Increasing the Effectiveness of Preschool Programs

by
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Whether enrolled in a publicly funded program or one paid for through parental fees, preschool attendance has become the norm for four-year olds in many parts of the country.[1] Although preschool serves as a form of child care for many families, its popularity also derives from its role in providing pre-kindergarten education.[2] Policymakers, educators, and families have embraced publicly funded preschool programs as a way to produce gains in young children's learning and development. They also expect preschool programs to bring about long-term effects: greater success in reading and math, less grade retention or placement in special education, and higher high school graduation rates.

Although such gains have been produced when young children have participated in high-quality preschool programs,[3] the quality of programs currently available is far from uniform, with the vast majority considered to be mediocre.[4] Moreover, the short-term benefits of some programs are small, at best.[5] These results stem in part from weak program standards, which tend to be lower and more variable than those found in K-12 education.[6] They may also result from solely emphasizing keeping costs low to serve greater numbers of children, rather than focusing on educational cost-effectiveness.

The effectiveness of today's preschool programs could be significantly improved if they were initially aligned with those that have demonstrated strong impacts. Additional improvements in cost-effectiveness could be subsequently achieved by systematically varying publicly funded programs to investigate the impacts of program variations. It would also be useful to implement formative evaluations to provide regular feedback to program staff regarding how well programs are "working."

The wide variety of programs currently available can create confusion about what contributes to program effectiveness. This report reviews research on the inputs contributing to quality, features of programs that impact children's learning and development, and current state policies related to these characteristics. The report concludes with specific recommendations for how preschool program effectiveness might be increased.

What We Know

- Many preschool programs fail to fully achieve what society expects of them. This is due in part to the limited amount of time some children spend in them. However, the poor quality of some programs limits their effectiveness, as well. Key influences on quality preschool environments include class size, teacher-child ratios, and teacher qualifications.

- We currently lack definitive data on the minimum quantity—and mix—of inputs required for highly effective programs. However, programs that have produced large gains share similar characteristics, including highly educated teachers, teacher-child ratios of 1 to 10 or less, and support for teachers' ongoing professional development. They also provide intellectually challenging curricula and guidance for what children should learn. In

addition, effective programs implement evaluations to highlight areas in need of improvement and make informed decisions about how to improve programs.

- Current state standards for publicly funded preschool programs vary widely, particularly in the areas of teacher qualifications, per-pupil spending, and learning standards. Low standards and spending levels will most likely result in programs that do little to enhance children's learning and development.

Policy Recommendations

- Program inputs play a key role in effectiveness. Minimum requirements for publicly funded preschool programs should include: teachers with a bachelor's degree and specialized training in early childhood education, class sizes no larger than 20, and staff-child ratios no larger than 1:10. Such programs have found to be cost effective when delivered for at least 2 ½ hours a day over a 180-day school year.

- Working together with researchers and evaluators, policymakers should systematically vary program inputs in order to refine standards for specific communities.

- The goal of publicly funded preschool program is to improve children's learning and development. Programs should therefore receive adequate funding to maintain effective class sizes and teacher-child ratios, hire and retain qualified teachers, and provide other supports that are crucial for meeting their community's needs. Policymakers should also recognize that choosing increases in available slots over this goal will jeopardize the economic benefits of preschool programs and raise K-12 costs.

- Children's learning standards should be strengthened so that teachers have clear and comprehensive guidelines about the skills and knowledge children should have, what specific practices can contribute to children's learning, and how that learning might best be assessed.

- Ongoing, formative research should be conducted to accurately gauge program strengths and weaknesses and also inform decisions about how programs can best be adjusted to improve their educational effectiveness.

- Stakeholders should be provided with reliable information about program quality. Children's scores at kindergarten entry alone do not provide an accurate picture of preschool quality. Information about quality should also be based on expert observations and assessments of programs, with the results readily available to parents, educators, and policymakers.

The Role of Quality in Preschool Program Effectiveness

As is the case with many educational initiatives, the effectiveness of any preschool program is related to variations in individual children and the greater context of where children live and schools are located.[7] Yet, just as a building is less likely to provide effective shelter if it is not constructed with quality materials and placed on a solid foundation, most preschool programs are unlikely to be effective without first meeting a specific level of quality in terms of structure and process.

Structural quality. Structural characteristics are often governed by state licensing regulations, and consist of the physical classroom, the number of children in a class, and teacher-child ratio. The qualifications of the staff—including teachers, teacher assistants, supervisors, and support personnel—also contribute to structural quality.[8] Research demonstrates that when classes are smaller and ratios are more favorable, teachers engage in more stimulating, responsive, and supportive interactions and provide more individualized attention. They also spend less time managing behavior and more time in educational activities. Although conventional wisdom may regard a "small" preschool class size as one with 20 children or less, an overview of the evidence suggests that substantial effects of class size—particularly for disadvantaged children—may be obtained only when classes for 3- and 4-year olds are reduced to 15 or fewer children.[9]

Process quality. Structural characteristics are the inputs or resources that influence the kinds of experiences children have on a day-to-day basis within classrooms, or "process quality." In quality preschools, instead of spending long periods of time quietly working on worksheets or in large groups listening to the teacher, young children have frequent opportunities to engage in creative activities. The materials reflect individual children's development, intellectual needs, and home language and culture. Children also participate in both large- and small-group activities, and are given the chance to develop important social, emotional, and language and cognitive capabilities.[10] High-quality experiences take into account how children develop and learn, and how that development and learning is best supported.[11]

Process quality also includes the interactions children have with their peers, and most importantly, with their teachers. Good teachers provide children with developmentally appropriate experiences. They are also skilled observers of children's activities and ideas, as such observations provide teachers with knowledge about individual children's abilities and also offer the opportunity to extend children's learning by asking thought-provoking questions and offering additional activities at appropriate times. Good teachers also seek to support children's social, developmental, and academic growth through a combination of teacher- and child-initiated activities.[12]

Perhaps not surprisingly, one of the most crucial influences on the quality and effectiveness of preschool programs is teacher education and training.[13] Studies find that a concentration in early childhood coursework is positively correlated with teachers' beliefs regarding providing instruction and experiences that are more developmentally appropriate for young children.[14] Teachers who receive specialized training in early childhood also use strategies that facilitate young children's language, cognitive, and social skills.[15] Furthermore, those who have the most sensitive and least harsh and detached behavior have attained both a bachelor's

degree (BA) and specialized, college-level early childhood training.[16] In sum, "more knowledge in early childhood education does appear to influence beliefs, attitudes, and practices of teachers,"[17] which in turn shapes the experiences young children have in preschool programs.

Characteristics of Effective "Model" Programs

Many studies provide information about the outcomes of effective preschool.[18] To learn more about the specific variables that correlate with effectiveness, we focus on long-term studies of three programs: the small-scale Carolina Abecedarian and Perry Preschool projects, which had one site each, and the large-scale Child-Parent Center program, which operated in several Chicago neighborhoods. All three served children at risk for school failure, and were initiated well before state-funded preschool programs became prevalent. Most importantly, each had economic benefits which far exceeded their costs and also had large impacts on children's outcomes.[19]

Despite the difference in the numbers of children served, all three initiatives had similar program characteristics, as well (see Table 1). For example, each utilized highly qualified teachers paid at public school levels, smaller classes, and teacher-child ratios of 1 to 8.5 or less. In addition, it seems likely that they had stronger supervision and more systematically engaged in reflective teaching and teacher-child interactions that were similar to what children would encounter in elementary school.[20] These advantages in practice were facilitated by teacher (and supervisor) quality and ratios that made intensive individualization possible.

Table 1. *Characteristics of the "Model" Abecedarian, Perry, and Child-Parent Center Programs*

	Program		
Characteristic	**Abecedarian[21]**	**Perry[22]**	**Child-Parent Centers[23]**
Location	Chapel Hill, NC	Ypsilanti, MI	Chicago, IL
Ages Served	6 weeks – 5 years old	3 & 4 year olds	3 & 4 year olds
Schedule	8 hours/day 5 days/week 50 weeks/year	2.5 hours/day 5 days/week 30 weeks/year	3 hours/day, 5 days/week 35 weeks/year + 6-week summer program
Maximum Class Size	12 (Infants) 7 (pre-Toddlers & Toddlers) 12 (Preschoolers)	13	17
Teacher/ Assistant: Child Ratio	1:3 (Infants) 1:4 (Pre-toddlers/ Toddlers) 1:6 (Preschoolers)	1:6.5	1:8.5

Teacher Qualifications	BA, MA, or demonstrated skills and competencies	BA & elementary and special education certification or better	BA & early childhood certification or better
Curriculum	Child-centered learning games and experiences	High/Scope	Emphasis on basic math and literacy skills through mix of teacher-directed whole-class instruction and small-group activities

It is noteworthy that these are the only programs that have been demonstrated to produce large long-term economic gains. There are no counterexamples of programs of lower quality demonstrating such results.

The Effectiveness of Current Preschool Programs

While studies of these three model programs are one important source of information, evaluations of state-funded preschool programs also inform our knowledge about the effectiveness of preschool education. For example, one recent study examined the overall impacts of state-funded preschool programs in Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia on children's early language, literacy, and math skills.[24] Across all five states, children who were enrolled in these programs experienced 31 percent more growth in their vocabulary development and 85 percent more growth in their print awareness than those who were not enrolled. In Michigan, New Jersey, Oklahoma, and West Virginia, program participants also experienced 44 percent more growth in their early math skills.[25]

Additional studies of two of the five programs confirm these findings. Testing at kindergarten entry shows that scores have risen as New Jersey increased the reach and quality of its program in 31 districts with high percentages of disadvantaged students. Tulsa, Oklahoma operates a preschool initiative as part of the state's universal preschool program. An evaluation of the city's program found substantial effects for *all* children, including those who qualified for a reduced price school lunch or did not qualify for any lunch subsidy. These effects include a 52 percent gain in pre-reading and reading skills, a 27 percent gain in pre-writing and spelling skills, and a 21 percent gain in early math reasoning and problem-solving abilities.[26]

Standards for Preschool Programs

Unfortunately, these programs are not necessarily typical of all preschool programs. Studies of other programs—both state-funded and not—find more modest results.[27] The disparity in program effectiveness may be explained by how closely aligned programs are with the "model" programs described above. For example, an examination of program standards in the five state-funded preschool initiatives that have had significant gains also shows an emphasis on

class size, teacher-child ratios, and teacher qualifications. In Oklahoma, South Carolina, and West Virginia, class sizes are limited to 20 and the maximum teacher-child ratio is 1:10. Class size in New Jersey's program is limited to 15, with classrooms staffed by both a teacher and teacher assistant. Michigan limits its class size to 18, with a 1:8 teacher/child ratio. All five of these states require teachers in state-funded preschool programs to have a minimum of a BA and certification related to early childhood.[28]

Class size and teacher-child ratios. However, the regulations governing class size, teacher-child ratios, and teacher qualifications in other state-funded preschool programs vary from state to state or even within states. For example, although most publicly funded programs limit their group sizes to 20 children or less and have staff-child ratios of 1 to 10 or better, three states have group-size limits of 24 and 28 for all or some of their publicly funded programs. Accordingly, the maximum staff-child ratio is higher (1:12 and 1:14) in two of these states, as well. Eight states do not limit their maximum group size for four-year olds in publicly funded programs at all. In these states, the staff-child ratio ranges from 1:8 to 1:16 to no limit on the number of children one teacher can be in charge of.[29]

Teacher qualifications. The teachers in the three model programs cited above had high levels of education, as do all or almost all of the teachers in publicly funded preschools in Michigan, New Jersey Oklahoma, South Carolina, and West Virginia. However, the latest data show that not all states require teachers in state-funded programs to have a four-year degree (see Table 2). All seven states offering publicly funded preschool solely within their public schools require teachers to have a BA and certification related to early childhood or elementary education. An additional eleven states offer state-funded preschool in public and community-based settings, and require teachers in both settings to have a BA. Conversely, nine states have a "two-tier" system, meaning teachers in private settings do not need to obtain the same level of education as public school teachers. The remaining 12 states do not require teachers in any of their publicly funded preschool settings—either public or private—to have a BA.[30]

Table 2. *Pre-Service Requirements and Average Salaries for State-Financed Preschool Teachers*

State-by-State Pre-Service Educational Requirements, 2002-2003[31]	% teachers with a BA or higher, 2003-2004[32]*	Average annual salary, 2003-2004[33]
Teachers In Public Or Private Settings Must Have A BA		
Alabama	96	$ 30,045
Arkansas	77	26,449
Illinois	93	36,286
Kansas	98	31,361
Louisiana		
8(g) Preschool Block Grant	98	32,152
LA-4 Public Preschool Program	98	33,079
Non-public schools Early Childhood Development Program	100	27,176

Starting Points Preschool Program	98	30,931
Maine	97	31,562
Maryland	100	45,385
Nebraska	94	31,667
Nevada	97	32,097
New Jersey		
Early Childhood Program Aid, non-Abbott districts	100	41,371
Early Childhood Program Aid, Abbott districts	86	39,593
North Carolina	86	28,656
Oklahoma	97	29,046
Pennsylvania	96	42,951
South Carolina	100	37,502
Tennessee	97	31,843
Texas	98	37,448
Vermont	83	26,800
West Virginia	100	34,772
Teachers In Public Schools Only Must Have A BA		
Iowa	75	29,016
Massachusetts	49	23,301
Michigan	96	41,707
Missouri	74	26,398
New York		
Universal Prekindergarten Program	91	37,991
Experimental Prekindergarten Program	99	52,730
Oregon	47	21,996
Virginia	92	34,198
Washington (state)	47	21,363
Wisconsin	99	37,315
No Teacher In Any Setting Needs To Have A BA		
Arizona	56	27,675
California		
State Preschool Half-Day Program	45	28,922
State Preschool Full-Day Program	39	30,107
Colorado	59	25,602
Connecticut	58	32,572
Delaware	46	21,158
Florida	34	22,557
Georgia	77	28,736
Hawaii	48	26,535
Kentucky	64	27,509
New Mexico	42	22,996
Ohio	79	32,013

*Survey data could contain some reporting error or misidentification

The variation in state regulations is reflected in the percentage of state-funded preschool teachers who had a BA or higher in 2003-2004, when such research was last undertaken. As can also be seen in Table 2, the majority of teachers working in states requiring a BA have attained that credential. In the nine states that only require public school preschool teachers to have a BA, 47 to 99 percent of all state-funded preschool teachers have attained that degree, with those figures roughly mirroring the number of children served in the public school sector in 2002-2003. The number of teachers with a BA in those states that do not require it at all ranges from 34 to 79 percent. Here, too, states with higher percentages of degreed teachers tend to have larger enrollments in public schools.[34]

Teacher salaries. Standards also differ in terms of teacher salary. In the model programs outlined in Table 1, teachers were paid salaries that were comparable to those found in public schools. Teachers in state-funded preschool programs requiring certified teachers tend to be paid according to public school salary schedules, as well.[35] Yet, while K-12 salaries for 2001-2002 averaged just over $44,000 per year,[36] in 2003-2004 the average salary for teachers in state-funded preschool programs was just $32,061.[37] In 19 state-funded preschool programs, teachers earned less than $30,000 annually (see Table 2). The salaries of 13.9 percent of state-funded teachers were below the federal poverty guidelines for a family of four. Almost 75 percent of teachers in state-funded programs earned wages that are considered to be "low income" for a family of four.[38]

Obviously, low salaries can be due to new hires in expanding programs and the low cost of living in some states. However, no matter where preschools are located, low salaries limit the quality of teacher who can be hired, raise turnover, and contribute to poor morale.[39] These problems, in turn, limit the educational effectiveness of preschool programs. For example, low wages hamper the ability of programs to hire and retain teachers who have a BA and teacher certification, as these qualifications enable teachers to work in K-12 settings, which on average pay higher salaries than preschool programs. Low wages may also make it difficult for non-degreed teachers to enroll in coursework leading to a BA or graduate degree because they do not have the financial capacity to do so.[40]

Per-pupil funding. Preschool teacher salaries are directly related to per-pupil spending levels for preschool. Although money spent does not guarantee program quality and effectiveness, the model programs cited in Table 1 spent substantially more than today's state-funded preschool programs. For example, in today's dollars the very intensive Perry Preschool program spent approximately $8,000 per child on a program that was 2.5 hours per day for 30 weeks each year. The Abecedarian program was full-day and year round, and per-pupil spending in today's dollars totaled nearly $15,000.[41] Only one state—New Jersey—approximates this level of annual spending in a program for its most disadvantaged communities.

States with preschool programs do spend nearly as much on preschool education costs as they do on K-12: $3,500 for preschool compared to $3,935 per pupil on K-12. Yet, these spending levels may only be sufficient in states where other local (and to a lesser extent, federal) funding sources contribute. However, it is highly unlikely that such funding is added to more

than double average per-pupil expenditures as is the case in grades K-12. Indeed, for some state preschool programs, very little funding comes from these other sources.[42]

Scheduling. Funding also influences decisions about the length of the preschool day. The majority of state-funded programs utilize half-day programs, meeting four or five days each week during the academic year for 2 to 3½ hours per day.[43] The amount of time children spend in preschool on a day-to-day basis would seem to contribute to program effectiveness. However, research offers only rough guidance that more is better.[44] How much children gain from additional hours each day and how these gains compare to gains from increased intensity (e.g. smaller classes and better ratios) is difficult to judge at present.

The programs cited in Table 1 varied considerably from one another in their schedules. While the Abecedarian program utilized a full-day schedule, the Perry Preschool and Chicago CPC programs enrolled children for just half a day. In Oklahoma, participating school districts may choose to offer either half- or full-day programs. New Jersey's state-funded Abbott preschools provide a 6-hour, 180-day program that is combined with wrap-around before- and after-school child care and summer programs.

Little research exists for comparing the outcomes of different preschool schedules that is not confounded by other variables such as class size, teacher training, and family background. Research on the effect of length of day in kindergarten is somewhat more informative, but the studies do not employ random assignment and their findings are mixed. Generally research shows that children in full-day kindergarten programs have more time to participate in meaningful learning activities than those enrolled in half-day programs. They also have better short-term academic outcomes and lower retention rates in the primary grades.[45]

Although additional research is still needed, a recent study[46] suggests that scheduling does matter in terms of preschool's effectiveness. In this study, the outcomes for children who were enrolled in a full-day (8 hours), extended year (45 weeks) program were compared with those enrolled in a 3-hour per day, 41-week program. Both programs were located within public schools in a single Abbott school district in New Jersey. They also utilized the same curriculum, were staffed by a certified teacher and an aide, and had the same group sizes and teacher-student ratios. Classroom practices were also equivalent as measured by the *Early Childhood Environment Rating Scale*.[47] This study found that participation in full-day, extended year preschool led to larger gains in children's language, literacy, and math abilities.

Outcome standards. Standards regarding the goals of preschool education for children are also important for program effectiveness. States set out these goals in standards for learning and development, including the skills, knowledge, habits, and dispositions that they want children to acquire, particularly if they are to be ready for kindergarten. Without such standards, teachers may rely on inappropriate beliefs about what young children should learn. This issue is particularly salient if teachers have not had specialized, college-level training in early childhood development and education. Even if teachers have participated in formal teacher preparation programs, the lack of clear expectations may result in the "sense of being 'rudderless'."[48]

Almost every state-funded preschool initiative has a document specifying the learning goals for preschool education. These documents are often called "Learning Standards" or "Content Standards." Reflective of the traditional early-childhood focus on the "whole" child, the standards articulated in these documents often span the domains of social/emotional development, physical development, health, language and literacy, math, science, and the creative arts. Many of these preschool standards indicate that they are also linked to K-12 outcome standards. However, they vary considerably in comprehensiveness and specificity.

To be maximally useful, standards meaningfully communicate learning goals. This requires that they be clearly written so that they are understandable by teachers and other stakeholders.[49] They should also contain enough information so that teachers and schools can document where children are in their progress towards achieving each of these outcomes.[50] This requires that preschool learning standards can also be linked to some form of valid and reliable assessment.

States' preschool outcome standards differ in the amounts of practical, "user-friendly" information they contain. In some states, standards focus solely on the outcomes or performance skills that children should be able to do upon completion of a preschool program. Although this is obviously the intent of these documents, the lack of additional information could be problematic for teachers without a formal educational background. For example, a language arts standard for preschoolers in one state says that children will "seek answers to questions through active exploration."[51] The document contains no information regarding what activities might demonstrate that a child is displaying "active exploration," as well as what teachers might do to facilitate such a process. How much information should be provided is difficult to judge, as state standards should not and cannot carry the primary responsibility for preparing teachers to provide effective preschool education.

Nevertheless, some state standards go to great lengths to clarify their goals. For example, one of the math and science standards for another state's preschoolers is that children will make comparisons and show an awareness of cause-effect relationships. Teachers are then advised to involve children in simple science experiments, such as investigating what materials sink, float, absorb water, or allow light to shine through, as well as examining what happens when two colors are mixed, or water is mixed with different liquids or solids.[52] These suggestions help to explain the standard and provide teachers with concrete examples of the types of activities they can employ to help children master these skills.

Additional Variables Contributing to Preschool Program Effectiveness

Developing and sustaining highly effective preschool programs poses challenges even under the best of conditions. Unfortunately, many preschool programs operate under less than optimal conditions, including minimal funding levels and low standards for teacher qualifications, ratios, class size, and other characteristics. One recent study[53] found that even some programs with above average standards are not necessarily effective for helping children learn important skills and concepts. What else might be done, then, to improve effectiveness?

Promoting teachers' ongoing professional development. A further examination of the programs cited above suggests that preschool effectiveness also depends on an ongoing focus on improving teachers' practice. In New Jersey, for example, the state faced a Court Order to improve the quality of its preschool education programs in 31 school districts with high concentrations of poverty and low property values. Although funds for the preschool program flowed from the state through the school districts, 70% of the children were served by contracts with private child care programs that previously had been required to meet only minimal child care licensing standards. The Court Order raised teacher qualifications requirements to a BA degree with early childhood certification. To meet this mandate, the state created and implemented new early childhood certification programs in higher education, a scholarship program to pay education costs for existing teachers who wanted to upgrade their qualifications, and additional supports to assist existing teachers in attaining their degrees in the higher education system.[54]

In addition, New Jersey created a new system to support continuous program improvement and the professional development of teachers. As a first step, the state created and adopted as policy *Preschool Teaching and Learning Expectations: Standards of Quality*.[55] This document outlines expected learner outcomes within the domains of social/emotional development, creative arts, and physical education, as well as language arts/literacy, math, science, social studies, and world languages. It also details teaching practices that lead to attainment of these standards. In addition, districts received funds to provide their preschool teachers with workshops in topics such as early childhood assessment, designing effective classroom environments, working with special needs children, and curriculum implementation.[56]

The state also required and funded master teachers (1 per 10-20 classrooms, depending on classroom teachers' experience levels) with early childhood backgrounds in each district to coach and mentor teachers on improving their practice.[57] Master teachers were provided with a year-long training in order to ensure they had the skills necessary to assist classroom teachers in providing educationally effective learning experiences. Each district also was required to employ an early childhood supervisor, who is responsible for overseeing preschool programs and teacher professional development throughout the district.[58]

Massachusetts has also implemented several initiatives with the goal of continuous improvement of practice and ongoing professional development. For example, when the state Department of Education created Community Partnerships for Children (Massachusetts' state-funded preschool), they required participating programs to seek accreditation by the National Association for the Education of Young Children or the National Association for Family Child Care. The Department of Education also provided funding to support learning activities related to accreditation. Accreditation was valued primarily because it was a self-study process for continuous improvement. Consequently, Massachusetts has more accredited programs than any other state.[59]

In order to increase professional development through college coursework, Massachusetts also contracted with institutions of higher education to bring college coursework directly to the preschool workforce. These programs motivated teachers in child care and Head Start programs to go back to school. Seeing their peers succeed made teachers increasingly interested in higher

education. Funds to improve quality were also disbursed to local Community Partnerships for Children Councils so that any specific professional development needs unique to their community could be addressed. For example, the Community Partnership in Lowell, Massachusetts used these funds to support the development of an articulation agreement between an Associate's degree-granting program and a Bachelor's degree-granting program. Participating teachers were able to transition smoothly into the four-year program, with full credit being granted for their coursework at the Associate level.[60]

An emphasis on continuous improvement of classroom practice appears to be a hallmark of highly effective programs. A review[61] of seven effective preschool interventions for disadvantaged children in the 1960s, '70s, and '80s found that teachers in these programs had access to a great deal of teacher- and classroom-specific support and professional development. For example, the teaching staff in two programs participated in weekly meetings to talk about individual children's needs and how they might best be met. Teachers in a third program received personalized consultations in setting weekly classroom objectives, as well as guidance regarding the help children might need in meeting such goals. All of the programs had an overarching focus on helping teachers reflect on their practice, strategize with experts on improvements, and adjust their pedagogical approaches to meet the needs of the children.

Instituting formative evaluations to inform policy and practice. The combination of early childhood-focused coursework and context-specific professional development can help teachers develop the knowledge base needed to improve their practice and focus on the specific needs of individual children in their classrooms. Thoughtfully-constructed standards documents can also provide guidance regarding the skills and knowledge children should have to successfully transition into kindergarten, as well as what classroom activities constitute "best practices" in helping children acquire these skills.

Yet, without an equal focus on what programs actually offer and children's growth in different content areas, it is impossible for teachers, parents, and policymakers to make decisions on how preschool programs might be "tweaked" to improve their effectiveness. For example, the evaluation of the state-funded programs that met professional standards—but were not very educationally effective—found that children spent most their of their day standing in line, waiting, or cleaning up, and "little of their day engaged in constructive learning or interacting with adults."[62] In short, these programs had warm and friendly environments, acceptable class sizes, adequate materials, and teachers with appropriate educational backgrounds, but classroom time was not used appropriately to enhance children's outcomes.

To lessen this type of unintended "disconnect" and make informed program improvement decisions, a process of continuous improvement through setting goals, assessing progress, and making changes to programs is necessary. Although there are many different ways in which this process has been formalized, the Plan, Do, Study, and Act cycle popularized by W. Edwards Deming[63] seems particularly apt. This approach emphasizes not simply setting goals and planning to achieve them, but planning for change. This is followed by implementing the plan in small steps (often through controlled experiments), studying the results of the implementation, then acting on what has been learned about the process to improve it, and, finally, returning to planning for additional change.

The application of this approach to state preschool programs can be illustrated with examples from Massachusetts and New Jersey, both of which have collected data with the express goal of discerning what programmatic elements and policies need improvement. In 1990, Massachusetts' conducted a study of teachers' practice in inclusive preschool classrooms to assess the effect of the state's policies promoting inclusion.[64] The study identified the contextual and policy factors that impeded realization of the programs' goals. One specific finding indicated that despite success in inclusion, many school staff did not have confidence that traditional early childhood programs could meet the educational goals they had for young children with disabilities. As a result of this study, the Department of Education funded institutions of higher education to offer three consecutive years of summer courses on inclusion to teachers and administrators of early childhood programs—free of charge—in order to increase their understanding of the benefits of inclusion.[65]

New Jersey has instituted several evaluative feedback mechanisms as part of its state-funded Abbott preschool program, as well. For example, districts engage in systematic self-appraisals of strengths and areas in need of improvement. The self-appraisal tool is aligned with the state's program implementation guidelines, as well as the field's standards regarding developmentally-appropriate curriculum and assessment.[66]

In addition, a partnership between the New Jersey Department of Education's Office of Early Childhood Education and several state institutions of higher education conducts assessments of classroom quality, including support for language, literacy, and mathematics development. These assessments have been conducted on a large sample throughout the districts and are repeated annually to track changes over time. Information from the classroom assessments informs statewide professional development planning for teachers and master teachers. New Jersey also has helped districts and teachers focus on effectively individualizing children's education through implementation of the Early Learning Assessment System (ELAS). The ELAS uses teachers' observations and children's work samples to both evaluate children's emerging skills and determine how teaching and the learning environment should be adjusted to enhance their development.[67]

Helping parents and other stakeholders judge preschool quality. A greater understanding of how "good" programs actually are—or are not—might also help increase the educational effectiveness of preschool programs by concurrently increasing demand for high-quality programs. Children's test scores at kindergarten entry, however, are not by themselves a valid indicator of preschool quality. They most likely reflect family background and the abilities a child brought to preschool. Even without relying on test scores it can be difficult to gauge the quality of preschool programs. This difficulty stems in part due to a child's inability to accurately report to his or her parents about the characteristics of programs. Parents may also overestimate quality,[68] or not be knowledgeable about the specific components that play a role in producing it.[69]

A number of states have adopted quality rating systems for licensed child care programs as a means for increasing the available information about quality and providing the public with an easy way to judge it. For example, North Carolina's child care centers can be rated with between one and five stars, with five stars indicating the highest level of quality. The number of

stars a program has received is shown on their operating license, which must be displayed in an area that parents are able to view on a daily basis. Furthermore, parents can "bank on" these stars in terms of the quality of any particular program. In order to receive three, four, or five stars, programs must allow the quality of all of their individual classrooms to be assessed by trained, university-based observers using the well-known *Early Childhood Environment Ratings Scale*.[70] Programs cannot receive five stars unless each individual classroom is also rated "good" in terms of quality.[71]

While further work is necessary to determine the extent to which quality rating systems are related to effectiveness, such an approach within the state-funded preschool sector might educate parents and other stakeholders about the overall quality of programs in their communities. This knowledge could in turn fuel an increased demand for both high-quality preschool programs and expanded efforts to assist programs in improving their effectiveness.

Policy Recommendations

Parents, educators, and policymakers increasingly realize the importance of publicly funded preschool programs as a means for enhancing children's kindergarten readiness and later academic outcomes. As these programs grow in enrollment and funding, scrutiny of their educational effectiveness will increase, as will the importance of ensuring programs are highly effective. Yet, many states have standards and funding levels that are unlikely to support the quality necessary for effective education of young children. Even those with adequate standards and funding cannot depend on these alone to assure that programs are highly effective. As a consequence, the outcomes previously experienced by children enrolled in model programs may not be realized in all of this country's state-funded preschool programs.

Setting realistic goals and providing adequate financial resources. Fortunately, there are practical steps that policymakers can take to increase the effectiveness of their programs, whatever their current policies. First, all states should have realistic objectives for preschool education based on the resources available. While goals such as "all children should obtain their full potential" or "closing the achievement gap" are laudable, it should be recognized that no single policy or program—including preschool education—will fully achieve such goals. Preschool education can make substantial progress toward these goals, but standards and resources must be proportional to the progress expected.

For example, consider the goal of bringing all children in poverty up to the national average on language and cognitive abilities by kindergarten entry. The only programs to convincingly demonstrate gains of this magnitude are multi-year programs with exceptionally good teacher-child ratios and well-paid, highly qualified staff under strong supervision. Such programs are much more expensive than the typical state-funded preschool program. Programs of lesser duration and intensity can still make substantial progress toward that goal (and can have a high benefit-cost ratio), but should not be expected to fully accomplish it. A more modest goal of eliminating one-third to half of the achievement gap at kindergarten entry would be more reasonable for even higher quality state preschool programs at age four with current standards and funding levels.

Given a fixed budget, policymakers often face a choice between increasing access or program effectiveness. Achieving the best balance in each state's particular circumstances is admittedly not easy. Stretching resources can reduce program effectiveness and jeopardize achievement of the program's goals. Also, political support for a program depends in part on its quality. Yet, restrictions on enrollment exclude children who could benefit from the program and can reduce political support for the program, thereby limiting its claim to the resources necessary for quality. The long-term goal should be to assure that a program's resources are adequate to achieve its goals in terms of effectiveness *and* enrollment.

Attention to program standards. Effectiveness can also be improved by attending to program standards. Such standards include staff-child ratios, class size, teacher qualifications, supervision and support, and length of day. Much remains to be learned about the precise contributions of variations in program characteristics to program effectiveness. In addition, given that the effectiveness of any preschool initiative also relies on the needs of children in particular communities, standards may differ depending on the population served. To learn more about the standards that are appropriate for a community's specific needs, policymakers must be willing to test changes in policy on at least a demonstration or pilot basis.

Once appropriate standards have been determined, in order to maximize their capacity, they must be adequately funded. Attention must also be paid to policies that support such standards. For example, a requirement for highly qualified teachers without provision for adequate teacher compensation is unlikely to be effective.

Ongoing learning for teachers. Effective programs rely on various professional supports for teachers, including detailed learning standards. While the publication of a learning standards document is a "step in the right direction," policymakers can strengthen their content so that teachers have clear guidance about the skills, knowledge, habits, and dispositions children should acquire. States also can offer guidance on specific types of practices that contribute to children's achievement of these goals and how children's progress might best be assessed.

Effective programs provide opportunities for teachers to reflect on their practice and receive context-specific professional development. Policymakers should therefore assess what types of professional development are called for to continually improve teachers' practice and meet children's needs.

Focus on continuous improvement. Even when standards and funding levels are relatively high, continuous improvement processes are necessary to assure program effectiveness. Substantial improvements in effectiveness at reasonable cost may be expected if states adopt a continuous improvement process that includes careful monitoring and evaluation of their programs and efforts to improve. It seems unlikely that any state has completely exhausted the potential to significantly improve the educational effective of its preschool programs. Given the clear successes that have been attained thus far from different program improvement approaches, there is much that states can learn from each other's current efforts. Such efforts can be pursued at multiple levels within a system, as well.

At the same time, if policymakers and the general public are not aware of the factors contributing to educational effectiveness, programs may be quickly dismissed as “failures” that are beyond improvement. However, greater public support for all of these key variables might be realized if stakeholders are provided with a reliable source of information about program quality. Community demands for access to good programs might serve as an incentive for increased funding and technical assistance to programs, as well.

In sum, we know preschool programs can produce outcomes that are beneficial for children and the larger community in which they live. However, realizing their promise requires more than just providing children with access to programs. Instead, children need the opportunity to participate in preschool programs that are educationally effective due to a concurrent focus on quality, standards, adequate funding, and continuous improvement.

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