RESEARCH UPDATE

Startzville Elementary School
Canyon Lake, Texas

Big Day for PreK Program Shows Positive Impact on Children's Language, Literacy, and Mathematics Development

PROFILE

School: Startzville Elementary School
Evaluation Period: 2010–2011 School Year
Model: Full-Day Four-Year-Old Preschool Program
Assessment: Early Childhood Inventory (ECI); Test of Preschool Early Literacy (TOPEL)

SCHOOL CHARACTERISTICS

Situated in Central Texas, Startzville Elementary School enrolls 662 students in Grades PreK–5. About three-quarters (72%) of the student population is white, 25% is Hispanic, approximately 2% is African American, and 2% are from other backgrounds. Approximately 65% of students are classified as economically disadvantaged, 11% are in special education, and 5% are in Bilingual/ESL Education.

IMPLEMENTATION OVERVIEW

In September 2010, Startzville Elementary began implementing *Big Day for PreK* in three PreK classrooms, to provide a more structured, hands-on approach than their previous preschool curriculum.

IMPLEMENTATION MODEL

Startzville implemented *Big Day for PreK* with four-year-olds in two full-day PreK classrooms, as well as in a half-day classroom that includes children with special needs and three- and four-year-old children of staff. There is a lead teacher in each classroom, and the full-day classes shared one teacher's aide. Implementation followed the research-based *Big Day for PreK* model, with three Big Experiences every day, and Small Group/Learning Centers time each morning (45 minutes) and afternoon (30 minutes).

PARTICIPANTS

A total of 28 students in the two full-day *Big Day for PreK* classrooms during the 2010–2011 school year comprise the sample described in this report. Of the 28 students, 50% are male, 11% are Limited English Proficient. 61% are "Caucasian", 34% are Latino, and 4% are African American.

MEASURES

Early Childhood Inventory (ECI)

The Early Childhood Inventory (ECI), a standardized one-to-one assessment, was used to assess students' academic progress. The ECI consists of four modules in key domains that have been shown to be most predictive of kindergarten readiness: Oral Language Development, Phonological Awareness, Alphabet Knowledge, and Mathematics. Each module consists of 2–4 subtests, on which students receive a score placing them at one of four stages of development: Pre-emergent, Beginning, Emergent, or Developed. In this study, the ECI was administered in September 2010, November 2010, and April–May 2011.

Test of Preschool Early Literacy (TOPEL)

The Test of Preschool Early Literacy (TOPEL) is a norm-referenced assessment consisting of three subtests related to early literacy: Print Knowledge, Definitional Vocabulary, and Phonological Awareness. Each subtest includes 27–36 items that are combined to provide a raw score and converted into percentile ranks, reflecting their standing among age-matched children from a normative, nationally representative sample. The three subtest scores are combined to provide a composite score, the Early Literacy Index. In this study, the TOPEL was administered in Fall 2010 and Spring 2011.

Interviews

All three classroom teachers (from the full-day and half-day classrooms) were interviewed in March 2011 about their perceptions of the program and its impact on student achievement.

RESULTS

ECI Results

Results of the Early Childhood Inventory (ECI) showed that students made progress in every domain (Oral Language, Phonological Awareness, Alphabet Knowledge, and Mathematics).

In the Oral Language module, children in *Big Day for PreK* classrooms made statistically significant gains on the Vocabulary subtest ($p < .001$), with the percentage of children who attained the Developed stage increasing from 7%–74%. Scores on the Sentence Structure subtest also increased with statistical significance ($p < .001$); the percentage of children who attained the Developed stage increased from 4%–81% (Graph 1a).

In Alphabet Knowledge, *Big Day for PreK* students made statistically significant gains in all subtests: Letter Recognition ($p < .001$), Letter Naming Fluency ($p = .003$), and Letter Sounds ($p < .001$). On the Letter Recognition subtest, the percentage of children who attained the Developed stage increased from 7% to 52%. Letter Naming Fluency scores showed that while 100% of students scored in the Pre-Emergent stage at the beginning of the year, 25% of students had moved to a more advanced stage by the end of the year. However, no children attained the Developed stage for this subtest. Finally, in the Letter Sounds domain, the percentage of students reaching the Developed stage increased from 7% to 85% (Graph 1b).

In the Phonological Awareness module, children in *Big Day for PreK* classrooms made statistically significant gains in all four subtests: Rhyme Identification ($p < .001$), Sound Matching ($p < .001$), Phonological Segmentation ($p < .001$), and Blending ($p = .009$). Graph 1c shows that the percentage of students attaining the Developed stage by the end of the year ranged from 74% to 100% across these four subtests.

In Mathematics, the *Big Day for PreK* students made statistically significant gains in all subtests. Number Sense scores increased ($p < .001$), with the percentage of children who attained the Developed stage increasing substantially from 0% to 59%. Gains in Geometry scores ($p < .001$) meant that the percentage of children in the Developed stage increased from 44% to 96%. Scores increased on the Patterns subtest as well ($p < .001$). The percentage in the Developed stage grew from 22% to 78%. Finally, Sorting scores also increased ($p < .001$); the percentage of children reaching the Developed stage in Sorting increased dramatically from 4% to 93% (Graph 1d).

TOPEL Results
A total of 28 children were assessed using the TOPEL in the fall and the spring. Results showed that, in *Big Day for PreK* classrooms, children achieved statistically significant gains in their composite scores as well as in each individual domain.

On the composite Early Literacy Index, raw scores increased with statistical significance from the fall to the spring ($p < .001$). Furthermore, percentile ranks also showed a statistically significant increase ($p < .001$) from an average of the 32nd percentile to the 56th percentile (Graph 2).

This means that in the fall, children scored, on average, the same as or higher than only 32% of same-aged children in a normative sample. By contrast, in the spring, the *Big Day for PreK* students scored, on average, the same or higher than 56% of age-matched children (Graph 2).

Results also showed statistically significant score increases in Print Knowledge ($p < .001$) and Phonological Awareness ($p < .001$). These gains corresponded with significant increases in average percentile rank: from the 25th percentile to the 57th percentile in Print Knowledge and from the 38th percentile to the 58th percentile in Phonological Awareness (Graph 2).

In Definitional Vocabulary, raw scores increased significantly from the fall to the spring ($p < .001$). Students also achieved a higher percentile rank in the spring (52nd percentile) compared to the fall (48th percentile), although this change in percentile was not statistically significant. The spring ranking above the 50th percentile indicates that, in this domain as in the others, *Big Day for PreK* students ended the year on target or above in their progress toward kindergarten readiness (Graph 2).
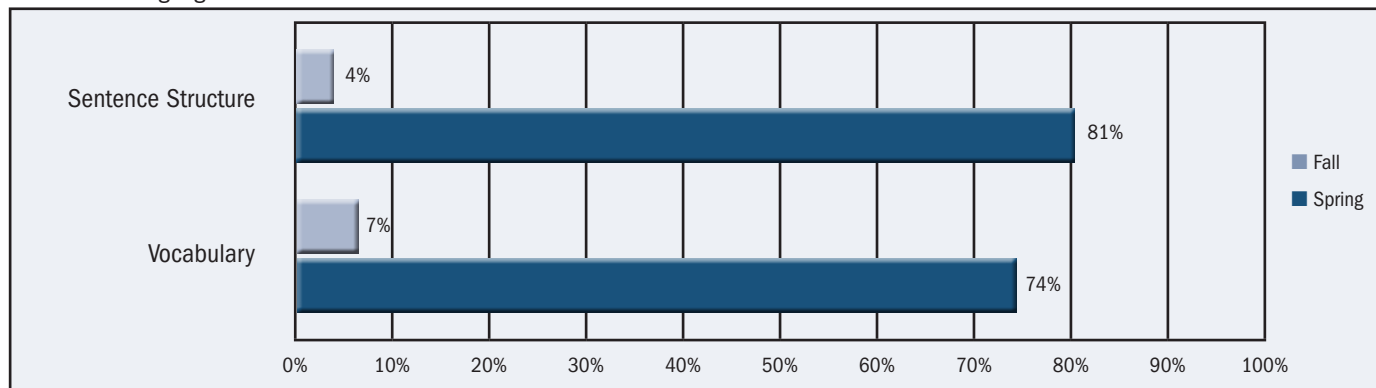
Teacher Interviews
Overall, teachers were quite positive about their experience implementing *Big Day for PreK*; both full-day teachers reported that their level of satisfaction with the program was a 9 out of 10. The teachers saw the curriculum as being effective in preparing students for kindergarten and identified progress in academic areas, as well as social development, as successes of the curriculum. Describing the engaging nature of the program, one teacher noted that in *Big Day for PreK* classrooms children "like to come to school."
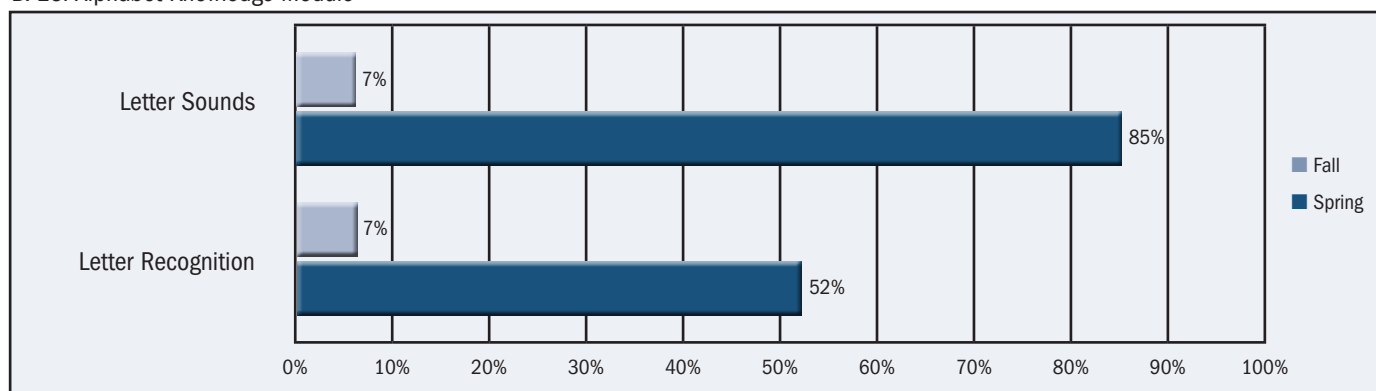
Graph 1
Startzville Elementary School *Big Day for PreK* Students (*N* = 27), 2010–11
Percentage of Students Achieving Developed Stage on Early Childhood Inventory (ECI) Subtests
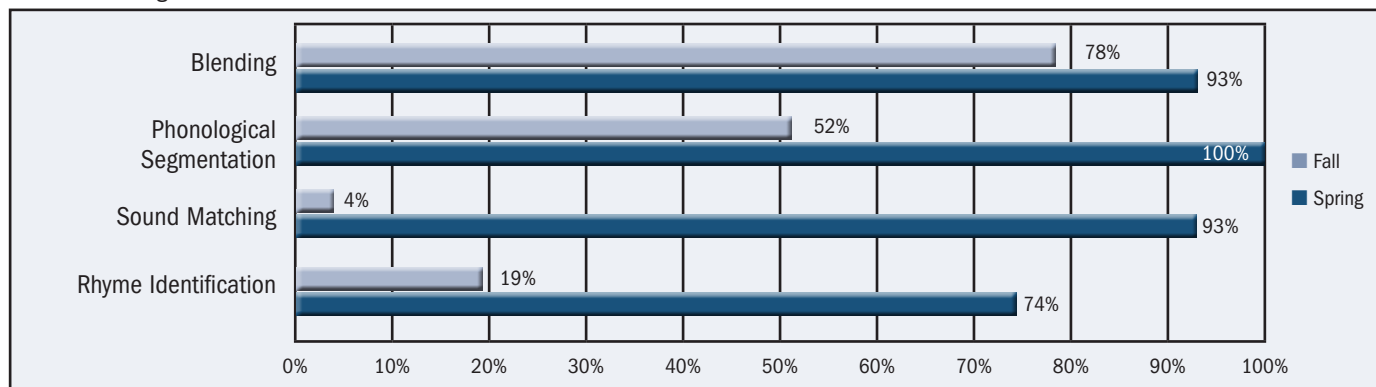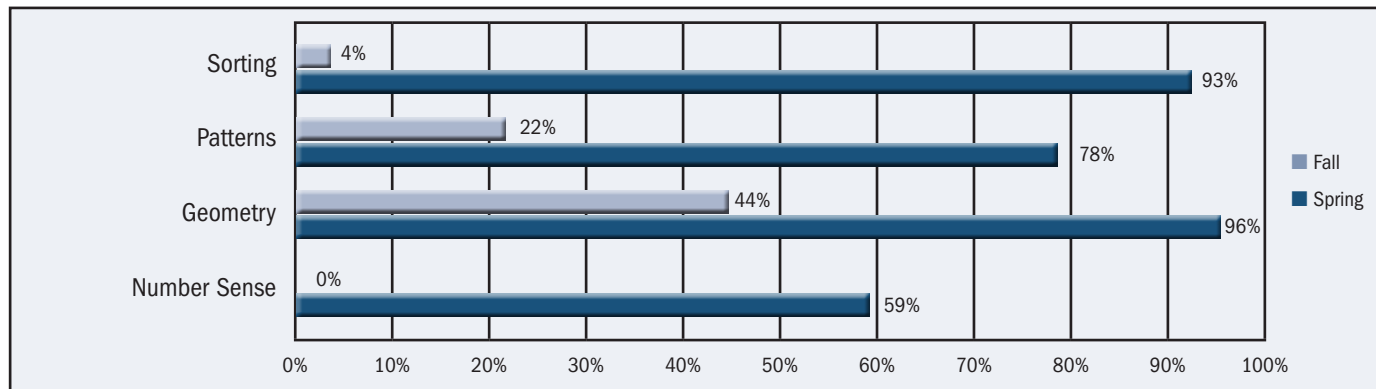
A. ECI Oral Language Module

Subtest		
Sentence Structure	Fall	4%
	Spring	81%
Vocabulary	Fall	7%
	Spring	74%

Legend: ■ Fall ■ Spring

Axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

B. ECI Alphabet Knowledge Module

Subtest		
Letter Sounds	Fall	7%
	Spring	85%
Letter Recognition	Fall	7%
	Spring	52%

Legend: ■ Fall ■ Spring

Axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

C. ECI Phonological Awareness Module

Subtest		
Blending	Fall	78%
	Spring	93%
Phonological Segmentation	Fall	52%
	Spring	100%
Sound Matching	Fall	4%
	Spring	93%
Rhyme Identification	Fall	19%
	Spring	74%

Legend: ■ Fall ■ Spring

Axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

D. ECI Mathematics Module

Subtest		
Sorting	Fall	4%
	Spring	93%
Patterns	Fall	22%
	Spring	78%
Geometry	Fall	44%
	Spring	96%
Number Sense	Fall	0%
	Spring	59%

Legend: ■ Fall ■ Spring

Axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

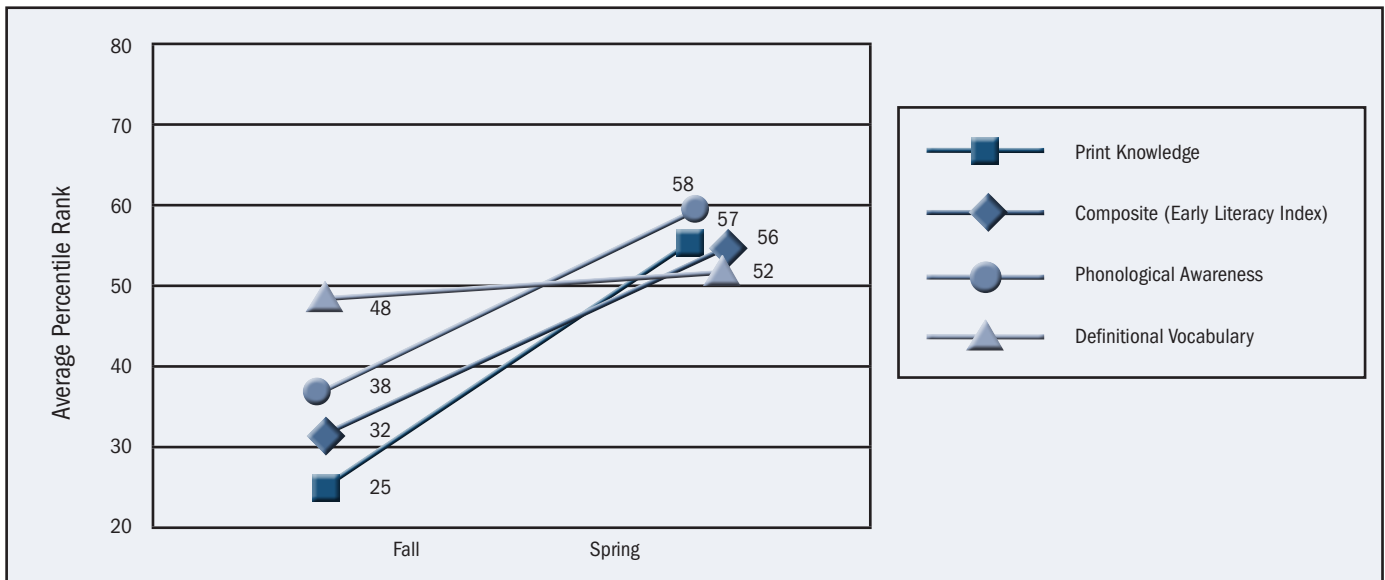**Graph 2**
Startzville Elementary School *Big Day for PreK* Students (*N* = 28), 2010–11
Mean percentile ranks from fall to spring for TOPEL subtests and the composite, Early Literacy Index

CONCLUSION

This report summarizes the findings of a mixed-methods evaluation of *Big Day for PreK* conducted during the 2010–2011 school year in Startzville, TX. Results indicate that *Big Day for PreK* students made substantial progress toward kindergarten readiness after one year in the program.

Results from the ECI and TOPEL show substantial growth in children's literacy and mathematics skills. On the ECI, the majority of children reached the highest level of skill, or the Developed stage, in

the Oral Language, Phonological Awareness, and Mathematics domains, and in all but one subtest in the Alphabet Knowledge domain. The *Big Day for PreK* students also achieved an average score above the 50th percentile for all TOPEL subtests (Print Knowledge, Definitional Vocabulary, and Phonological Awareness) as well as for the Early Literacy Index composite score. Along with high ratings from the teachers, the positive results on the ECI and TOPEL provide converging evidence that *Big Day for PreK* had a positive impact on preschool students' learning and development.

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