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A Comparative Analysis of Pre -School Education in Learing Environment: Research and Policy Effects

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Abstract – Over the last several decades, participation in center-based preschool programs has become much more common, and public support for these programs has grown dramatically. Nevertheless, participation remains far from universal, and policies vary across states, as well as across options such as private child care, preschools, Head Start, and state pre-K.

Since policy makers typically have more alternatives than money, they face key questions about the value of preschool education, whom it should serve or subsidize, and which program designs are best. This brief reviews the research regarding the short- and long-term effects of preschool education on young children's learning and development. A detailed and comprehensive assessment of evidence yields the following conclusions and recommendations:

The idea of state-funded universal preschool has started to gain traction in recent years. Iowa already has a system in place to meet the needs of many preschool children; however, as of recent, the current system is in funding jeopardy.

Nebraska, on the other hand, does not have universal preschool available to its children and it is struggling to meet the needs of K-5 education funding. Each state struggles with the benefits versus the costs of preschool education for the state's children. This research brief will review the benefits of a preschool education as well as examine what the research says about fading effects on academic skills for students who attend preschool. This research brief will also highlight promising practices in eliminating fading academic effects in students who attend preschool in comparison to students who do not attend preschool.

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INTRODUCTION

Rapidly evolving preschool education poses challenges for local, state, and federal education policy. In 1960, just 10% of the nation's 3-and 4-year-olds were enrolled in any type of classroom. Less than a half century later, nearly three-quarters of children enroll in a preschool classroom at age 4 and about half do so at age 3.1 These trends have been accompanied by growth in private preschool education and child care, state-funded pre-K, preschool special education, and the federal Head Start program. Public programs currently enroll about half of those in programs at ages 3 and 4. Children are therefore served by programs that vary widely in enrollment, program design and operation, and this is true across and even within states. Issues of quality also arise out of this miscellany.

A recent study in California, for example, revealed that state pre-K offered the highest educational quality, but that educational quality averaged across all programs, public and private, was relatively low. This policy brief summarizes research regarding the short- and long-term effects of preschool education, with particular attention given to what is known about influences on program effectiveness. This information is relevant to public policy makers who must decide whether and how much to support various types of preschool programs, what standards to set for public programs, and how much funding to allocate.

KEY CHARACTERISTICS OF HIGH-QUALITY PRESCHOOL?

The quality of a preschool program determines how effective it is in helping children learn and develop—and whether it's a worth-while investment. To assist educators, community members, and policymakers in assessing the quality of their preschools, we worked with our colleagues at NIEER to compile 10 research-based benchmarks, which we briefly describe here.

The first four benchmarks specify the minimum teacher qualifications. Research shows teachers are

crucial. Better education and training for teachers can improve the interaction between children and teachers, which in turn affects children's learning.

Thus, we recommend the following: teachers should have a bachelor's degree and specialized training in preschool education[5] and should complete at least 15 hours of in-service training annually, while assistant teachers should have at least a Child Development Associate (CDA) or equivalent credential.

Benchmarks five and six focus on class size and staff-child ratios. Classes should be limited to 20 children at the most[6] and have no more than 10 children per teacher.[9] With smaller classes and fewer children per teacher, children have greater opportunities for interaction with adults and can receive more individual-ized attention, both of which are essential to their academic and social development Early learning standards are also critical to quality because preschool programs too frequently underestimate children's capability to learn. Clear and appropriate expectations for learning and development across all domains are essential.[10] Thus, benchmark seven calls for programs to address children's physical well-being and motor development, social/emotional development, approaches toward learning, language development, and cognition and general knowledge.

PRESCHOOL SCIENCE ASSESSMENT

The recent National Research Council report Early Childhood Assessment: Why, What, and How (Snow & Van Hemel, 2008) defines assessment as “gathering information in order to make informed instructional decisions” (p. 27). Educators and policy makers who would like to make informed decisions for early science instruction are limited in their efforts because science is not among the domains that are well represented in the catalog of reliable and valid assessments available to educators and researchers (see also Brassard & Boehm, 2007).

This seems to be true regardless of the purpose one might have for assessing science learning. That is, whether one is a classroom teacher who wishes to assess individual children's learning and skills to guide individualized instruction for her students, a researcher who speaks with a sample of children to assess the effectiveness of a curriculum or curricular program, or a researcher or administrator who observes a classroom to measure the quality of the environment for science learning, few comprehensive tools exist. In what follows, more detail is given on the state of science assessment and on the work of research teams making progress on these fronts.

The discussion begins by briefly addressing the everyday assessment that occurs in preschool classrooms when teachers observe and interact with children, then moves to descriptions of more structured, performance-based assessments used by educators to measure children's progress in scientific knowledge building (and other readiness domains). A discussion of program evaluation follows, with an emphasis on a new standardized measure that can be used in large-scale studies to assess the science readiness landscape for large groups of learners and to provide information about the strengths and weaknesses of particular programs. Finally, instrumentation to measure the quality of supports for science learning in preschool classrooms is reviewed. Given the links between overall classroom quality and children's readiness outcomes, it is assumed that high-quality classrooms for science learning will similarly be associated with positive learning outcomes in the domain. Of course, whether or not this assumption is correct is an empirical question that cannot be answered in the absence of psychometrically valid tools for assessing both learning outcomes and classroom quality.

EFFECTS OF VERY EARLY EDUCATIONAL INTERVENTION

Researchers also have studied the effects of early education and child care beginning before age 3, sometimes during the first year of life. The Abecedarian study employed a randomized trial to evaluate the effects of a full-day (six to eight hours) year-round educational program from about four months of age to kindergarten entry. This study followed 111 children from program entry through age 21 with a largely intact sample.

The Abecedarian program produced large initial gains in IQ that have declined over time, with effect sizes of about 0.75 at age 4, 0.50 at age 5, and 0.33 at ages 15 and 21. Effects on reading and math achievement averaged about 0.40 standard deviations from ages 8 to 21, with only a very slight decrease in magnitude over time. The program had large effects on grade retention and special education, reducing each by 23 percentage points. The study reports no statistically significant effect on high school graduation, but high school graduations (excluding GED) through age 19 were 67% for the treatment group and 51% for the control group, a 16 percentage point difference. Attendance at a four-year college was significantly different, 36% for the program group versus 14% for the control group.

There were broader effects, as well. At the young adult follow-up, the program group was more likely to have a skilled job, less likely to have become teen parents, and less likely to smoke marijuana. Effects were not found on social development or behavior during the program or in later delinquency and crime. However, control group involvement in crime and delinquency was low, making it difficult to improve on an already good outcome. A 16 percentage point difference in adult smoking is not statistically significant, but is similar to the observed difference in the Perry Preschool study. The program group also reported fewer depressive symptoms at age 21 (effect size of 0.42). Finally, the free child care appeared to have

improved mothers' long-term employment opportunities and earnings.

Other randomized trials replicate or partially replicate the Abecedarian findings. The Project CARE study compared essentially the same program as Abecedarian to a home visiting model and a no treatment control group.93 This study is limited by a smaller sample size (only 16 children in the center-based program, with 14 included at long term follow-up), and thus it has sometimes been combined with the Abecedarian data for analysis. The CARE study finds essentially the same pattern and magnitude of preschool effects on IQ over time. The home visitation program had no significant effects.

UNIVERSAL PRESCHOOL PROGRAMS

Universal preschool and the research to support it are very enticing for federal, state, and local government. Though there is much research on the benefits of prekindergarten education, those policymakers who do not support universal prekindergarten often cite a fading effect that has occurred in a few programs where students who have attended prekindergarten have shown gains at first but have regressed or stabilized compared to their peers growth who did not attend prekindergarten (Ramey et al., 2000). This section will review the current status of universal prekindergarten in the United States.

There appears to be no common definition of universal prekindergarten. Each of the 10 states who offer some type of universal prekindergarten education has interpreted universal as they have seen fit for their state and for their budget. According to H.R. 4060, The Universal Prekindergarten Act, universal prekindergarten was created to ensure that all children three, four, and five years old have access to a high-quality full-day, full-calendar year prekindergarten education (United States Congress, 2008). It does not appear that any state has been able to live up to the age range and program length suggested by this bill.

LEARNED FROM OTHER PRESCHOOL PROGRAMS?

State and local pre-K policies vary gready, making it difficult to generalize about programs nationally. For example, the High/Scope Perry Preschool was a public school program, but was far from typical. The Chicago Child-Parent Centers are closer to today*s public school programs in funding level and in features such as class size, teacher qualifications, and pay. Chicago's centers demonstrate what a carefully crafted, reasonably funded public school program can accomplish. A similar public school program for 4-year-olds was found effective in a rigorous study back in the 1960s.[21] This study involved about 500 children, and the program features were more similar to those of today's public school programs. A teacher and an aide staffed each preschool classroom of 17 children. Effects on cognitive abilities at kindergarten entry and at third-grade follow-up were impressive; they were comparable to the average effects in the meta-analysis for rigorous studies.

Looking across these three well-researched and effective public programs, we see that all three employed public school teachers who received intensive coaching and supervision, with regular in-depth discussion and feedback regarding teaching practices. That support for teachers likely contributed to the strong results and differentiates these programs from many others today.

CONCLUSIONS

Assessment in preschool justifiably concerns many people; they worry about the negative effects of certain kinds of assessments on young children. They fear that students experience feelings of inadequacy, confusion, pressure, or boredom if they are tested. The assessments described here include some that take advantage of the work products, conversation, and activities that are naturally part of children's experiences during the course of a typical preschool day. Other assessments may require that children take time out of their day, but these are often designed to be game-like and interesting for children. Assessment of young children also raises concerns if data from preschoolers, whose performances are more variable than those of older learners and who do not know the "importance" of performing well, are used to inform high stakes decisions about program and school effectiveness. As with assessment more generally, it is critical that the instruments be used for the purposes for which they were designed. Reviews of these issues can be found in recent review volumes (Brassard & Boehm, 2007; Snow & Van Hemel, 2008).

- Many different preschool programs have been shown to produce positive effects on children's learning and development, but those effects vary in size and persistence by type of program.

- Well-designed preschool education programs produce long-term improvements in school success, including higher achievement test scores, lower rates of grade repetition and special education, and higher educational attainment. Some preschool programs are also associated with reduced delinquency and crime in childhood and adulthood.

- The strongest evidence suggests that economically disadvantaged children reap long-term benefits from preschool. However, children from all

other socioeconomic backgrounds have been found to benefit as well.

- Current public policies for child care, Head Start, and state pre-K, do not ensure that most American children will attend highly effective preschool programs. Some attend no program at all, and others attend educationally weak programs. Children from middle-income families have least access, but many children in poverty also lack preschool experiences.

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