

Cost-Effectiveness of Early Childhood Development Programs

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Introduction

For over four decades, the positive effects of early childhood development programs on school readiness and performance have been documented in hundreds of research studies and in dozens of research syntheses (Karoely et al., 2005; Reynolds, Wang, & Walberg, 2003; Zigler, Gilliam, & Jones, 2006). In the past decade, findings of the accumulated evidence have been more widely disseminated to practitioners and policy makers (Carroll et al., 2003; Governor's Task Force, 2002). During this time, states began to substantially increase investments in preschool programs for both at-risk children and those at lower risk.

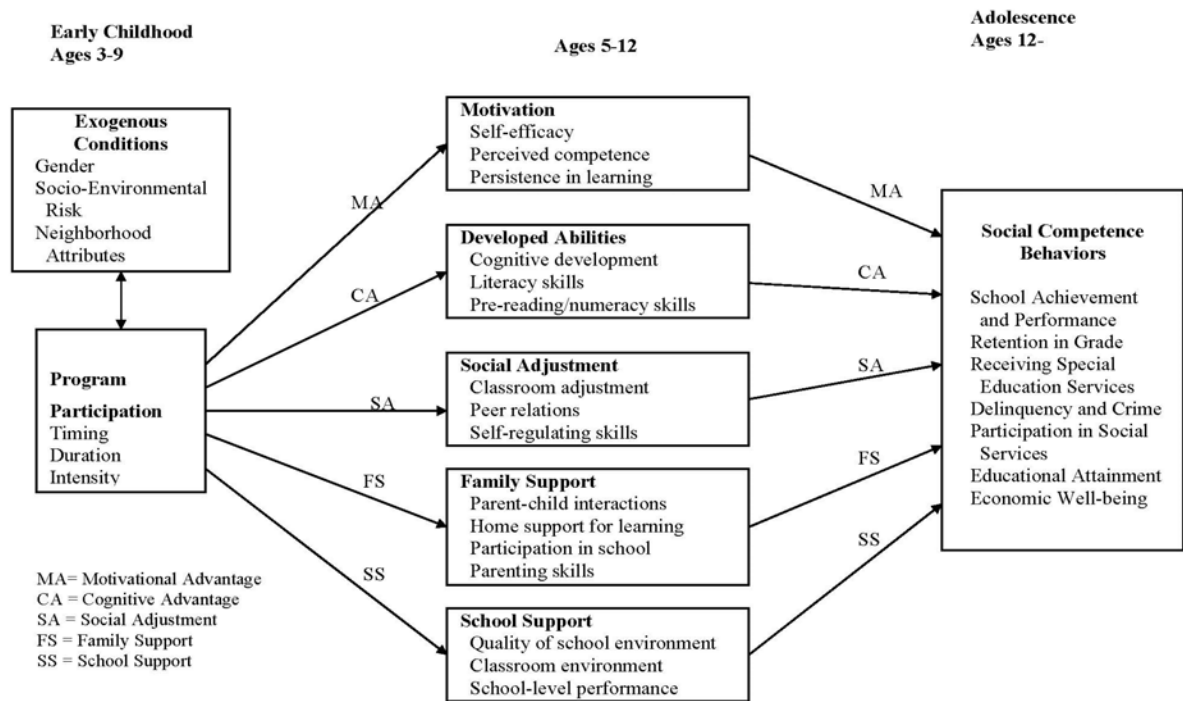
Today 38 states fund voluntary preschool programs for 3- and 4 year-olds. In 2005-2006, state-funded programs served 943,000 children at an annual expenditure of \$3.3 billion dollars (Barnett et al., 2007). This is a 13% increase in expenditures from the previous year. These programs complement the federally-funded Head Start program, early childhood special education, and related investments at the local level.

In this report, I review evidence on the effectiveness and cost-effectiveness of early childhood development (ECD) programs on school readiness, school achievement and performance, and long-term life course development. The focus is on preschool or prekindergarten programs for 3- and 4-year-olds and full-day kindergarten. Three questions are addressed: (1) What are the effects and economic benefits of preschool programs?, (2) What are the effects and economic benefits of kindergarten and school-age programs?, and (3) Which elements and principles of effectiveness are key to long-term effects? In summarizing results, I emphasize findings from cost-benefit analyses.

How Program Participation Influence Academic and Social Competence

Considerable research has documented that ECD programs impact later school performance and related outcomes through at least one of five processes or pathways (Reynolds, 2000). In short, these can be viewed as the "active" ingredients contributing to impacts of child development. As shown in Figure 1, the first is the cognitive advantage pathway, which indicates that the longer-term effects of ECD programs are due primarily to the enhancement of cognitive skills, including literacy skills, school readiness, and language and numeracy.

Figure 1. Paths from Program Participation to Social Competence Behavior



The family support pathway indicates that impacts on child outcomes derive from greater parental investments in children’s development, such as greater parent involvement in education, increased parenting skills, and greater resource supports for parents.

The school support pathway suggests that longer-term effects would occur to the degree that post-program school experiences reinforce learning gains. Enrollment in higher-quality schools and schools with positive learning environments would strengthen or maintain learning gains while enrollment in schools lower in quality would neutralize earlier learning gains.

The social adjustment and motivational advantage hypotheses indicate that noncognitive skills can be the mechanism of effects of ECD programs, such as increased classroom and peer social skills, positive teacher-child relationships, achievement motivation, and school commitment. The greater the magnitude of effect of program experiences on a particular pathway or multiple pathways, the more likely that enduring effects would occur.

Notably, programs that provide comprehensive services would be expected to impact several of the pathways simultaneously. This is one explanation for why comprehensive programs have been found to be more likely to have longer-term effects.

Cumulative Evidence on Preschool Impacts

Given the voluminous knowledge base, the effects of preschool ECD programs are summarized through findings from 19 reviews of preschool impacts published in the past decade (1995-2006). These reviews were selected as among the most thorough in assessing short- and longer-term effects of both model and large-scale programs (contact the author for additional information). Table 1 shows the most frequently cited programs along with the last age of follow up as of 2006. To be included, the programs had to include a center-based early education or preschool component.

Program	Type	Age	Citations
Avance Family Support and Education	Large Scale	5	3
Carolina Abecedarian Project	Model	21	13
Chicago Child-Parent Centers (CPC)	Large Scale	21	14
Comprehensive Child Development Program (CCDP)	Large Scale	5	8
Consortium for Longitudinal Studies	Model	27	6
Early Training Project	Model	20	8
Educational Testing Service Head Start Study	Large Scale	8	6
Prenatal/ Early Infancy Project (PEIP)/Nurse-Family Partnership Program(NFP)	Model	15	8
Even Start	Large Scale	7	4
Harlem Training Project	Model	12	4
High/Scope Perry Preschool Program	Model	40	19
Houston Parent-Child Development Center (PCDC)	Model	11	12
Infant and Health Development Program	Model	8	11
Institute for Developmental Studies	Model	13	5
Louisville Experiment (Head Start)	Model	16	5
Maryland Head Start	Large Scale	17	4
Milwaukee Project	Model	14	8
New Haven Follow-Through Study	Large Scale	17	6
New York State Experimental Prekindergarten	Large Scale	9	3
Philadelphia Project	Model	18	7
PSID Head Start Longitudinal Study	Large Scale	25	3
Yale Child Welfare Research Project	Model	10	4

Two major conclusions are evident. First, many programs have assessed long-term effects into adulthood. Three quarters of the reviews reported effects at 5 or more years after the end of participation. This is rare for social programs and indicates that impacts on life course development and economic benefits can be accurately assessed. Second, the accumulated evidence includes both model programs, developed for research demonstration, and large-scale programs, developed for routine implementation by schools and other institutions. Consequently, the generalizability of the evidence for policy recommendations is much stronger today than a decade ago.

What are the main findings of the reviews? Of the hundreds of studies synthesized in the reviews, there is substantial evidence that preschool programs for mostly children at risk, positively impact cognitive skills, school achievement, social and emotional development as well as educational attainment, employment, and later social behavior. The average effect size on cognitive skills at or near school entry was 0.42 standard deviations, which is roughly equivalent to one-half of a year of growth associated with preschool participation. Average effects were also statistically and practically significant for social and emotional development, school achievement, delinquency and crime, grade retention, special education, school completion, and employment and earnings.

Effects and Economic Benefits of Three Preschool Programs

Before discussing the results of the cost-benefit analysis, Table 2 summarizes the three preschool programs and studies. In brief (see Reynolds & Temple, 2006; Temple & Reynolds, 2007 for details), all three programs provided high quality educational enrichment to children at risk in group settings characterized by small class sizes, a focus on language and cognitive skills, and well-qualified and compensated teachers. The Carolina Abecedarian Project (ABC) was the most intensive and lengthy, providing full-day, year round care for five years (Campbell & Ramey, 1995; Ramey, Campbell, & Blair, 1998). The High/Scope Perry Preschool Program (PPP) provided the most established and organized curriculum, which followed the Piagetian cognitive principle of child-initiated learning (Schweinhart et al., 1993). The Chicago Child-Parent Centers (CPC) provide the most comprehensive services by implementing an intensive parent involvement component, outreach services, and attention to health and nutrition (Reynolds, 2000; Reynolds et al., 2002; Sullivan, 1971). It also is the only program that became established in public schools.

A significant difference among programs was child to staff ratios. CPC had 17 children and a certified teacher and aide (8.5 to 1 ratio), which is most consistent with current practice. ABC, implemented in a university-based child care center, had 12 children and two teachers (6 to 1 ratio), neither of whom were certified. PPP had the most unusual structure with 24 children and 4 master’s level certified teachers in the classroom for an average ratio of 5.7 to 1. Moreover, unlike the other programs, Perry children were selected because they had IQ scores of 70 to 85.

Table 2. Background and Characteristics of Three Preschool Programs

Characteristic	Perry Preschool	Abecedarian	Child-Parent Centers
Years of operation	1962-1967	1972-1977	1983-1985
City and context	Ypsilanti, MI Urban	Chapel Hill, NC Rural	Chicago, IL Inner city
Location	Elementary school	University Center	Elementary school or adjacent to

Characteristic	Perry Preschool	Abecedarian	Child-Parent Centers
Number of sites	1	1	24
Child attributes	Low SES IQs of 70-85	Low SES High risk	Low SES Reside in Title I area
Race/ethnicity	100% Black	96% Black	93% Black 7% Hispanic
Entry age	3 years	1-4 months	3 years
Mean duration	1.8 years	5 years	1.6 years
Length of day	Part-day	Full-day	Part-day
Other components	Weekly home visits	Medical services Nutrition	Parent program Outreach Occasional home visits Health services
Mean class size	22	12 (Infancy) 12 (Preschool)	17
Mean child to staff ratio	5.7 to 1	3 to 1 (Infancy) 6 to 1 (Preschool)	8.5 to 1
Curriculum emphasis	Cognitive and social Child-initiated	Language and social Traditional	Language and social Teacher-directed
Staff compensation	Public school	Competitive with public schools	Public school
School-age services	None	K to grade 2	K, grades 1 to 3

Preschool Participation Enhances Children's Well-Being into Adulthood

The major long-term findings of the studies leading to economic benefits are shown in Table 3 (also see Masse & Barnett, 2002; Reynolds et al., 2002; Schweinhart et al; 1993). The estimated impacts of the programs are large and occurred 17 to 25 years after the end of preschool participation. Group differences are specific to preschool participation and are adjusted for child and family background differences between groups such as pre-program IQ, family SES, and other factors.

Table 3. Adjusted Means or Percentages for Program and Comparison Groups on Key Outcomes for Cost-Benefit Analysis

Outcome	Perry Preschool	Abecedarian	Child-Parent Centers
Original sample sizes (Program, Control)	58, 65	57, 54	989, 550
Sample recovery for high school completion (%)	94	95	87
Special education services by age 15/18 (%)	15 vs 34	25 vs 48	14 vs 25
Grade retention by age 15 (%)	ns	31 vs 55	23 vs 38
Child maltreatment by age 17	n/a	n/a	7 vs 14
Arrested by age 19	31 vs 51	ns	17 vs 25
Highest grade completed by age 21/27 (mean)	11.9 vs 11.0	12.2 vs 11.6	11.3 vs 10.9
High school completion by age 21/27 (%)	71 vs 54	70 vs 67 (graduation)	66 vs 54
Attend college by age 21/27 (%)	33 vs 28	36 vs 14 (4-year)	24 vs 18
Employed at age 21/27 (%)	71 vs 59	70 vs 58 (teen mothers)	n/a
Monthly earnings at age 27 (\$)	1219 vs 766	n/a	n/a

Note. For Perry, special education is for EMI placement by age 15. Ages for educational attainment and employment are 27 for Perry, 21 for Abecedarian, and 22 for Chicago.
ns = not significant; n/a = not available

Although the magnitude of estimated effects varied, participation in all three programs was associated with significantly lower rates of special education services up to and including adolescence. The impact on special education was large, as preschool participants had rates of special education that were 40-60% lower than the comparison group. Similar reductions in grade retention were observed for ABC and CPC programs. The Consortium for Longitudinal Studies (1983) showed similar results.

Participation in each program also was linked to significantly higher rates of high school completion up to age 27 as well as more years of education. Preschool participation was associated with about a one-half (CPC and ABC) to full year increase (PPP) in educational attainment. Program participants also had higher rates of postsecondary and college attendance, with ABC showing large differences in attendance at 4-year colleges.

On employment and earnings, only PPP has shown significant group differences but this may reflect the age at follow up assessment (27 versus 21/22 for the ABC and CPC). For ABC, differences in employment were largest for teen mothers of program participants. Employment and earnings are not currently available for CPC.

Finally, both PPP and CPC have demonstrated significant program effects on crime. These effects are large. Participation in PPP was associated with a 40% decrease in arrests by age 19 (from 51% to 31% ever arrested) whereas CPC was associated with a 33% reduction in juvenile petitions by age 18 (from 25% to 17% with 1 or more petitions). Only PPP has collected data on adult crime, and findings are consistent with those of earlier ages. The lack of crime prevention benefits in ABC may be due to the low base rates of crime in Chapel Hill, North Carolina or, more likely, to the relative absence of family services in the program. Overall, these findings show that the programs enhanced participants' general social competence over the first two decades of life.

Not shown are the substantial effect sizes for program participation on cognitive skills at the time of kindergarten entry, and on school achievement through the elementary grades. CPC participation also was associated with higher levels of parent involvement in school.

Summary of Results of Cost-Benefit Analyses

At a minimum, the economic return should equal the amount invested in the program--a return of at least one dollar per dollar invested. Estimates of economic benefits derive from three sources. Benefits to participants are returned to the child and parent attending the program but do not directly benefit others in society. These benefits include increased earnings capacity in adulthood projected from educational attainment as well as the benefit to parents from the provision of part-day care for children. Benefits to the general public include averted expenditures of remedial education and social welfare spending by governments, reduced tangible expenditures to crime victims as a result of lower rates of crime, and increased tax revenues to state and federal governments as a result of higher earnings capacity. Benefits to society at large include the sum of benefits to program participants and to the general public. Societal benefits are emphasized, which represent the total economic contribution of programs (Footnote 1).

As shown in Table 4, all three programs showed substantial economic returns of preschool into adulthood through government savings in education, justice system, and health expenditures and in increased economic well-being. The values are those reported in the CBAs for each program. All values are the average economic return per program participant in 2002 dollars using the procedures discussed earlier in the chapter.

Table 4. Summary of Costs and Benefits Per Participant in 2002 Dollars for Three Preschool Programs

Costs and Benefits	High/Scope Perry Preschool	Chicago Child-Parent Centers	Abecedarian Project
Program Costs (\$)			
Average program participant	15,844	7,384	35,864
For one year of participation	9,759	4,856	13,900
Program Benefits (\$)			
Total benefits	138,486	74,981	135,546
Net benefits (benefits-costs)	122,642	67,595	99,682
Total benefit per dollar invested	8.74	10.15	3.78
Public benefit per dollar invested (Benefit-cost ratio)	7.16	6.87	2.69

Note. Costs are program expenditures and do not include estimated costs for comparison-group experiences. Ages of study participants for economic analyses were 27, 21, and 22, respectively. The Abecedarian cost is relative to control group. The total cost per participant was \$67,225. Based on the actual costs, total and public benefits of Abecedarian Project per dollar invested are \$2.02 and \$1.44, respectively.

Although the costs of the programs are significantly different from each other, the economic returns of each program far exceeded the initial investment. The total economic benefits per participant, both measured and projected over the life course, ranged from \$74,981 to \$138,486. The net economic benefit per participant (benefits minus costs) for Perry was \$122,642 and for Abecedarian was \$99,682. The net economic benefit for the Child-Parent Centers, an established Title I program, was \$67,595. The benefit for ABC is especially salient given its relatively high cost. Despite the cost of full-day year-round care for five years, the program returned per participant nearly \$100,000. Indeed, using the actual cost of ABC (\$67,225) rather than the marginal cost (actual cost minus the costs of care for the comparison group) benefits substantially exceeded costs.

Table 5 also shows the economic benefits as a ratio of program costs. These ratios can be interpreted as the economic return per dollar invested, which is an indication of program efficiency. Benefit to cost ratios index the return on investment, whereby \$2 dollars per dollar invested would be a 100% return. All three programs showed a large return on investment based on data collected into adulthood, ranging from a total societal benefit of \$4 per dollar invested to \$10.15 per dollar invested. These are equivalent to a 278% to 915%

return on the dollar. The CPC program showed the highest benefit-cost ratio, reflected its relatively lower costs. The lower costs are primarily a result of a higher child to staff ratio in the classroom (8.5 to 1 versus less than 6 to 1 for Perry and Abecedarian). That a routinely implemented school-based program demonstrates positive returns is encouraging. The other school-based program, Perry Preschool, demonstrated an economic return of \$8.74 per dollar invested. At \$3.78 per dollar invested, ABC had the lowest benefit-cost ratio. This is not surprising given its high cost. In terms of public benefits alone (i.e., government and crime victim savings), benefit-cost ratios ranged from \$2.69 to \$7.16 per dollar invested.

In summary, the CBA findings show the high returns of investments in preschool education despite the differences in timing, duration, geography, time period, and content of the three programs. This consistent pattern of results strengthens the generalizability of findings to contemporary programs.

Effects of Contemporary State-Financed Preschool Programs

The consistent findings of the economic analyses of the Perry, Chicago, and Abecedarian programs despite their major differences in social context and instructional approach are encouraging evidence in favor of expanding preschool access. Nevertheless, the participants of the three programs were almost exclusively low-income, African American children. While there is no comparable evidence from studies of middle income families or from more diverse samples, research on the short term effects of state-funded preschool programs, which include more diverse samples by socioeconomic status and race/ethnicity, provide an indication of the extent to which the findings could provide a similar pattern of effects. Because intensive programs achieve their long-term effects initially from enhancing school readiness skills and because studies of current state-funded programs lack information on longer-term effects, I compare the estimated effect sizes on school readiness between intensive preschool programs with those more routinely implemented state-funded programs (e.g., Gilliam & Zigler, 2001).

Findings are reported in Table 5. For consistency, the impacts are reported in standard deviation units whereby a value of .20 or above is considered an educational meaningful difference in favor of program participants. Gilliam and Zigler (2001) assessed the impact of state-funded preschool on school readiness in preschool and kindergarten up to 998 in six states and the District of Columbia. Although the programs primarily served children at risk, participants were more heterogeneous on family income and race and ethnicity than those of intensive programs. They reported an average effect size of .36 standard deviations.

Table 5. Effect Sizes for State-Funded and Intensive Preschool Programs on School Readiness (Values are Standard Deviation Units)

Program/Study	Urbanicity / N of sites	SES attributes	Language-cognitive skills at age 5
State-Funded Preschool			
Gilliam & Zigler, 2001	Mixed	Lower income 7 states and cities	.36
Hustedt et al. 2007	Mixed New Mexico	Lower/Middle	.37
Hustedt et al. 2007	Mixed Arkansas	Lower/Middle	.30
Frede et al. 2007	Urban New Jersey	Lower income	.32
Barnett et al. 2006	Mixed Oklahoma	Lower/Middle	.26
Gormley et al. 2005	Urban Tulsa, OK	All SES	.58
Intensive Preschools			
CPC/Perry Preschool/ Abecedarian Mean	Mixed 22 sites	Low income	.66
Consortium for Longitudinal Studies (1983)	Mixed 13 sites	Low income	.50

Note. Language-cognitive skills was measured by one of following: IQ tests (only Perry, Abecedarian, and Consortium), cognitive, vocabulary/language skills, literacy, or early academic achievement. Age of assessments vary between end of preschool and beginning of kindergarten. Most of state-funded programs were average of receptive vocabulary and math skills.

Effects sizes for evaluations of state-funded programs for 4-year-olds implemented from 2002 to 2006 in New Mexico, Arkansas, New Jersey, and Oklahoma ranged from .26 to .58. These are statistically and educationally meaningful. Note that the effect sizes for language/vocabulary and math skills are averaged, as the assessments were identical across states. The strong effect size for the Tulsa was for the universal Oklahoma prekindergarten program (Gormley et al., 2005) that served children from all SES backgrounds.

While findings are generally limited to short-term effects, recent studies show benefits at the end of kindergarten and beyond for state-funded programs (Frede et al., 2007; Schweinhart, 2002) and for other large-scale programs (see Table 1).

In summary, findings of the evaluations consistently show positive and meaningful effects in many states for both universal and targeted programs. However, effects sizes are smaller than for intensive preschool programs but the reach of the state-funded programs is greater.

Cost-Benefit Analyses from Policy Simulations

To estimate the economic benefits of high-quality but routinely implemented preschool programs, several researchers have conducted cost-benefit simulations that either modify assumptions of actual the cost-benefit analyses of longitudinal analyses of model programs or make projections from correlational data linking short-term outcomes such as achievement scores to educational attainment, income and criminal behavior, which are more easily translated to economic benefits. Three such analyses are summarized below. All indicate that more widely implemented preschool programs for 3- and 4-year olds would be likely to yield benefits than significantly exceed costs.

Using short- and long-term data from 58 evaluation studies published from 1967 to 2003, Aos et al. (2004) estimated an economic return of \$2.36 return per dollar invested for preschool programs for low-income 3- and 4-year-olds. In 2003 dollars, the estimated cost per child was \$7,301 (which was based on the CPC program) and societal benefits of \$17,202. It should be noted that the estimates were based on studies that investigated long-term outcomes such as educational attainment and studies limited to short-term outcomes such as achievement, which were used to make long-term projections. Moreover, some benefit categories such as intangible crime-victim benefits, were not included.

Karoly and Bigelow (2005) estimated the economic benefits of universal access to one year of preschool education at age 4 in California. Based in part on cost-benefit findings from the CPC program and assuming a 70% participation rate, the estimated return to California society at large was \$2.62 per dollar invested. The most conservative estimates were about \$2 return per dollar invested and the most liberal were about a \$4 return per dollar invested.

A broader national analysis by Lynch (2007) used modified estimates from the cost-benefit analysis of the CPC program (Reynolds et al., 2002) to generalize across states and in the country at large. It was estimated that by the year 2050, a high quality targeted preschool program for 4-year-olds would cost \$6,300 (2006 dollars) per child and provide a return per tax dollar invested of \$3.18 in government budget savings alone. For a universal access program, the return per tax dollar invested was estimated at \$2.00 for government budget savings. Considering all societal benefits (budget savings, justice system and child welfare savings, and increased earnings), the long-range annual benefit per tax dollar invested was estimated at \$12.10 for a targeted program and \$8.20 for a universal access program.

The Effects of Full-Day Kindergarten

Although there are no cost-benefit studies of the effect of full-day kindergarten (FDK) over half-day kindergarten, many studies have examining achievement gains at the end of kindergarten and in the early school grades. Aos et al. (2007) synthesized the results of 23 well-designed comparison-group studies of the effects of FDK on academic achievement and related outcomes. The average effect size of FDK on achievement at the end of kindergarten was .18 standard deviations for all children and .17 for economically disadvantaged children. This is equivalent to roughly a 2-month increase in achievement. This relatively small

advantage largely disappeared by first grade and did not re-emerge later. The average effect size was .01 at the end of first grade, .048 at second to third grade, and .00 at fourth and fifth grade. These findings include analyses of the Early Childhood Longitudinal Study, which tracks a national sample of 20,000 kindergartners from 1998. Aos et al. (2007) reported that the net cost per child for implementing FDK is \$2,611 in Washington State. This cost would be expected to vary by state. Based on the available evidence, the benefit-cost ratio of FDK relative to half-day kindergarten is approximately zero. Assuming no other benefits are achieved, the economic return is likely to close to zero.

Key Principles of Effectiveness of Early Childhood Development Programs

Findings summarized in this review indicate that greater investments in high-quality preschool and school transition programs are warranted. Since nearly two in five children do not enroll in center based preschool programs, and the quality of services that many receive is not high, the ECD programs summarized in the review provide effective models to be used in the design of coordinated early childhood systems. Research on these three programs and on many others suggest five major principles that can enhance the effectiveness of early childhood development programs and to increase long-term economic benefits.

The first main principle is that a coordinated system of early education is in place beginning at age 3 and continuing to the early school grades. Program implementation within a single administrative system in partnerships with communities can promote stability in children's learning environment which can provide smooth transitions from preschool to kindergarten and from kindergarten to the early grades. The three major programs we reviewed were either housed in elementary schools or provided continuity of services between preschool and formal schooling. This is a "first decade" strategy of promoting child development. In the movement to universal access to early education, schools could take a leadership role in partnership with community agencies. More generally, programs that provide coordinated or "wrap-around" services may be more effective under a centralized leadership structure rather than under a case-management framework. The CPC program, for example, is an established program in the third largest school system in the nation. Findings from the cost-benefit analysis of a complete cohort CPC participants gives a good indication of the size of effects that could be possible in public schools, the largest administrative system of any universal access program.

A second major principle of effective ECD programs is that the teaching staff should be trained and compensated well, preferably with earned bachelor's degrees, certification in early childhood, and competitive salaries. These characteristics are much more likely under a public school model of universal access, notwithstanding the need for established partnerships with community child-care agencies. It is no coincidence that the three major programs reviewed in the chapter followed this principle. Being located in public schools, the Perry and CPC programs were implemented by teachers with at least bachelor's degrees and appropriate certification in early childhood. They were paid on the public school salary scale, and Perry teachers received a 10% bonus for working in the program.

Third, educational content should be responsive to all of children's learning needs but special

emphasis should be given to cognitive and school readiness skills through a structured but diverse set of learning activities. All of the cost-effective programs reviewed had a strong emphasis on the development of cognitive and language skills necessary to do well in school within a responsive learning environment. Child to staff ratios of less than 9 to 1 in preschool help as well. The curriculum appeared to less important since the programs spanned from Perry's child-initiated approach to Chicago's blended, teacher-directed approach.

A fourth principle for effective preschool education is that comprehensive family services should be provided to meet the different needs of children. As child development programs, preschool programs must be tailored to family circumstances and thus provide opportunities for positive learning experiences in school and at home. Those with special needs or who are most at risk benefit from intensive and comprehensive services.

Finally, greater commitment to on-going evaluations of effectiveness and cost-effectiveness is needed. Even today, cost-benefit analyses are rarely conducted. This state of affairs limits full consideration of the effects of alternative programs. Paramount in conducting cost-benefit analyses is the availability of longitudinal studies of programs for children and youth. These studies are more likely to accurately assess the total impact of program participation.

Policy Recommendations

1. Increase state and federal investment in high-quality, evidence-based preschool programs and school transition programs and practices. The amount of evidence of positive and enduring effects of high-quality preschool programs is unprecedented. There is not only a critical mass of evidence from long-term cost-benefit analyses, but increasingly strong evidence from state-financed prekindergarten that participation is associated with sizeable increases in school readiness and transition to elementary school. These demonstrated increases in many programs are critical to the emergence of enduring effects. Economic analyses of the likely economic effects of upscaled and sustained programs consistently show that even under modest assumptions, prekindergarten programs for 4-year-olds would be expected to return more than \$2.00 per dollar invested. Considering a wider spectrum of effects that have been tested in other programs such as CPC, the return is likely to be more than \$4.00 per dollar invested.

2. Use results of cost-benefit analysis to better prioritize funding of education and social programs. In a time of increasingly limited fiscal resources, greater scrutiny of existing programs and services becomes essential. Cost-benefit analysis and other impact evaluations are especially important because they can identify the most efficient use of taxpayer dollars for crime prevention and other outcomes. Although there are many criteria to be used in funding decisions and not all effective programs are analyzed for returns, increased funding for and use of economic analyses of social programs are some of the best ways to determine the most efficient use of public investments in young people.

3. Develop funding mechanisms to support the implementation of early childhood development programs in a more timely manner. Because the effects of early education occur for educational, economic, and social outcomes, policy makers should consider a

broader array of funding mechanisms to increase investments in the organization and implementation of effective ECD programs. It is important for state policy-makers to understand how long-term savings are achieved from initial investments. A similar issue arises at the level of state agencies. Most high quality ECD programs are broad in their impact, leading to reductions in a range of problematic outcomes and the promotion of a variety of positive developmental consequences. For example, investments in quality preschool programs not only benefit the educational system but also the welfare, juvenile justice and corrections systems. Among the new funding mechanisms to consider are the following:

--Issue state bonds for early childhood development programs that have a high probability of repayment within five to ten years.

--Develop a check-off box on the state income tax form for voluntary contributions to early childhood development funding.

--Redirect a portion of funds from remediation and treatment to ECD programs. would provide needed funds for early education. For example, in K-12 education, state Departments of Education and local school districts receive approximately \$13 billion dollars per year in Title I block grants but less than 5% goes to preschool.

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