from kindergarten through third grade.

This summary is based on Chapter 7 — *Vignette: Building a High-Quality Program—The Boston Public Schools Experience* — which can be found on page 153 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education*.
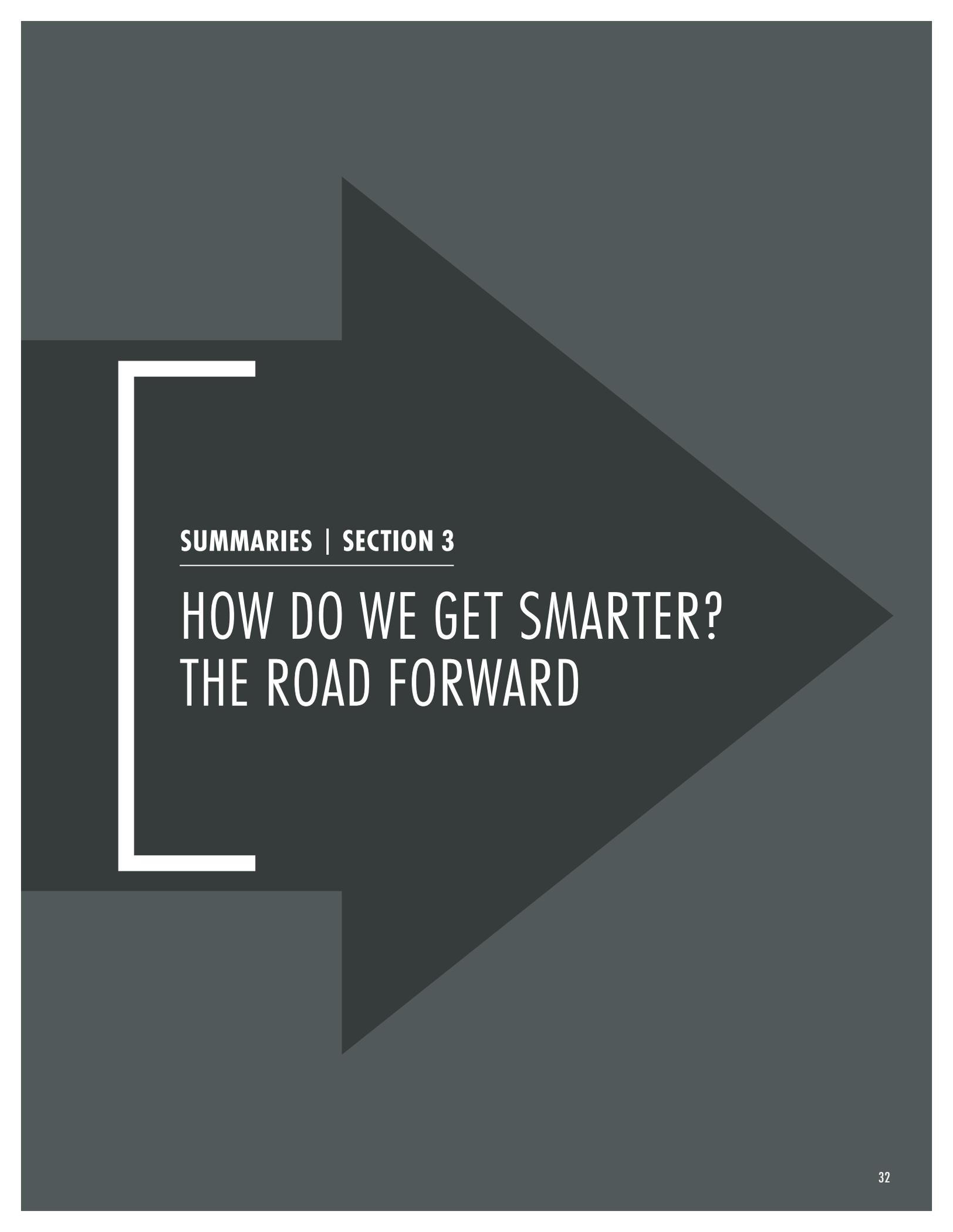
SUMMARIES | SECTION 3

HOW DO WE GET SMARTER? THE ROAD FORWARD

Understanding the fundamentals of early care and education implementation research and frameworks

JoAnn Hsueh, Ph.D., MDRC, Tamara Halle, Ph.D., Child Trends, and Michelle Maier, Ph.D., MDRC

An Overview of Implementation Research and Frameworks in Early Care and Education Research provides an introduction to implementation science principles specific to researching the effectiveness of early care and education (ECE) programming. Authors JoAnn Hsueh, Tamara Halle, and Michelle Maier outline principles and frameworks from implementation science that undergird implementation research and point readers to additional volume chapters explaining how to use implementation research to improve the scaling of ECE programs across different settings and contexts.

The importance of implementation research to scaling programs and outcomes

Implementation research is critical to illuminate what makes ECE programs, practices, and policies effective; to support program replication, expansion, and sustainability; and to guide program improvement to ensure that ECE programs reach their potential for narrowing achievement gaps. It looks at the process by which a program is put into practice and the variables among internal and external conditions that affect program quality across contexts and at scale. Implementation research is necessary because many evidence-based ECE models have proven to be insufficient to guide program scaling that successfully benefits all children.

Defining implementation research

Implementation research is the systematic inquiry into how a program is received and experienced in real-world settings and situations. Using a set of implementation-specific principles, the resulting research and analysis illuminate *what* is happening, *how* it is happening, *who* is making it happen, *why* a program achieves the outcomes that it does, and *for whom* it works best. Implementation research can take a vertical perspective, looking at how processes across different levels of the supporting system can work in synergistic or countervailing ways to support a program's implementation, or it can take a horizontal perspective, examining how implementation unfolds across a range of different settings, contexts, and populations.[1]

Focusing inward and outward

A growing set of implementation frameworks have been applied to ECE. Some focus inward on program components and structure, while others focus outward on the contexts and larger infrastructure that support the successful implementation of programs and systems. An inward focus articulates key aspects of implementation, such as core program components, implementation drivers, implementation processes, or different stages of implementation and program development. An outward focus addresses the broader organizational infrastructure, system, and/or contexts that influence implementation of a program model and that have the potential to create a hospitable environment that can facilitate a program being carried out as expected.[2]

Blending implementation research from both inward and outward perspectives, while situating a program along different stages of implementation and program development, can help to identify sets of research questions and evidence-building research activities that can be used to build ECE programming on a large scale and move toward the ultimate aim of reducing disparities in early academic achievement.

Guiding readers toward a deeper understanding of implementation research.

The authors refer readers to additional chapters in *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education* that provide more in-depth discussions and illustrations of how implementation research can be applied in innovative ways to guide and strengthen ECE programming and outcomes for all children:

- *Designing Implementation Research to Guide the Scale-up of Effective Early Care and Education Across Settings* describes a framework to guide the empirical study of program implementation within an evidence-building context and discusses potential methodological and measurement considerations when taking an inward and outward focus to implementation research to understand variation in the impacts of ECE programming across diverse populations, contexts, and conditions.

- *How Implementation Science and Improvement Science Can Work Together to Improve Early Care and Education* considers the similarities and distinctions between implementation science and improvement science. It provides concrete examples as they have been applied to studying home visiting models. The chapter also considers how integrating implementation science, improvement science, and traditional program evaluation can further support the effectiveness and sustainability of early childhood interventions, especially those targeted to ECE settings.

- ***The Contributions of Qualitative Research to Understanding Implementation of Early Childhood Policies and Programs*** discusses qualitative methods to understand how implementation processes are constructed and adapted. It underscores the value of moving beyond children's immediate experiences in classrooms to understand the perspectives of local actors, conditions, and contexts and to begin to theorize how ECE policies, systems, and programs can be improved to address the needs of children with diverse backgrounds.

- ***Equity as a Perspective for Implementation Research in the Early Childhood Field*** underscores that researchers must tackle biases and cultural limitations introduced by their own research methods in order to appropriately and fully understand how programs are operated and implemented across settings, contexts, and populations with diverse histories and backgrounds. This affects the degree to which ECE programming meets the goal of reducing inequity in young children's learning opportunities and experiences.

This summary is based on Chapter 8 — *An Overview of Implementation Research and Frameworks in Early Care and Education Research* — which can be found on page 177 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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Implementation research helps bring effective early care and education to scale across settings

Michelle Maier, Ph.D., MDRC, and JoAnn Hsueh, Ph.D., MDRC

In *Designing Implementation Research to Guide the Scale-Up of Effective Early Care and Education Across Settings*, researchers Michelle Maier and JoAnn Hsueh call for concerted efforts to design and enhance implementation research to better understand variation in implementation and program impacts from multiple and holistic perspectives. Expanding the scope of early care and education (ECE) to scale implementation research helps to ensure findings can be used to guide policy and practice as well as determine how best to support and sustain effective programming to reach a broad number of children and close disparities in achievement.

Strong implementation research helps bring high-quality learning experiences to more children

To ensure that all children have access to high-quality learning experiences, it is important to have the information necessary for bringing promising programs to wider populations. Well-designed, ongoing implementation research can provide feedback to inform program adaptation and adjustments, identify supports needed to successfully implement in varied localities and contexts, and address how and why a program works, under what circumstances, and for whom.

Clear guidelines for creating strong implementation research

Maier and Hsueh see effective implementation research as a discipline that allows researchers to adapt a set of principles to specific programs and their contexts. They recommend that developers, researchers, and practitioners reflect on three key design considerations. First, use implementation frameworks to guide implementation study design. Second, use these frameworks to help determine prioritized areas of inquiry to develop a better understanding of the full story of program implementation, regardless of where it lies in terms of program development stages. Third, consider the breadth and depth of measurement for each prioritized area of inquiry.

Understanding implementation frameworks guides research design and purpose

Thoughtful application of implementation frameworks helps us build evidence to understand program effects on average, as well as variation in those program effects across different contexts and populations. It also allows us to establish the added value of a program above and beyond the "business as usual" environment or the treatment contrast. This can be done, first, by weighing fidelity of implementation; that is, how the "Program Planned" aligns with the "Program Received" by teachers and children. The next step is to assess the implementation process, which consists of the procedures, methods, or activities necessary to foster the strong implementation of core components and enact the implementation plan.

A lens for understanding the effects of variation in conditions and program resources

Implementation frameworks also highlight where sources of variation may be likely to influence program effects and underscore where research can focus. This includes operationalizing and measuring the fidelity of implementation of the program and implementation plan; sources of variation in program effects such as treatment contrast or participant characteristics; sources of variation such as characteristics of the implementing organization or larger system; and potential moderators of these relationships.

Creating an evidence-building cycle

Building effective evidence for programs and policies occurs in an iterative cycle of program implementation and adaptation. The process often begins with a program model in an early developmental stage that is piloted on a small scale and/or in a relatively controlled setting. The goal may be to establish clarity or refine the program goals, target population, and key activities and components as they are being implemented. Yet, even in the early stages of program development, implementation research can lay important groundwork for informing future scale-up. ECE can benefit by aligning implementation research designs and measurement to this evidence-building cycle and stages of program development.

How to employ effective research methodologies

Implementation studies use quantitative, qualitative, or mixed-method approaches. Quantitative approaches in implementation research are more objective and try to quantify constructs of interest, such as the level of fidelity achieved; participants' attitudes, competencies, and behaviors; and the degree of service contrast observed. Qualitative efforts are more exploratory, subjective, and open-ended, and they typically rely on one-on-one interviews or focus groups, ethnographies, document reviews, unstructured or semi-structured observation, and case studies, among others. Mixed-method approaches combine these two types of methods.

Necessary considerations for implementation research

Maier and Hsueh go on to illuminate essential considerations, elements, and features of effective implementation research, including:

- **Implementation plan and system support.** The implementation plan outlines how the "implementing" organizations or providers plan to operate the program. This includes procedures and activities necessary to foster implementation of the program model's core components and practices, such as changes in staffing, professional development (i.e., training and coaching), and other supports, like purchasing materials or building partnerships with other organizations to deliver the program model as intended.

- **Characteristics of participants.** Implementation studies are interested in the intended target population, as well as the population that ultimately is recruited, enrolled, and served. While research suggests that low-income, racial and ethnic minority, and dual language learning children benefit more from ECE, an overarching question as a program is scaled continues to be about equity and for whom the program is effective: all children or subgroups of children?

- **Characteristics of organizations implementing the program.** These characteristics include staff credentials, academic qualifications, and prior work experiences, as well as attitudes, beliefs, knowledge, teaching priorities, readiness, buy-in, motivation to implement the program model, engagement, and stress and burnout of the front-line staff, along with supporting staff, such as administrators, directors, trainers, and coaches.

- **Contextual factors external to an organization.** Investigating the contextual factors external to the implementing organization can help to situate the findings from evidence-building efforts of a program at different stages of development. Contextual factors include the funding and policy environment, rules and regulations, and local economic and population characteristics. In early stages of development, implementation studies can aim to describe the systems or structures that are in place as the program is being delivered.

- **Service contrast resulting from the program.** The effectiveness of a program is a culmination of two sets of influences: (1) the strength of the critical components of the program model being tested, and (2) the degree of service contrast, or the difference in experiences with active ingredients of the program model versus other services that might be available to the target population of the program model.

Insights for prioritizing research questions in implementation research

The authors offer several reflective questions to help developers, researchers, and practitioners reflect on and address the above considerations, so that their unique implementation study answers the questions most important for strengthening their particular program and informing program scale-up:

- At what stage of development is the program under study? What level of evidence has already been gathered?

- Where in the evidence-building cycle is the program under study?

- What areas of inquiry are most critical to examine given the program's current stage of development and evidence base?

- Which areas of inquiry may provide the most information to inform future stages of the program's development and to guide design and measurement strategies?

This summary is based on Chapter 9 — *Designing Implementation Research to Guide the Scale-Up of Effective Early Care and Education Across Settings* — which can be found on page 195 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

GETTING IT RIGHT: USING IMPLEMENTATION RESEARCH TO IMPROVE OUTCOMES IN EARLY CARE AND EDUCATION
CHAPTER 10 SUMMARY | JUNE 2020

Bridging implementation and improvement science to improve early care and education

Tamara G. Halle, Ph.D., Child Trends

In *How Implementation Science and Improvement Science Can Work Together to Improve Early Care and Education*, Tamara G. Halle explains the value of two frameworks to advance effective implementation and quality improvement in early childhood programs, policies, and practices. Despite nuanced differences between these approaches, they share enough similarities that they can be easily combined to support and promote evidence-based early childhood programs and systems by identifying what works in different contexts and conditions while providing insights for continuous improvement.

The promise of new evaluation and improvement methods

There is great interest among researchers and policymakers in determining what it takes to improve the quality of early care and education (ECE) and achieve the outcomes desired for young children, especially young children experiencing socioeconomic disadvantage. While randomized controlled trials are thought to be the gold standard in evaluation, limitations in experimental design and the long timeframe necessary for evaluation hinder the rapid scaling of effective programs across settings. Two new perspectives, implementation science and improvement science, are being used to answer important questions with faster acquisition of practice-based evidence and recommendations for necessary improvements.

Implementation science seeks to bridge the gap between evidence of effective programs and what is done in practice

Implementation science is the systematic inquiry into the processes by which interventions are enacted in real-world settings. Implementation science focuses not only on the interventions themselves but also on the contextual factors and organizational supports necessary to create a hospitable environment for enacted interventions to achieve their intended outcomes.[1] It is an interdisciplinary field, encompassing different scientific disciplines, such as behavioral psychology, behavioral economics, and sociology; different ECE occupations, including administrators, frontline implementers, trainers, researchers; and different service sectors, such as education and health. Implementation science

helps uncover the critical ingredients of early childhood programs and systems that are associated with changes in outcomes. It also helps practitioners achieve the goals of early childhood programs and supports taking effective ECE programs or systems to scale.[2]

Improvement science can promote a culture of continuous quality improvement

Improvement science involves systematic examination of the methods and contextual factors that best facilitate quality improvement at the individual, program, and/or system level.[3] Improvement science draws heavily on process improvement models from the business sector and organizational change management theory, as well as implementation science. Improvement science originated in manufacturing with the systematic study of the series of steps and activities that make up a work process, with the aim of improving the quantity and/or quality of the work product and reducing costs.[4] The inclusion of systems thinking and change management perspectives led to the study of how workers think together about improving their activities as a team. Improvement science strongly emphasizes the expertise of practitioners and their role as "active inquirers" who develop *practice-based evidence*.[5]

More similarities than differences

There are more similarities than differences in the main areas of focus of implementation science and improvement science, making them compatible tools for real-time implementation and short- and long-term improvement.

Research Questions/ Outcomes of Interest	Implementation Science	Improvement Science
Acceptability	√	√
Adaptation	√	√
Adoption	√	√
Appropriateness/fit	√	√
Client outcomes	√	√
Cost	√	√
Dosage	√	√
Effectiveness	√	√
Equity	√	√
Feasibility	√	√
Feedback loops	√	√

Continues on next page

Research Questions/ Outcomes of Interest	Implementation Science	Improvement Science
Fidelity to intervention components	√	
Fidelity to implementation components	√	√
Implementation infrastructure	√	√
Implementation teams	√	√
Leadership	√	√
Needs	√	√
Organizational culture and climate	√	√
Quality of implementation supports	√	√
Quality improvement of outcomes	√	√
Readiness	√	√
Service outcomes	√	√
Scale up	√	√
Spread	√	√
Sustainability	√	√
Transportability	√	
Variability of outcomes	√	√
Use of data	√	√

Nuanced differences offer a fuller perspective on programs in practice

Implementation science tends to focus on the conditions that support *fidelity* to evidence-based practices to achieve *intended outcomes*, where improvement science does not. Improvement science tends to focus on *innovation* and *adaptation* of evidence-based practices to achieve *improved outcomes*. Another difference is the time frame it may take to achieve outcomes. Implementation science posits that long-term outcomes may not be evident until full implementation of an evidence-based program has been achieved, which could take two to four years.[6] In contrast, improvement science aims to make improvements in outcomes rapidly—for example, over the span of 12 to18 months.[7] A final distinction is that improvement science aims to develop practice-based evidence in addition to evidence-based practice.[8]

Implementation Science + Improvement Science = Progress

The investigation of the critical ingredients for improving the quality of early care and education and achieving the outcomes we want for young children is still a work in progress, but thanks to implementation science and improvement science, we do know what some of those key ingredients are. Rigorous program evaluation designs that permit comparisons of different types of program improvement methods—and that consider implementation processes, structures, and outcomes—will help the field clarify what it takes to achieve improved outcomes for early childhood practitioners and settings, and for the children in their care.

This summary is based on Chapter 10 — *How Implementation Science and Improvement Science Can Work Together to Improve Early Care and Education* — which can be found on page 223 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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Qualitative research provides practical information and helps us understand implementation at in-depth local levels

Sharon Ryan, Ed.D., Rutgers, The State University of New Jersey

In *The Contributions of Qualitative Research to Understanding Implementation of Early Childhood Policies and Programs*, Sharon Ryan argues that qualitative studies examining implementation of early childhood programs can provide practical information to help policymakers and leaders understand why early childhood programs do or do not fulfill their promise. The early childhood field has assumed that with evidence of best practices, it is possible to scale up what works in one site to many programs. Yet, evidence-based practices are often transformed, adapted, or even ignored in local sites. Therefore, it is imperative to look across programs at a macro scale while also employing qualitative studies to go deeply into variations in context and implementation strategies. With more qualitative studies of implementation across multiple sites, it might be possible to identify which local adaptations make sense and which may unnecessarily undermine best practices for young children.

Implementation research—vertical, horizontal, and across stages of development

Implementation research is defined as any systematic inquiry of an innovation in practice, the factors that influence its enactment, and the relations between the innovation, influential factors, and outcomes.[1] Implementation research can examine an innovation vertically by how it is taken up and employed at differing levels of the educational system (e.g., state, district, and school). Implementation studies may also look horizontally at how an innovation is implemented across a number of sites in a range of communities or geographic areas.[2] They can also examine an innovation at differing stages of development.

A new way of looking at implementation research

More recently, implementation researchers have begun to theorize about implementation as a complicated network of relations that assumes the movement from innovation to practice is multi-directional and deeply political.[3] From this perspective, the implementation process is influenced and shaped by many agents (from children to policymakers) with varying levels of power and influence, within educational settings that constitute a nexus of multiple policies. Researchers working from this perspective look at the politics of innovation, and how a wide range of stakeholders working in various networks resist, transform, and implement policy depending on organizational ethos and resources, professional theories, and perceived need.[4]

The great promise of qualitative studies

Qualitative research is interested in how individuals construct their social worlds and how those worlds are mediated by context and culture.[5] Research from this perspective typically involves spending a lot of time in educational settings, observing and talking with participants to develop an understanding and interpretation of educational phenomena. Qualitative researchers interested in implementation therefore examine innovations in sites of practice, often observing what takes place in schools and early childhood settings, as well as shadowing key stakeholders and questioning them about an innovation and their reasoning about how they have approached its implementation.

Three paths for improving implementation

Ryan suggests three possible paths toward a more comprehensive, critical, and policy-capturing use of qualitative research to improve the implementation of high-quality early childhood education systems. These include:

- **Investigating multiple levels of the system,** which involves examining the multiple levels through which early childhood policy takes place within and across states.

- **Focusing on all stakeholders** through interview studies as well as case studies to concentrate attention on the multiple stakeholders who implement early childhood programming.

- **Examining issues of equity** to address inequities in systems of preschool education that may have inadvertent consequences, such as resourcing and compensation experienced by teachers depending on where they work,[6] union contracts, and state policies guiding the programs.

This summary is based on Chapter 11 — *The Contributions of Qualitative Research to Understanding Implementation of Early Childhood Policies and Programs* — which can be found on page 259 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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The importance of an equity perspective in early childhood implementation research

Milagros Nores, Ph.D., National Institute for Early Education Research

In *Equity as a Perspective for Implementation Research in the Early Childhood Field*, Milagros Nores argues that addressing equity in implementation research is important to shape early childhood development investments and programs, particularly given that many of these have expanded under the principle of reducing inequities and disadvantages before kindergarten. Research with an equity lens helps define inequities in present conditions that may determine outcomes, ensures that the research itself does not introduce biases, and captures the extent to which programs and policies reduce or increase inequities.

The value of equity as a research lens

An equity perspective makes the research process more responsive to the equity goals of early childhood, takes into account existing disadvantages, and leads to processes that make it easier to engage agents and individuals in long-term equity change. Research on what occurs in preschool classrooms, teacher practices, interactions, the effectiveness of programs or preschool curricula, and, ultimately, their effect on children cannot be separated from the biases and inequities that children and families may experience in the education process, and the social structures in which schools and individuals are embedded. Only by understanding what's working, what isn't, and why, with the aim of advancing equity across children and families, can research strongly support the development of effective programs and policies for all children.

Defining equity research

Equity-focused implementation research analyzes the impact of internal and external processes—as well as foundational assumptions and interpersonal engagement—on marginalized and underserved individuals and communities[1] within the process of inquiring how programs, policies, and individual practices are enacted in real-world settings. It includes understanding the complexity and multidimensionality of context, culture, and power as fundamental elements to be addressed in evaluation.[2] The goal is to ensure that research components capture whether a program is working toward reducing inequities and is validly defining them in relation to the people served—and that evaluations are not introducing biases that reduce the chances of truly understanding whether the program works and for whom.

Equity-based perspectives, cultural competence, and intersectional approaches enhance research in various ways

Cultural competence increases effective interactions between researchers and participants in both qualitative and quantitative research-based interactions. Researchers actively seek to engage with the diverse perspectives and segments of the community, respect the cultures represented, and are aware of how their own backgrounds and experiences limit or enhance the conduct of research.[3]

Equity and the essential components of effective research

Understanding that researchers' values can blur the evaluation process, Nores acknowledges that effective research requires integrating equity concepts across all research components, from questions asked to interpretation of findings:

- **Developing theoretical frameworks and evaluation questions.** Researchers should explicitly examine the values, beliefs, and approach embedded in theoretical frameworks, and whether they fit the evaluated population. The American Evaluation Association advocates thoughtful consideration of alternative competing frameworks, assessing the fit of theory to the context, and attentiveness to complex power explanations within systems. In addition, a crucial step in every evaluation is defining the questions to be addressed. Questions and how they are worded are critical to setting the evaluation in the right direction.

- **Designing and sampling.** Consider the sources and types of data, the individuals from whom evidence will be drawn, the approach—quasi-experimental, experimental, ethnographic, case study, or mixed methods—and the timing. Equity will define who is represented, whether differences between and within groups can be assessed, and how much information is collected that will contextualize and identify the sources of differences across groups. Questions to guide design and sampling could be: Who is included with this design? Who is excluded? Will the different groups that make up the target population be well represented?

- **Using unbiased instruments.** The equity process may require reviewing the instruments' weaknesses for particular subgroups in the population of interest: Who does it not measure well? Researchers should reflect on what constitutes meaningful, reliable, and valid data,[4] starting at the planning stage and continuing throughout data collection. Choose data collection instruments that have been used with the populations of interest and that have shown sensitivity to those populations. This does not guarantee a lack of bias, but it does ensure that an instrument will be able to effectively capture increases in equity (changes over time and between groups).

- **Advancing equity in fieldwork.** A lot of culturally responsive work should occur at the fieldwork stage, where one-on-one interactions take place between a research team and partners in the field who are willing to be research subjects and agents. Fieldwork encompasses ethics approvals, recruitment strategies and training of field personnel, management of data collection, consenting procedures, survey and interview protocols and procedures, focus group protocols and procedures, retention policies and strategies, and translation and interpretation services.

- **Checking methods and analyses.** Initial checks should ensure that the research processes do not render a sample that is more representative of some particular category—language, race, ethnicity, gender, immigration status, or other identification—than the target population. Did only some teachers answer the surveys? Who attended the focus groups? Who finished the assessments? Who attended the program? The training? Differences between the target group and the final sample need to be clearly reported, both because they may bias results and because they are necessary to interpret analyses.

- **Interpreting and disseminating effectively.** Interpretation should reflect the context studied and whether the feedback based on race, ethnicity, gender, language, or another individual characteristic allows the program and agents of change to engage the system in long-term equitable change.[5] Questions to be addressed include: Are the main results consistent for all subgroups, or is there evidence of subgroup differences? Are interpretations of subgroup differences contextualized? Are institutional or programmatic factors that contributed to subgroup effects shown? Does the program reduce equity for participants along particular dimensions? Is it neutral? Negative? What factors are contributing to or hindering equity?

This summary is based on Chapter 12 — *Equity as a Perspective for Implementation Research in the Early Childhood Field* — which can be found on page 275 of the complete publication *Getting it Right: Using Implementation Research to Improve Outcomes in Early Care and Education.*

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