

FIRST THINGS FIRST EXTERNAL EVALUATION RESEARCH BRIEF

October 2010

Arizona Kindergarten Readiness Study

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First Things First is a statewide early childhood and health system-building initiative created by the passage of Proposition 203 in 2006.

The First Things First External Evaluation is being conducted by a tri-university consortium with faculty from the University of Arizona, Arizona State University, and Northern Arizona University.

To understand the impact of First Things First on children and families:

- We are collecting information from a variety of stakeholders, including children, parents, childcare providers, teachers, and other service providers.
- We are using a variety of methods to collect information, including case studies, surveys, and direct assessment of child skills and development.
- We are gathering and analyzing data from children and families across a broad age span from 2 months to 5 years.
- We will examine change over time between cohorts of children who have varying levels of participation to First Things First funded programs and services.
- We are ensuring inclusion of children and families that represent diverse ethnic and racial backgrounds and live in rural and urban communities across the state.

What is “Ready” for School in Arizona? A Snapshot of Beginning Kindergartners

Background

Over the last two decades, U.S. society has begun to place heavy academic demands on its young children. Thus, preparation for school has changed dramatically. Children are expected to arrive at school in good health and with the requisite social, emotional, and behavioral skills to adequately negotiate a kindergarten classroom. For example, today’s kindergartener is expected to arrive on the first day of school with the following skills:

- **Reading skills** – phonological awareness, letter knowledge, print awareness, writing, and interest in and appreciation of books;
- **Language skills** – receptive and expressive vocabulary skills, grammatical knowledge, and conversational skills;
- **Mathematics skills** – number concepts, number operations, geometry concepts, and spatial reasoning;
- **Social and emotional competencies** – the ability to relate to teachers and peers in positive ways, and the ability to manage feelings and behaviors in appropriate ways;
- **Self-management skills** – the ability to use the restroom independently, feed and dress oneself, follow verbal directions;
- **Physical abilities** – sit and listen for 10 minutes, use scissors, use pencil/crayons/markers, walk, climb stairs, run without falling.

However, children enter school with widely varying experiences and skills. While some children have participated in preparatory experiences, such as preschool, others have not engaged in any school-like experiences outside of their homes. Some children recognize letter symbols and sounds, numbers, shapes, and colors, and even read and write their names, while others haven’t begun to master these types of activities yet.

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Research Indicates that Preschool Attendance Enhances School Success

Over the years numerous research studies and meta-analyses of smaller model programs like the Perry Preschool as well as state-funded programs continue to show that preschool experiences enhance children's academic knowledge and social development.

A half century of research has consistently revealed that children's initial academic success in school was strongly correlated with family income and parents' educational level. This initial achievement gap due to parent education level and family income has proven difficult to reduce without targeted intervention measures—one of which has been providing high quality preschool experiences for children at risk for school failure.

Since the late 1960's, federal programs like Head Start have been effective in helping children from low income families have a greater likelihood of closing the achievement gap.¹ In the 1980's the demand for preschools and child care centers rose to meet the needs for working families with nearly 60% of the children in the United States attending some form of preschool. As of 2007, national figures show that 74% of 4-year-olds have

attended either public or private preschool programs.² In addition, over the years numerous research studies and meta-analyses of smaller model programs like the Perry Preschool as well as state-funded programs continue to show that preschool experiences enhance children's academic knowledge and social development.³

Arizona's First Things First Early Childhood Initiative

In 2006, Arizona citizens voted to establish First Things First, a state wide, comprehensive community-based, early childhood initiative aimed at improving learning, development and health through increased awareness and access to high quality preschool, family support and healthcare programs for children birth to age five. A comprehensive evaluation plan was put into place at the outset to measure progress throughout the initiative.

One facet of the evaluation, the Arizona Kindergarten Readiness Study, includes a biennial "snapshot" of Arizona's beginning kindergarteners in order to determine the general level of school preparedness across the state. Therefore, in the fall of 2009, 1,145 kindergarteners participated from 82 randomly selected schools across Arizona. Children in the study received a battery of readiness assessments covering areas of language, literacy, mathematics skills, and motor development. In addition,

¹ Barnett, W. S. *The battle over Head Start: What the research shows*. Paper presented at the Congressional Science and Public Policy briefing on the impact of Head Start, Washington, DC.

² The National Institute for Early Education Research (2009). *The State Preschool Yearbook*. New Brunswick, NJ: Rutgers University, Graduate School of Education. Retrieved from <http://nieer.org/yearbook/pdf/yearbook.pdf>.

³ Camilli, C., Vargas, Ryan, S., Barnett, W. S. (2010). Meta-Analysis of the Effects of Early Education Interventions on Cognitive and Social Development. *Teachers College Record*, 112 (3), pp. 579–620.

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parents and teachers also completed questionnaires regarding family, child, and classroom characteristics and parenting and teaching activities. Parents and teachers also completed checklists regarding the child's social and emotional competencies.

This brief presents some of the first findings from the Kindergarten Readiness Study which evaluated the baseline year of the early childhood initiative to determine the knowledge and skills of beginning kindergarteners in the state *prior* to the implementation of the initiative's full range of early childhood health, education and family support programs. Specifically, this report focuses upon some of the differences found in the areas of literacy and math between children who attended preschool and those who did not.

Preschool Attendance

Arizona's evaluation has shown so far that while 74% of children attend preschool in the state, attendance rates differ depending upon family income, parents' education level and primary language spoken in the home. Figure 1 shows that preschool attendance dramatically increases when family income is \$50,000 or greater. Preschool attendance is also higher when parents' education includes some college or higher education degree (see Figure 2). Finally, Figure 3 indicates that more English-speaking children (77%) attended preschool than Spanish-speaking (57%).

Figure 1. Percent of children attending preschool by family income

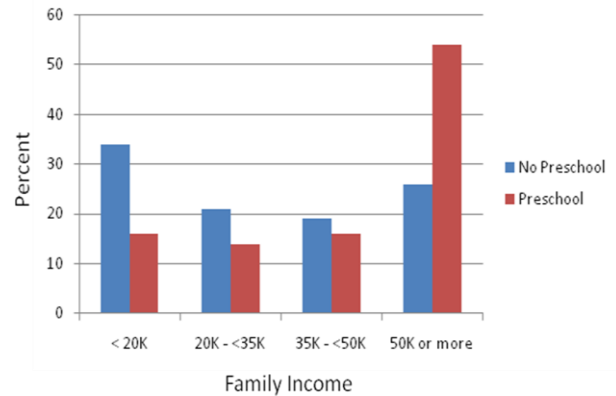


Figure 2. Percent of children attending preschool by parent education level

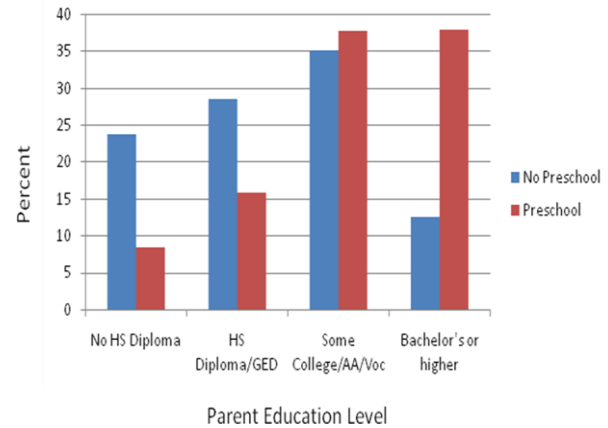
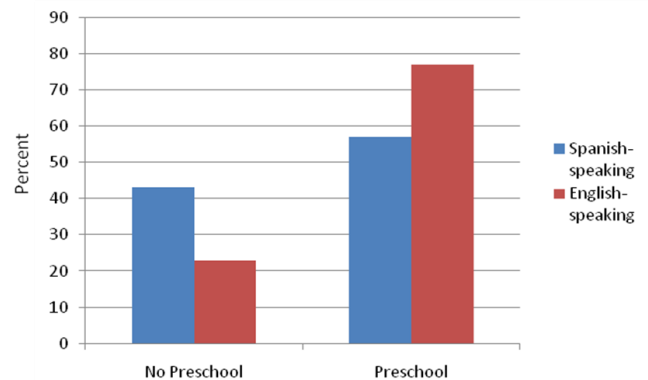


Figure 3. Percent of children attending preschool by primary language spoken in the home



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Preschool Attendance Improves Outcomes in Literacy and Math

Improved scores in rhyme awareness, a measure of literacy, and math skills (as rated by teachers) were found for all children whose parents indicated 10 hours or more a week of preschool. Table 1 presents the mean scores for rhyme awareness and math skills between the two groups. The findings clearly reveal the positive academic impact preschool makes on young learner's early reading and math knowledge and skill.

Table 1. Differences in mean rhyme awareness and math scores based on preschool attendance

	Rhyme Awareness	Math Skills
Preschool	8.27*	28.17*
No Preschool	6.94	26.46

Note: *Mean significantly different from no preschool at the $p < 0.05$ level.

Discussion

This initial evaluation of a representative sample of Arizona's beginning kindergarteners indicates that those who attended preschool for 10 or more hours a week prior to kindergarten had higher scores on a test of rhyme awareness and exhibited on average more math-related abilities during the fall of the kindergarten year. These findings were also similar to

outcomes observed in the kindergarten year (2007) for the sample of children chosen to be a part of the birth cohort in the Early Childhood Longitudinal Study (ECLS-B). Children in that study attending center-based preschool also had higher scores in reading and math assessments⁴.

Interestingly, in the ECLS-B study, gains were the highest for children of low-income and minority groups. Similar outcomes were also observed for these subgroups of children in Arizona's Readiness Study.

Implications & Recommendations

Findings from the Arizona Kindergarten Readiness Study support the critical importance of preschool experience prior to kindergarten as found in other national and state evaluations. Thus, it is important that all children across Arizona have access to high-quality preschool experiences which, indeed, is one of the major components of Arizona's First Things First early childhood initiative. The Quality First Program as designed seeks to increase access, enhance childcare center and childcare home quality, provide professional development as well as continuing education to early childhood teachers. The data reported here strongly support the continued investment in these types of programs.

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⁴ Koury, A, Votruba, E., & Levine-Cooly, R. (2010). *Prekindergarten and the Development of Reading and Math Skills Among At-Risk Children*. Paper presented at the the 32nd Annual APPAM Research Conference, Boston, MA.