

Delaware Pilot Full-day Kindergarten Evaluation:

A Comparison of
Ten Full-day, Five Part-day and Four Charter
Kindergarten Programs
and
Comparison between First Grade Students who
attended Full-day Kindergarten and Part-day
Kindergarten

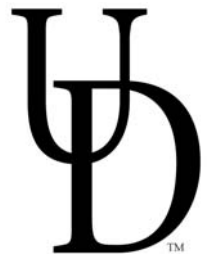
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Executive Summary
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Delaware Pilot Full-day Kindergarten Evaluation:

Part 1: A Comparison of Ten Full-day, Five Part-day, and Four Charter Kindergarten Programs during School Year 2005-2006

The Joint Finance Committee (JFC) of the Delaware General Assembly appropriated funds to establish ten pilot full-day kindergartens in school districts in 2004. In June 2005, the legislature appropriated funding for four of the original school districts and all charters offering full-day kindergarten, to provide full-day kindergarten for the 2005-2006 school year with the five remaining school districts also continuing to receive pilot full-day kindergarten funding. The JFC requested that an evaluation be conducted to assess the outcomes of full-day and part-day kindergarten models again in 2005-2006. This comparison analysis examines a set of full-day and part-day kindergarten classrooms. Four full-day charter school kindergartens and five part-day kindergartens agreed to participate in the comparative evaluation. Because the full-day charter school kindergartens are all located in Wilmington and have a demographic profile which is different than other kindergarten programs, these programs have been analyzed separately. Program characteristics of the full-day, part-day, and charter school kindergartens are found in the Table A below.

Table A. Program characteristics for three kindergarten models

Characteristic:						
Kindergarten Model:		Class Size	Teaching Hours	Special Education Eligibility	Free or Reduced Meal Eligibility	Teachers per Class
Charter (N=4)	Avg. Range	22.25 17-27	7.04 hrs. 6.67-7.25	1 (4.4%) 0-1	14 (62.6%) 10-24 students	1 1
Full-Day (N=10)	Avg. Range	21.3 14-25	6.57 hrs. 5.75-7.25	6.0 (29.8%) 1-12 students	8.9 (39.5%) 0-17 students	1.3 1-2
Part-Day (N=5)	Avg. Range	20.4 14-28	2.8 hrs. 2.25-3.25	1.8 (8.8%) 0-5 students	5.8 (27.8%) 0-10 students	1 1

Data for this evaluation was collected on the following variables: students' reading abilities, students' math abilities, students' writing abilities, students' acquisition of kindergarten performance indicators of the Delaware educational standards; amount of time of classroom instruction; and teachers' perceptions of students' readiness for kindergarten when they started kindergarten.

A summary of the findings of this evaluation follow. It is important to note that the school district full-day kindergartens and the charter school kindergartens served significantly more students who were at-risk for academic failure than did the school district part-day kindergartens. Therefore, this comparison is between students with many risk factors attending school district or charter school full-day kindergartens and students with far fewer risk factors attending school district part-day kindergartens. Subsequently, this difference may impact the results reported in the evaluation.

Findings

Readiness for Kindergarten

Teachers were asked to rate their students regarding their intellectual and social readiness for kindergarten. The table below provides a comparison of the proportion of children considered intellectually and socially ready for kindergarten. This is an indication of the proportion of students who started kindergarten with deficits of some type.

Table B: Kindergarten readiness of students attending three kindergarten models

Kindergarten Model:		Full-Day (N=199)	Charter Full-Day (N=50)	Part-Day (N=93)
Readiness:				
<u>Intellectually Ready for Kindergarten</u>	n	129 students	35 students	66 students
	%	63.3%	70.0%	71.0%
<u>Socially Ready for Kindergarten</u>	n	138 students	42 students	67 students
	%	69.3%	84.0%	72.0%

Kindergarten Student Outcomes

- Over the course of one academic year, students in school district full-day kindergartens and in charter school kindergartens made more progress in the development of writing skills as measured by the *Test of Early Written Language-2 (TEWL-2)* than students in part-day kindergartens. Between a fall administration of the *TEWL-2* and a spring administration of the instrument, the kindergarten students in the charter schools gained 11.3 months of writing skills, students in school district full-day kindergartens gained 9.9 months of writing skills, and the students in school district part-day kindergartens gained 8.8 months of writing skills.
- The preliminary analysis of the reading scores at the end of the school year indicate that students in school district part-day kindergartens who receive free or reduced lunch tended to have the lowest of performance scores on a measure of discrete phonemic awareness skills.
- Regarding math skills, the assessments indicate that students' end of school year skills are similar regardless of the kindergarten program in which they participated.
- Regarding science, humanities, and social studies; the assessments indicate that students' end of school year skills are similar regardless of the kindergarten program in which they participated.
- By analyzing report card data on seven (7) kindergarten literacy and math indicators from five (5) school districts which had both full-day and part-day kindergarten classrooms in this

evaluation, it was found that the school district full-day kindergarten classes had a greater percentage of at-risk students than part-day kindergarten classes (54.1% vs. 36.5%), and an equal or greater percentage of the students in the school district full-day kindergarten classrooms achieved the benchmark performance indicators compared to the percentage of students in the school district part-day kindergarten classrooms.

Classroom Instruction

The table below provides a comparison of the amount of time spent and the proportion of time used in the three kindergarten models. Teachers provided weekly schedules of their classroom activities. From this information, this table provides comparisons for three major activities that occurred during the school week. The “basic” activities include preparing for the school day, meeting basic needs of children, preparing for lunch, and departure from school.

Table C. Average number of minutes per week spent in literacy, basic activities, and mathematics in three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=10)	Charter Full-day Kindergarten (N=4)	Part-day Kindergarten (N=5)
Use of Time:				
Literacy	Average %	747.2 minutes 37.91%	596.5 minutes 28.68%	395.0 minutes 48.05%
Basics	Average %	335.2 minutes 17.01%	662.5 minutes 31.86%	78.0 minutes 9.49%
Math	Average %	273.6 minutes 13.88%	274.3 minutes 13.19%	142.3 minutes 17.31%

Part 2: A Comparison between First Grade Students who attended Full-day Kindergarten and Part-day Kindergarten

In June of 2004, the Joint Finance Committee of the Delaware General Assembly appropriated funds which funded pilot full-day kindergartens in nine school districts and one charter school. An evaluation of the outcomes of these students at the end of the 2004-2005 school year was conducted and the outcomes of the full-day kindergarten students were compared with the outcomes of students in eight randomly selected part-day kindergarten programs. The students from the ten pilot full-day kindergartens were monitored during the 2005-2006 school year in order to assess their outcomes as first graders. The students who had received full-day kindergarten services during 2004-2005 were matched with students who were demographically similar and had attended a part-day kindergarten in a Delaware school district during the 2004-2005 school year.

Table D. Characteristics of first graders in this evaluation who had attended three kindergarten models.

Kindergarten Model:		Special Education Eligibility	Free or Reduced Lunch Eligibility
Full-Day (N=174)	n %	31 17.8%	79 45.7%
Part-Day (N=175)	n %	16 9.1%	61 34.9%

Data for this evaluation was collected on the following variables: students' reading abilities, students' math abilities, students' writing abilities, students' acquisition of first grade performance indicators of the Delaware educational standards; and teachers' perceptions of students' readiness for first grade when they started first grade.

Findings

First Grade Student Outcomes This data on the first graders was collected in February of 2006, which is considered to be the middle of the school year for students.

- On measures of discrete phonemic awareness skills (such as decoding nonsense words) those first graders who attended school district full-day kindergartens had better skills than students who attended school district part-day kindergartens. For those students who were eligible for free or reduced lunch in first grade, those who attended school district full-day kindergartens achieved higher scores than their counterparts who had attended school district part-day kindergartens.
- In the area of math skills, first graders who attended school district full-day kindergarten and students who attended school district part-day kindergarten performed at similar skill levels on the mathematics assessment. Because of the risk factors associated with many of the students who attended full-day kindergartens, it would have been expected that those who attended school district full-day kindergarten would not have performed as well.

- Concerning their writing skills, of the 161 first graders who attended school district full-day kindergarten, 142 (88%) were rated as having average or above writing skills for first graders; of the 150 first graders who attended school district part-day kindergarten, 136 (85.1%) were rated as having average or above writing skills for first graders.
- When assessing their academic knowledge, as assessed by the *Woodcock Johnson III*, those first grade students who attended school district part-day kindergartens performed better than first grade students who attended full-day kindergartens.
- Of the 28 first grade literacy and mathematics indicators assessed on report cards, more of the first graders who attended school district full-day kindergartens were rated as proficient on 15 of the indicators in comparison to the first graders who attended school district part-day kindergartens; a similar proportion of first graders who attended school district full-day kindergarten and part-day kindergarten were rated as proficient on nine of the indicators; on two of the indicators, a greater proportion of first graders who attended school district part-day kindergartens were rated as proficient than those who attended school district full-day kindergartens.

Limitations

As with any program evaluation, there are limitations to these findings. The most significant limitation to this evaluation is the lack of randomization of the school district full-day kindergartens, the charter schools, and comparison part-day kindergartens. There are also important contextual and community variables that were not assessed for this evaluation, such as the child care experiences and other out-of-home activities in which children and families participate. In order to have a more complete understanding of the impact of full-day kindergarten, more data and analysis should occur related to students' outcomes and contextual variables. Many of the school district full-day kindergartens had more students who had risk factors. Because of this, it is difficult to accurately assess the differential impact of full-day kindergarten, indeed more benefits may have been detected for full-day kindergarten with a more similar sample of students.

Conclusions

First and foremost, at this point in time, full-day and part-day kindergarten models are serving different populations of students. As can be seen in both the 2004-2005 kindergarten evaluation (Amsden et al., 2005) and in this current evaluation, full-day kindergarten serves four times more students with disabilities and three times more students eligible for free or reduced school meals. While the stated long-term goal may be to make full-day kindergarten available to all students, presently, the model serves a disproportionate number of students with poverty and disability risk factors. Any discussion of the outcomes and benefits of a full-day kindergarten model need to take these factors into account.

Charter school full-day kindergarten is distinctly different than other full-day kindergarten because of the large number of children at-risk due to poverty. More than 60% of the students attending full-day charter school kindergarten in Wilmington are eligible for free or reduced school meals. This is twice the rate of part-day kindergarten and 50% greater than the rate of school district full-day kindergarten.

The findings of this evaluation indicate that at the end of the kindergarten, both part-day and full-day kindergarten students are achieving academically at similar levels, despite full-day kindergarten students having more risk factors than students attending part-day kindergarten.

As documented by the 2005 kindergarten evaluation (Amsden et al., 2005) and confirmed by this evaluation, a significant amount of time is spent on literacy activities for students participating in both full-day kindergarten and part-day kindergarten. The absolute amount of time spent learning literacy skills is almost twice as much in school district full-day kindergarten (12.5 hours per week) as in part-day kindergarten (6.6 hours per week). With this strong emphasis on literacy instruction, students who have begun their school experiences at-risk for academic success, are achieving at similar rates as those students without poverty and disability risk factors.

This trend appears to continue into first grade. Students who attended full-day kindergartens in 2004-2005 were found to be achieving at approximately the same levels as students who attended part-day kindergartens, despite having increased numbers of risk factors. This was also true for mathematics skills, writing skills, and general academic skills. The full-day kindergarten focus appears to be supportive of students with poverty and disability risk factors achieving similar outcomes in first grade as students attending part-day kindergarten who have fewer of those risk factors.

When asked about preparedness for kindergarten or for first grade, teachers indicated that few children are “ready” for school. At the kindergarten level, when teachers are asked about children’s proficiency in such areas as listening or following directions, the teachers indicated that fewer than 20% of children were proficient in those areas. A year later, after children had participated in kindergarten, first grade teachers reported that more than 50% of students were not proficient in specific skills expected of entering first graders, despite whether they attended full-day or part-day kindergarten.

When first grade performance indicators for Delaware educational standards were used to compare the academic outcomes of students attending full-day kindergarten with students attending part-day kindergarten, for 15 of the 28 performance indicators, students attending full-day kindergarten had more positive outcomes and for eleven of the performance indicators there was no difference between students attending full-day and part-day kindergartens. Eight of the 15 performance indicators where students attending full-day kindergarten had more positive outcomes were performance indicators related to literacy skills.

With the similar academic outcomes for students using standardized, norm-referenced assessment measures despite the model of kindergarten they attended, this difference in

outcomes on performance indicators of the Delaware educational standards may reflect the increased amount of time teachers had during kindergarten to provide instruction in the area of literacy.

There are a number of issues related to program offerings and program quality that were raised during this evaluation. Aside from the massive difference in literacy instructional time between full-day and part-day kindergarten, the availability of intervention services for students is also great. Students attending full-day kindergarten have twice as many opportunities to participate in reading interventions in addition to the already significantly greater intensity of reading instruction they receive. Students in full-day kindergarten are also far more likely to have speech-language interventions, counselor interventions, and English language learner interventions available to them than do students attending part-day kindergarten. The availability of these supports are especially important to students with risk factors such as poverty or disabilities.

Because of the comparably less intense instruction students in all three kindergarten models received in mathematics, student outcomes in mathematics are uniformly low. When compared to the kindergarten mathematics standards, the students in all three kindergarten models do not appear to be gaining the expected skills. This is reflected in the time spent on math instruction as reported by the kindergarten teachers. It is unclear from the data collected for this evaluation, however the trend may also be true for science outcomes as well.

The low estimates by first grade teachers about the preparedness of students entering their classrooms, despite the model of kindergarten which students attended is important to consider. While there was a slight trend that first grade teachers assessed students who attended part-day kindergarten as more proficient in expected social, school, and perceptual-motor skills, less than 50% of the students from both groups had the expected skills according to the first grade teachers. This means that students leaving kindergarten, despite attending full-day or part-day kindergarten, are not leaving with the skills expected for rising first graders. This may call for an examination of the focus of the curriculum and the instructional strategies being implemented in all kindergarten models.

Because the risk factors of poverty and learning disabilities experienced by many of the children in the full-day kindergartens, it would have been expected that they would not have achieved the same academic outcomes as kindergarteners without these risk factors. It is an accomplishment for those children in full-day kindergarten to be performing at a similar academic level as children who attended part-day kindergarten without those risk factors.

Finally, poverty and other risk factors exert a powerful influence on children's school adjustment and achievement. Many interventions seek to contravene these influences in order to support children's success in school. Based on the data collected for this evaluation, it appears that part-day kindergarten programming is least effective in ameliorating the negative impacts of poverty and risk. Full-day kindergarten, however, appears to have great benefits for students with the risk factors of poverty and disability.

References

- Bowman, B.; Donovan, S.; & Burns, M. (2001). *Eager to Learn: Educating our Preschoolers*. Washington, DC: National Academy Press.
- Brosterman, Norman. (1997) *Inventing Kindergarten*. Harry N. Abrams, Inc., New York
- Clark, P., Kirk, E. (2000) All-day kindergarten: Review of research. *Childhood Education*, 76(4), 228-231.
- Goffin, Stacie G. & Wilson, Catherine S. (2001). *Curriculum Models and Early Childhood Education, Appraising the Relationship*. Merrill Prentice Hall. New Jersey.
- Good, R. & Kaminski, R. (2002). *Dynamic Indicators of Basic Early Literacy Skills (6th Ed.): Administration and Scoring Guide*. Eugene, OR: University of Oregon.
- Good, R.; Simmons, D.; Kame'enui, E.; Kaminski, R.; & Wallin, J. (2002). *Summary of Decision Rules for Intensive, Strategic, and Benchmark Instructional Recommendations in Kindergarten through Third Grade* (Technical Report No. 11). Eugene, OR: University of Oregon.
- Hausken, E.G. & Rathbun, A.H. (2002) *Adjustment to Kindergarten: Child, Family, and Kindergarten Program Factors*. ED 463849.
- Hresko, W.; Herron, S.; & Peak, P. (1996) *Test of Early Writing Language – 2*. Pearson Education, Inc.: Bloomington, MN.
- Jordan, N. C.; Kaplan, D.; Nabors Oláh, L.; and Locuniak, N. (2006) Number Sense growth in kindergarten: A Longitudinal investigation of children at risk for mathematicx difficulties. *Child Development*, 77, 153-175.
- NAEYC/NAECPSD. (2003). Joint Position Statement: Early childhood curriculum, assessment, and program evaluation. <http://naecs.crc.uiuc.edu/position/pscape.pdf>
- Woodcock, R.; McGrew, K.; & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Itasca, IL: Riverside Publishing.

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A Comparison of Ten Full-day, Five Part-day, and Four Charter Kindergarten Programs and A Comparison between First Grade Students who Attended Full-day Kindergarten and Part-day Kindergarten

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Introduction

This descriptive program evaluation includes three major components examining the outcomes of students participating in full-day and part-day kindergartens. These components include:

- a comparison of literacy, math, and other academic skills for students currently in first grade who attended either a full-day or a part-day kindergarten program;
- a comparison of literacy and math skills and behavior of kindergarteners who attended a full-day or a part-day kindergarten program; and
- a profile of the state funded full-day kindergarten programs in comparison to a sample of part-day kindergarten programs.

In June 2004, the Joint Finance Committee (JFC) of the Delaware General Assembly appropriated funds to establish ten pilot full-day kindergartens. In June 2005, the legislature appropriated funding to continue the full-day kindergarten programs funded in 2004 and to fund full-day kindergarten in all charter schools offering full-day kindergarten. In June 2005, the JFC requested that an evaluation of the full-day kindergarten models continue to be conducted, building on the 2005 evaluation (see Amsden, et al, 2005).

This comparison analysis examines a set of school district full-day and school district part-day kindergarten classrooms. Four full-day charter school kindergartens and five school district part-day kindergartens agreed to participate in the comparative evaluation. The comparisons of outcomes and characteristics of the kindergarten programs are made among three groups:

- full-day school district kindergarten programs,
- full-day charter school kindergarten programs, and
- part-day school district kindergarten programs.

Although they are full-day kindergartens, all four of the charter school kindergartens in this program evaluation are located in Wilmington and place a heavy emphasis on serving children living in poverty and having many other risk factors. For this reason, those four full-day kindergarten models are examined separately. In June 2005, the Delaware Department of Education contracted with the University of Delaware Center for Disabilities Studies to conduct the evaluation of the ten school district full-day kindergartens, four charter school full-day kindergartens, and five school district part-day kindergartens.

Purpose of the Evaluation

Discussions between Department of Education personnel and Center for Disabilities Studies established the following program evaluation questions for this work:

1. What is the profile of students and program characteristics in all Delaware state-financed full-day kindergarten classrooms compared to a random sample of part-day kindergarten classrooms for school year 2005-2006?
2. For the 2005-2006 school year, how do students from full-day pilot kindergarten compare to a comparable part-day cohort, specifically on the variables of:
 - a. student academic outcomes (including literacy, mathematics, and kindergarten standards),
 - b. student behavior outcomes, and
 - c. student support services?
3. What are the student outcomes for first grade students who attended full-day kindergartens during school year 2004-2005 compared with a comparable sample of students who attended part-day kindergartens during school year 2004-2005 on the following variables:
 - a. student academic outcomes (including literacy, mathematics, and first grade standards),
 - b. special education referrals, and
 - c. teacher assessment of first grade readiness skills?

Based on these questions, a program evaluation design was developed by the Center for Disabilities Studies personnel and approved by Department of Education.

Population of Interest

For this evaluation, those kindergartens funded by local school districts and charter schools were considered. At the time of the evaluation, of the 16 public school districts in Delaware, nine districts received state funding to offer a pilot full-day

kindergarten in at least one school within the district. Of the charter schools offering kindergarten, all offer full-day kindergarten.

Of the ten school district full-day kindergarten classrooms in this evaluation, two, Appoquinimink and Smyrna, were located in separate early childhood centers, while the remaining eight were located in elementary schools. Two of full-day kindergarten classrooms were located in urban areas while the remaining eight were located in rural school districts. For the purpose of this evaluation, the types of programs providing kindergarten services are defined as follows:

1. **Kindergarten** - a program or class that serves as an introduction to school for four to six-year-old children.
2. **Full-day Kindergarten** - a program or class for four to six-year-old children that meets five days per week for at least five hours per day.
3. **Part-day Kindergarten** - a program or class for four to six-year-old children that meets five days per week for up to three hours per day.
4. **First Grade** - a full-day program or class for five to seven-year-old children that meets five days per week for at least 6 hours per day.

Evaluation Methods

Included in this section is information about the selection of kindergarten classrooms to be part of the program evaluation, the selection of the first graders to be assessed as part of the program evaluation, the measurement instruments used to assess student outcomes of the kindergarten programs, and the process for assessing student outcomes. In addition, methods of handling and analyzing the data are described as well as a final description of the sample for this program evaluation.

Kindergarten Classroom Selection

The ten pilot school district full-day kindergartens and four charter school kindergartens funded by the Department of Education were compared with five school district part-day kindergartens. The school district full-day kindergarten classrooms were in school districts that had received the pilot full-day kindergarten funding starting in 2004-2005. The charter school kindergarten classrooms were randomly selected, one each from the four charter schools in Wilmington. The part-day kindergartens were randomly selected from classrooms in the districts offering full-day kindergarten.

First Grade Student Selection

First grade students tracked for this program evaluation were from the ten pilot full-day kindergartens evaluated in 2004-2005 (see Amsden et al., 2005). They were

tracked and assessed during the 2005-2006 school year in order to determine their academic and behavioral outcomes as first graders. The students who had received full-day kindergarten services during 2004-2005 were matched with students who were demographically similar and had attended a part-day kindergarten in a Delaware school district during the 2004-2005 school year. The demographic characteristics used in the matching process were gender, ethnicity, special education service eligibility, eligibility for free or reduced school meals, living in an urban or rural community, and age.

Data Measures

The measures used for this program evaluation were based on the primary evaluation questions and a theoretical description of high quality kindergarten programming (see Appendix A). In addition to the variables identified by the primary evaluation questions, the measurement methods needed to ensure that the following variables were documented for both full-day and part-day kindergartens:

- curriculum content (e.g., literacy, mathematics) and
- classroom configurations, including number of teachers, number of students, and the backgrounds of students.

A description of the specific measures used for this evaluation follow.

Measures: Kindergarten Classroom Activities

The measures used to collect data about classroom activities and the content of classroom activities included:

- a. *Weekly Classroom Schedules*. These were collected once from each of the teachers. Teachers completed a standard data collection form developed by Center for Disabilities Studies personnel. This schedule provided information regarding children's weekly experiences in each of the kindergartens.
- b. *Adult Intervention Schedule*. These were collected once from each of the teachers. Teachers completed a data collection form developed by Center for Disabilities Studies personnel to provide information about the teachers and other educational professionals providing educational services to individual students or small groups of students either in the classroom or in another location in the school.

Measures: Kindergarten and First Grade Student Outcomes

To document the characteristics of the students enrolled in the ten school district full-day kindergartens, four charter school kindergartens, and five school district part-day kindergartens and to determine the skills they acquired during their enrollment in

kindergarten, the following measures were used:

- a. *Student Demographic Information*. This data was made available by the Delaware Department of Education.
- b. *Readiness Checklist*. This checklist was adapted from the *Successful Transitions and Relationships (STAR)* project conducted by Richard Fabes at the University of Arizona. The adapted checklist was used as a way to describe the readiness of students for kindergarten or first grade. The *Readiness Checklist* was completed by teachers in February of the school year reflecting on the students' readiness at the beginning of the school year. The checklist assesses teachers' perception of students' readiness in the following domains:
 - Social Development
 - School – Specific Instrumental Development
 - Reading and Writing
 - Logical Thinking and Use of Numbers
 - Perceptual-Motor Development
 - Student's Profile
- c. *Student Academic Progress*. Data for this variable was collected through the following means:
 1. *Student Report Card Grades*. This data was collected at mid-year to describe the students' acquisition of skills related to 4 performance indicators of the Delaware kindergarten standards and 28 performance indicators of the Delaware standards for first graders.
 2. *Measures of Student Skill Development*. Kindergarten and first grade students were assessed to determine their early literacy development, their mathematics abilities, their writing skills, and their general scholastic abilities. The four measures of student skill development were:
 - i. The *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)*, used to measure the early literacy skill of phonological awareness, alphabetic understanding, automaticity, and fluency. Students were assessed at mid-year and at the end of the academic year.
 - ii. The *Number Sense Battery* (Jordan, et al., 2003) was used as a measure of early math development. The skills assessed were counting and counting principles, number recognition, number knowledge, nonverbal calculations, story problems, and number combinations.
 - iii. The *Test of Early Writing Language-2 (TEWL-2)*, was used as a measure of early writing abilities. This instrument measures basic writing skills such as

conventions, idea conceptualization (e.g., essay themes or topics), and the ability to generate a writing sample.

- iv. The *Woodcock-Johnson III Tests of Achievement* was used as a standardized measure of general intellectual ability, specific cognitive abilities, scholastic aptitude, and achievement.

Data Collectors

A group of trained professional data collectors with experience as teachers and administrators in public schools were the primary data collectors for this program evaluation. The assessors attended four training sessions during the course of the evaluation to ensure their reliability in data collection.

Data Handling and Analysis

All data collected from the student assessments and materials returned by the teachers was immediately coded and entered into software designed to analyze social science data. All raw data was then stored in locked cabinets while all electronic data was kept on a secure server in files with password protection accessible only to personnel working on the program evaluation. For student information, identifying information was removed and a student identification number assigned in order to protect the identity of the students.

This evaluation of the outcomes of students in ten school district full-day kindergartens, four charter school kindergartens, and five comparison school district part-day kindergartens; and the comparison of the first grade students who had been in full-day kindergarten to students who had been in part-day kindergarten is designed to be a descriptive evaluation. Therefore, data for the two types of kindergartens are reported in frequencies, with means and frequencies calculated and reported for each variable. Where appropriate, a comparison test (e.g., analysis of variance) between the three types of kindergarten models has been conducted.

Sample

The fourteen full-day kindergartens and the five part-day kindergartens were operated by school districts or charter schools in buildings housing other kindergartens or other grade levels. In some schools, the full-day kindergarten classroom was the only full-day kindergarten in the building. In other schools the full-day kindergarten classroom observed was one of eight in the building. (See Appendix B for the full-day and part-day kindergartens in the schools participating in this evaluation.)

Information about the characteristics of the full-day and part-day kindergarten classrooms can be found in Table X. Data on the following variables were collected:

- length of the school day,
- number of students per class,
- number of students receiving special education services,
- number of students eligible for free or reduced lunch, and
- number of teachers assigned to the classroom.

Part I: Findings for the 2005-2006 Kindergarten Models

Kindergarten Profile

On average, the charter school kindergartens had the largest average class size with 22.25 students, the longest school day (7.04 hrs), and the greatest number (14) and proportion (62.6%) of students eligible for free and reduced school meals. For comparisons of the three kindergarten models, see Table 1.

Considering this classroom profile information, the charter schools and the school district full-day pilot kindergartens could be considered to be serving students at-risk for lower academic achievement due to the higher rates of students living in poverty and greater numbers of students with special needs being served in these classrooms.

Table 1. Program characteristics for three kindergarten models.

Characteristic:				Special Education Eligibility	Free or Reduced Meal Eligibility	Teachers per Class
Kindergarten Model:		Class Size	Teaching Hours			
Charter (N=4)	Avg.	22.25	7.04 hrs.	1 (4.4%)	14 (62.6%)	1
	Range	17-27	6.67-7.25	0-1 students	10-24 students	1
Full-Day (N=10)	Avg.	21.3	6.57 hrs.	6.0 (29.8%)	8.9 (39.5%)	1.3
	Range	14-25	5.75-7.25	1-12 students	0-17 students	1-2
Part-Day (N=5)	Avg.	20.4	2.8 hrs.	1.8 (8.8%)	5.8 (27.8%)	1
	Range	14-28	2.25-3.25	0-5 students	0-10 students	1

Demographics of Kindergarten Students

The demographic information of students was provided by the Delaware Department of Education. Data for students' ethnicity, gender, eligibility for free or reduced school meals, and eligibility for special education services was collected.

Ethnicity of Students

The ethnicity of the students attending the school district full-day kindergartens and the school district part-day kindergartens are more similar to each other than they both are to the ethnicity of the students attending the charter schools. More than 50% of the students who attended school district full-day kindergarten and school district part-day kindergarten were Caucasian and approximately one third were African American. Both school district full-day and part-day kindergartens served a similar proportion of Latino students (17.9% in school district full-day kindergarten and 15% in school district part-day kindergarten). The ethnicity of students in the full-day charter school kindergartens was overwhelmingly African American (96.6%). See Table 2 for details.

Table 2. Ethnicity of kindergarten students in three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=207*)	Charter School Full-day Kindergarten (N=89)	Part-day Kindergarten (N=100*)	Total (N=396)
Students' Ethnicity:					
Caucasian	n	114	1	52	167*
	%	55.1%	1.1%	52.0%	42.2%
African American	n	55	86	32	173*
	%	26.6%	96.6%	32.0%	43.7%
Latino	n	37	1	15	53*
	%	17.9%	1.1%	15.0%	13.4%
Other	n	1	1	1	3*
	%	.5%	1.1%	1.0%	.7%

* The ethnicity data was not available for eight students.

Gender of Students

The gender of the students across these three kindergarten models varied. Part-day kindergartens enrolled 57% female students while school district full-day kindergartens enrolled just over 47% female students. Charter school full-day kindergartens enrolled almost 61% male students (see Table 3 for details).

Table 3. Gender of kindergarten students in three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=211*)	Charter School Full-day Kindergarten (N=87*)	Part-day Kindergarten (N=100*)	Total (N=398*)
Gender of Students:					
Male	n	111	53	43	207*
	%	52.6%	60.9%	43.0%	52.0%
Female	n	100	34	57	191*
	%	47.4%	39.1%	57.0%	48.0%

* The gender data was not available for five students.

Eligibility for Free or Reduced Meals

The eligibility of students for free or reduced school meals also varied among the three kindergarten models. Less than 29% of students enrolled in the part-day kindergartens were eligible for free or reduced school meals. Slightly less than 42% of students in school district full-day kindergartens were eligible and 64% of students in the charter school full-day kindergartens were eligible. Eligibility for free and reduced school meals is used as a proxy for students living in poverty.

Table 4. Frequency of students in three kindergarten models eligible for free or reduced meals at school.

Kindergarten Model:		Full-day Kindergarten (N=213)	Charter School Full-day Kindergarten (N=89)	Part-day Kindergarten (N=102)	Total (N=404)
Eligible for Free or Reduced Meals:					
Eligible	n %	89 41.8%	57 64.0%	29 28.4%	175 43.3%
Not Eligible	n %	124 58.2%	32 36.0%	73 71.6%	229 56.7%

Special Education Services

Overall, 17.1% (n=69) of the kindergarten students (N=404) in this evaluation received special education services. There was a greater proportion of students receiving special education services in the school district full-day kindergartens than in either the charter schools or the school district part-day kindergartens (see Table 5 for details).

Table 5. Special education services received by kindergarten students in the three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=213)	Charter School Full-day Kindergarten (N=89)	Part-day Kindergarten (N=102)	Total (N=404)
Special Education Services:					
Learning Disability	n %	28 13.1%	1 1.1%	8 7.8%	37 9.3%
Speech	n %	16 7.5%	0 0.0%	4 3.9%	20 5.0%
All other disabilities	n %	10 4.7%	0 0.0%	2 2.0%	12 2.9%
Not receiving any special education services	n %	159 74.6%	88 98.9%	88 86.3%	335 82.9%

Participation in Kindergarten Interventions

Many schools have intervention services to address students who may need assistance with academic skill development. Data was collected about the type of intervention services, participation in intervention services, and amount of time students received intervention services for the three kindergarten models examined in this evaluation. Programs identified four non-special education intervention services: reading interventions, speech interventions, English language learner interventions and counselor interventions. More intervention services for students were available in school district full-day kindergartens than in either of the other two kindergarten models (see Table 6 for details).

Table 6. Intervention services available to kindergarten students in three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=10 classes)	Charter School Full-day Kindergarten (N=4 classes)	Part-day Kindergarten (N=5 classes)
Interventions:				
Reading	Time Mean	375.0 min./week	None reported	40.0 min./week
	Time Range	100-750 min./week		40 min./week
	# of Children	48 children		4 children
	# of Schools	5 schools		1 school
Speech	Time Mean	120.7 min./week	30.0 min./week	54.0 min./week
	Time Range	30-240 min./week	30 min./week	30-90 min./week
	# of Children	19 children	2 children	13 children
	# of Schools	5 schools	2 schools	5 schools
Counselor	Time Mean	30.0 min./week	None reported	None reported
	Time Range	30 min./week		
	# of Children	2 children		
	# of Schools	2 schools		
English as a Second Language	Time Mean	150.0 min./week	None reported	None reported
	Time Range	30-360 min./week		
	# of Children	5 children		
	# of Schools	4 schools		

Readiness for Kindergarten

The *Kindergarten Readiness Checklist* was used to assess teachers' perceptions of students' skill proficiency upon entering kindergarten. Teachers across all three kindergarten models thought that a vast majority of their students were not proficient in the skills that a student entering kindergarten could be expected to possess. Teachers in

charter schools reported that less than 10% of their students were proficient in specific skills (see Table 7 for details). A copy of the *Kindergarten Readiness Checklist* is found in Appendix C.

Table 7. Percentage of kindergarten students rated proficient by their teachers in three domains of development.

Kindergarten Model:	Full-day Kindergarten (N=199)	Charter School Full-day Kindergarten (N=50)	Part-day Kindergarten (N=93)
Kindergarten Readiness Factors:			
Social Development	15.3%	4.5%	14.8%
School-Specific Skills	16.8%	8.2%	17.8%
Perceptual-Motor Development	19.1%	9.8%	28.3%

The *Kindergarten Readiness Checklist* also included three items addressing teachers' perceptions of students' overall academic skills, intellectual readiness, and social readiness. Teachers were asked to rate the students below average, average or above average. Teachers across all three kindergarten models rated a majority of their students average or above in all three categories (see Table 8 for details).

Table 8. Percentage of kindergarten students teachers reported were average or above in three skill areas.

Kindergarten Model:		Full-day Kindergarten (N=199)	Charter School Full-day Kindergarten (N=50)	Part-day Kindergarten (N=93)
Readiness:				
<u>Academic</u> : Overall, how would you rate this child's academic skills?	n %	122 students 61.5%	35 students 71.5%	65 students 69.9%
<u>Intellectual</u> : Overall, how would you rate this child's intellectual skills?	n %	129 students 63.3%	35 students 70.0%	66 students 71.0%
<u>Social</u> : Overall how would you rate this child's social skills?	n %	138 students 69.3%	42 students 84.0%	67 students 72.0%

Classroom Instruction Projected Time Allocation

Teachers submitted weekly time schedules describing the routine of the students in the class. The routine included the amount of time spent on specific curricular content (literacy, math, science, social studies) as well as other instructional activities (aesthetics, computer, gross motor activities such as physical education). In addition to curriculum content areas, teachers also reported on how much time they spent helping students to transition, dress, eat, and complete other daily tasks. These activities are referred to as

“basics.” From these time schedules, the amount of time per week spent on the curriculum content areas and on basics was calculated.

Literacy development activities constituted approximately 48.0% of the curriculum content provided to students in school district part-day kindergartens and represents 385 minutes (6.4 hours) of the average 19 hour week. Students in school district full-day kindergarten spent 747.2 minutes (12.4 hours) a week working on literacy skills which represents 37.9% of the time in a full-day kindergarten. Students in charter school full-day kindergarten spent 596.5 minutes (9.9 hours) a week working on literacy skills, representing 28.6% of the amount of time in a charter school full-day kindergarten.

The percentage of time spent on literacy activities varied from a low of 37.91% of the day in school district full-day kindergarten to 48.0% of the school day in part-day kindergarten. For school district full day and part-day kindergartens the amount of time spent on literacy instruction exceeded the combined total time spent on mathematics, gross motor, science, social studies, aesthetics, fine motor and computer activities. In full-day charter school kindergartens, the combined total percentage of time spent on curriculum activities in mathematics, gross motor, science, social studies, aesthetics, fine motor and computer activities exceeded the time spent in literacy activity by only 2.3%. For details about how the instructional time was used across all three kindergarten models, see Table 9.

Table 9. Average number of minutes per week spent in curriculum content areas in the three kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=10 classes)	Charter School Full-day Kindergarten (N=4 classes)	Part-day Kindergarten (N=5 classes)
Use of Time:				
Literacy	Average Range %	747.2 min./week 500.0-920.0 37.9%	596.5 min./week 465.0-725.0 28.7%	395.0 min./week 220.0-580.0 48.1%
Math	Average Range %	273.6 min./week 135.0-450.0 13.9%	274.3 min./week 217.0-330.0 13.2%	142.3 min./week 86.25-195.0 17.3%
Gross Motor Instruction	Average Range %	64.0 min./week 20.0-175.0 3.2%	65.0 min/week 0 - 110.0 3.1%	0 min./week 0 0.0%
Aesthetics	Average Range %	147.75 min./week 58.0-252.5 7.5%	154.75 min/week 20.0-259.0 7.4%	9.75 min./week 0-45.0 1.2%
Science	Average Range %	113.1 min./week 60.0-225.0 5.7%	70.4 min./week 30.0-122.5 3.4%	59.75 min./week 0-120.0 7.3%
Social Studies	Average Range %	72.35 min./week 40.0-115.0 3.7%	50.63 min./week 0-122.5 2.4%	20.0 min./week 0-100.0 2.4%
Fine Motor	Average Range %	41.0 min./week 0-150.0 2.1%	5.0 min./week 0-20.0 0.2%	37.5 min./week 0-150.0 4.6%
Computer	Average Range %	27.8 min./week 0-70.0 1.4%	24.25 min./week 0-60.0 1.2%	29.75 min./week 0-70.0 3.6%
Basics	Average Range %	335.2 min./week 200.0-500.0 17.0%	662.5 min./week 425.0-850.0 31.9%	78.0 min./week 50.0-100.0 9.5%
Recess	Average Range %	149.0 min./week 0-300 7.6%	176.2 min./week 150.0-240.0 8.5%	50.0 min./week 0.0- 150.0 6.1%

Student Outcomes

Five measures of kindergarten student outcomes were collected for the students in the three kindergarten models. Results for each of these measures are below.

Early Literacy Skills: *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)*

Students’ literacy skills were assessed in the fall and spring of the academic year using the *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)* to assess students’ skills in initial word sounds, letter recognition, and the ability to sound out simple words. Based on a student’s score, he or she received one of three instructional support recommendations: “benchmark” (meeting the expected skill level), “strategic” (needing instructional support in a specific area of literacy development) or “intensive” (needing instructional support across all areas of literacy development. The percentage of students in the school district full-day kindergarten model receiving a benchmark recommendation increased almost 10% from fall to spring while the number of students in the part-day kindergarten model remained the same from fall to spring and the number of students in the charter school full-day kindergarten model receiving a benchmark recommendation declined over 12%. All three of the models experienced an increase in the number of students receiving an intensive instructional recommendation with the charter schools full-day kindergarten having a 21% increase in the number of students receiving an instructional recommendation of “intensive” (see Table 10 for details).

Table 10. Percentage and frequency of “Instructional Support Recommendations” in fall and spring for students in three kindergarten models.

Kindergarten Model:		Full-day Kindergarten		Charter School Full-day Kindergarten		Part-day Kindergarten	
		Fall (N=185)	Spring (N=167)	Fall (N=185)	Spring (N=167)	Fall (N=185)	Spring (N=167)
Benchmark	%	50.3%	59.9%	57.8%	45.6%	62.5%	62.0%
	n	93	100	52	36	55	49
Strategic	%	35.1%	19.2%	30.6%	22.8%	31.8%	24.1%
	n	65	32	26	18	28	19
Intensive	%	14.6%	21.0%	8.2%	31.6%	5.7%	13.9%
	n	27	35	7	25	5	11

Early Math Skills: *Number Sense Battery*

Students’ math skills were assessed in the fall and spring of the academic year using the *Number Sense Battery*. Five specific areas of math skills were assessed: counting, and number sense, which included nonverbal calculation, story problems and

number combinations. Individual student scores for each of these sub-scales were aggregated and a mean for students in the three groups of kindergarten were computed and change scores from fall to spring were calculated. Students in all three kindergarten models had similar skill levels in the five mathematics domains according to the *Number Sense Battery* at the beginning of the school year. Students in all three kindergarten models also showed improvements in all five math skill domains from fall to spring. No one model appears to be supporting a higher level of mathematics skill development in students (see Table 11 for details).

Table 11. Fall and spring mean and change scores for five math skills for students in three kindergarten models.

Kindergarten Model:	Full-day Kindergarten (N=10 classes)			Charter School Full-day Kindergarten (N=4 classes)			Part-day Kindergarten (N=5 classes)		
	Fall	Spring	Change	Fall	Spring	Change	Fall	Spring	Change
Counting max. = 13	10.3	10.6	+0.3	10.4	11.0	+0.6	10.3	10.9	+0.6
Number Sense max. = 36	16.2	21.6	+5.4	16.4	22.8	+6.4	15.2	22.5	+7.3
Three Components of Number Sense:									
Nonverbal Calculation max. = 8	4.1	5.0	+0.9	4.1	5.3	+1.2	3.7	5.5	+0.8
Story Problems max. = 8	2.1	3.5	+1.4	2.2	4.2	+2.0	2.0	3.8	+1.8
Number Combinations max. = 8	2.0	3.7	+1.7	2.3	3.7	+1.7	1.9	3.7	+2.8

The three of the items comprising the “number sense” domain of the *Number Sense Battery* are consistent with the Delaware mathematics performance indicators K.209 “connect representations of numbers less than 12 (e.g., concrete materials, drawings or pictures, mathematical symbols)” and K.210 “show whole/part relationships of whole numbers less than 10 (e.g. 10 is 6 and 4 10 is 3 and 7).” Students scores across the three kindergarten models indicate that students are not achieving benchmark regardless of the kindergarten program that they attend.

Early Writing Skills: of Early Written Language -2 (TEWL-2 Test)

Students’ early writing skills were assessed using the *Test of Early Written Language -2 (TEWL-2)* during the fall and spring of the academic year. Individual student scores were converted to an age equivalency. Percentage of students at or above

their age at testing was determined for each of the three kindergarten models. In the fall, a majority of students in all three kindergarten models were at or above their age level with students in the charter school full-day kindergarten model having the highest writing skills for their age levels. All three kindergarten models saw an increase in the number of students with writing skills at or above age expectancy. The charter school full-day kindergarten model saw a 7.8% increase in the percentage of students at or above age level in their writing skills while the part-day kindergarten model saw a 28% increase (see Table 12 for details).

Table 12. Percentage and frequency of students in three kindergarten models having *TEWL-2* “Basic Subtest” scores with age-equivalents equal to or greater than actual age.

Kindergarten Model:		Full-day Kindergarten	Charter School Full-day Kindergarten	Part-day Kindergarten
Time of Assessment:				
Fall	n	125	61	55
	%	62.5%	73.5%	59.8%
	N	200	83	92
Spring	n	152	65	79
	%	81.7%	81.3%	87.8%
	N	186	80	90
% Change		+19.2%	+7.8%	+28.0%

Academic and Intellectual Skills: *Woodcock-Johnson III Tests of Achievement: Kindergarten*

To measure students’ academic achievement skills, the *Woodcock-Johnson III Tests of Achievement* was used. In April 2006, students were assessed using three of the *Woodcock-Johnson III Tests of Achievement* subscales: “Understanding Directions,” “Picture Vocabulary,” and “Academic Knowledge.” Individual scores were converted to an age equivalency. The percentage of students at or above their age at testing was determined for each of the three kindergarten models in each of the three skill domains. For the domain of academic knowledge, students in all three kindergarten models displayed the same level of skill for their age. Students in the part-day kindergarten model displayed greater skills in “understanding directions” than did students in either of the full-day kindergarten models. Students in the part-day and charter kindergarten models had better vocabulary skills than did students in the full-day kindergarten model (see Table 13 for details).

Table 13. Percentage and frequency of students in three kindergarten models scoring at age level or greater on three sub-scales of the *Woodcock-Johnson III Tests of Achievement*.

Kindergarten Model:		Full-day Kindergarten	Charter School Full-day Kindergarten	Part-day Kindergarten
Achievement Areas:				
Academic Knowledge	n	149 students	66 students	65 students
	%	81.0%	80.5%	79.3%
	N	184 students	82 students	82 students
Understanding Directions	n	97 students	37 students	53 students
	%	52.7%	44.6%	66.2%
	N	184 students	83 students	80 students
Picture Vocabulary	n	87 students	50 students	49 students
	%	47.0%	60.0%	60.5%
	N	185 students	83 students	81 students

Academic and Intellectual Skills: *Students' Report Card Grades*

Midyear report card grades were collected to describe the kindergarten students' academic outcomes. Due to variety in the report cards among the schools and across the models, it was only possible to compare school district full-day and part-day kindergarten classes within the same school districts. Five school districts had both a full-day kindergarten and part-day kindergarten classrooms participating in the evaluation. The four performance indicators reported on district report cards for at least four school districts were:

English Language Arts:

- Uses conventional spelling for familiar words (K.104)
- Identifies 5-10 familiar words, including their names (K.128)

Mathematics:

- Recognizes and reproduces simple visual, oral and physical patterns attribute (K.218)
- Sort and Classify objects by a simple attribute (K.219)

At mid-year, for all four standards, more students in full-day kindergarten models were achieving the standards than students in the part-day kindergartens (see Table 14 for details).

Table 14. Students' achievement of four performance indicators from the Delaware kindergarten standards.

Kindergarten Model:		Full-day Kindergarten	Part-day Kindergarten
Kindergarten Performance Indicators:			
Write using invented/temporary spelling, demonstrating some letter/sound association (K.103)	n	55	50
	%	76.4%	72.5%
	N	72	69
Identifies 5-10 words (K.128)	n	60	52
	%	78.9%	72.2%
	N	76	72
Recognize and reproduce simple visual, oral and physical patterns (K.218)	n	43	32
	%	59.7	47.1%
	N	72	68
Sort and Classify objects by a simple attribute (K.219)	n	70	41
	%	97.2%	60.3%
	N	72	68

Summary of Findings for Kindergarten Students

Students enrolled in the school district full-day and charter school full-day kindergartens had more risk factors related to poor academic achievement than did the students enrolled in school district part-day kindergartens. Based on the data collected during the 2005-2006 academic year a number of findings were clear:

- 1) the percentage of students enrolled in the school district full-day kindergarten model recommended for benchmark instruction in literacy skills increased to virtually the same level as students in the school district part-day kindergarten models despite starting the academic year at a much lower level;
- 2) the percentage of students enrolled in the charter school full-day kindergarten model recommended for benchmark instruction in literacy skills decreased by over 12%;
- 3) the percentage of students in all three kindergarten models improved in math during the academic year, however, few students in any of the kindergarten models are achieving the performance indicators for the math standards
- 4) the percentage of students achieving to age level in the area of writing improved most from the beginning of the academic year for students in the school district part-day kindergarten model;
- 5) students in all three kindergarten models had similar academic knowledge as assessed by the *Woodcock-Johnson III Tests of Achievement*;
- 6) students in the school district part-day kindergarten model had better ability to follow directions than students in the other two models;
- 7) students in school district part-day kindergarten had better vocabulary skills than students in the other two models; and

- 8) more students in the school district full-day kindergartens had achieved standards in two reading and two math areas at a greater rate than students in the school district part-day kindergarten models.

Part II: Findings for the First Grade Students Participating in Part-day or Full-day Kindergarten in 2004-2005

The findings of the program evaluation of the 2004-2005 full-day kindergarten pilot classrooms indicated that students had positive outcomes in comparison to those students who attended part-day kindergartens (Amsden et al., 2005). In order to determine longer-term outcomes for students enrolled in full-day kindergartens, the Joint Finance Committee of the Delaware General Assembly requested that the students in the full-day pilots be tracked through their first grade experience and compared to students who had attended part-day kindergartens. The students who had received full-day kindergarten services during 2004-2005 were matched with students who were demographically similar and had attended a part-day kindergarten in Delaware school districts during 2004-2005. Despite the attempt to match students across the two kindergarten models, it was not possible to find an equal number of students who were eligible for special education who had attended part-day kindergarten in 2004-2005. One other area of difference between these two groups of students was their eligibility for free or reduced school meals (see Table 15 for details). Other than these two variables, the students in the two groups were demographically comparable.

Table 15. Characteristics of first graders in this evaluation who had attended two kindergarten models.

Characteristics:		Special Education Eligibility	Free or Reduced Meal Eligibility
Kindergarten Model:			
Full-day (N=174)	n	31	79
	%	17.8%	45.7%
Part-day (N=175)	n	16	61
	%	9.1%	34.9%

Demographics of Students in the Two Comparison Groups

The demographic information of students was provided by the Delaware Department of Education. In addition to special education eligibility and eligibility for free or reduced school meals, data for students' ethnicity and gender was collected.

Ethnicity and Gender of Students

The ethnicity of the first grade students who attended part-day and full-day kindergarten was similar. Approximately 50% of the students who attended both models were Caucasian. There was a slightly higher percentage of African American students who attended part-day kindergartens. The gender of the students in the two groups was essentially the same. See Tables 16 and 17 for details.

Table 16. Ethnicity of first grade students who had attended two kindergarten models.

Kindergarten Model:		Full-day	Part-day	Total
Students' Ethnicity:		Kindergarten	Kindergarten	
Caucasian	n	84	86	170
	%	48.3%	49.1%	48.7%
African American	n	52	60	112
	%	29.9%	34.3%	32.1%
Latino	n	25	27	52
	%	14.3%	15.4%	14.9%
Other	n	13	2	15
	%	7.5%	1.2%	4.3%
Total	n	174	175	349
	%	49.8%	50.1%	100.0%

Table 17. Gender of first grade students had attended two kindergarten models.

Kindergarten Model:		Full-day	Part-day	Total
Gender of Students:		Kindergarten	Kindergarten	
Male	n	93	96	189
	%	53.4%	54.9%	54.2%
Female	n	81	79	160
	%	46.6%	45.1%	45.8%
Total	n	174	175	349
	%	49.9%	50.1%	100.0%

Data Collection

Data for the comparison of the development of first grade students who had attended part-day kindergarten and students who had attended full-day kindergarten was collected during February 2006. Data was collected on teachers' perceptions of students' readiness for first grade; students' reading, math, and writing abilities; and students' acquisition of first grade performance indicators of the Delaware educational standards.

Readiness for First Grade

The *First Grade Readiness Checklist* was used to assess teachers' perceptions of students' skill proficiency upon entering first grade. As in kindergarten, teachers assessed that students who had attended part-day and full-day models of kindergarten were not proficient in the skills expected of students entering first grade. For all three proficiency categories (social development, school-specific skills, and perceptual-motor development) teachers assessed that a higher percentage of students having attended the part-day kindergarten model were proficient in the skills listed (see Table 18 for details). A copy of the *First Grade Readiness Checklist* is found in Appendix D.

Table 18. Percentage of first grade students who had attended one of two kindergarten models who were rated proficient by their teachers on three domains of development.

Kindergarten Model:	Full-day Kindergarten (N=145)	Part-day Kindergarten (N=164)
Readiness for First Grade:		
Social Development	28.64%	36.23%
School-Specific Skills	37.33%	42.16%
Perceptual-Motor Development	46.07%	49.06%

The *First Grade Readiness Checklist* also included four items addressing teachers' perceptions of students' academic ability, ability to adjust to first grade, their intellectual readiness, and their social readiness. Teachers were asked to rate the students below average, average or above average. Teachers rated a greater percentage of students who had attended part-day kindergarten as ready for first grade, intellectually ready, and socially ready (see Table 19 for details).

Table 19. Percentage of first grade students teachers reported were average or above on three readiness categories by two kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=145)	Part-day Kindergarten (N=162)
Readiness for First Grade:			
<u>Academic</u> : Overall, how would you rate this child's academic skills?	n %	94 64.8%	127 students 78.3%
<u>Adjustment</u> : Able to successfully adjust to the demands of first grade.	n %	103 students 71.0%	140 students 86.4%
<u>Intellectual</u> : Based on your experience, how intellectually ready is this child for first grade?	n %	99 students 62.8%	130 students 80.0%
<u>Social</u> : Based on your experience, how socially ready is this child for first grade?	n %	98 students 67.5%	145 students 89.5%

Student Outcomes

Five measures of first grade student outcomes were collected for the students who had attended the two kindergarten models. Results for each of these measures are presented.

Early Literacy Skills: *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)*

Students’ literacy skills were assessed at mid-year using the first grade *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)* to assess students’ skills in phoneme segmentation fluency, nonsense word fluency, and oral fluency. Based on a student’s score, he or she received one of three instructional support recommendations: “benchmark” (meeting the expected skill level), “strategic” (needing instructional support in a specific area of literacy development) or “intensive” (needing instructional support across all areas of literacy development). Slightly more students who had attended full-day kindergarten were recommended for benchmark instruction when compared to students who attended part-day kindergarten (see Table 20 for details).

Table 20. Percentage and frequency of mid-year “Instructional Support Recommendations” for first grade students who had attended one of two kindergarten models.

Kindergarten Model:		Full-day Kindergarten (N=161)	Part-day Kindergarten (N=153)
Risk Categories:			
Benchmark	n	118	108
	%	73.3%	70.6%
Strategic	n	34	33
	%	21.1%	21.6%
Intensive	n	9	12
	%	5.6%	7.8%

Early Math Skills: *Number Sense Battery*

First grade students’ math skills were assessed in February using the *Number Sense Battery*. Four specific areas of math skills were assessed: counting and number sense. Individual student scores for each of these sub-scales were aggregated and a mean for students who had attended the two kindergarten models were calculated. Students who had attended both kindergarten models had almost identical scores (see Table 21 for details).

Table 21. Mean scores for math skills of first grade students who had attended one of two kindergarten models.

Kindergarten Model:		Full-day Kindergarten	Part-day Kindergarten
Math Skill:			
Counting max.=10	Mean	8.5	8.6
	Range	5-10	1-10
	N	156	153
Number Sense max. = 36	Mean	30.4	30.8
	Range	4-36	13-36
	N	155	152

Early Writing Skills: *Test of Early Written Language-2 (TEWL-2)*

Students' early writing skills were assessed using the *Test of Early Written Language -2 (TEWL-2)* at mid-year. Individual student scores were converted to an age equivalency. Percentage of students at or above their age at testing was determined for each of the two groups of first grade students who had attended the two kindergarten models. The results of the *TEWL-2* indicate that the students who had attended the part-day and the full-day kindergarten models had virtually the same writing skills at the mid-point of their first grade year (see Table 22 for details).

Table 22: Percentage and frequency of first grade students who had attended one of two kindergarten models with scores at or above age equivalency using the *TEWL-2*.

Kindergarten Model: Subtest:		Full-day Kindergarten (N=161)	Part-day Kindergarten (N=160)
Basic subtest	n	147	149
	%	91.3%	93.1%
Contextual subtest	n	23	31
	%	14.3%	19.4%
Global Score	n	109	108
	%	67.7%	67.5%

Academic and Intellectual Skills: *Woodcock-Johnson III Tests of Achievement: First Grade*

In January 2006, the *Woodcock-Johnson III Tests of Achievement (W-J III)* was used to assess the academic skills of the students who had attended part-day and full-day kindergarten during 2004-2005 school year. Three of the *WJ-III* sub-scales were used: "Following Directions," "Picture Vocabulary," and "Academic Knowledge." Results of the *W-J III* are reported by grade equivalency ranging from K.0 to 12.9 with the first symbol representing a grade level and the numeral following the decimal point representing the number of months in that grade. For this program evaluation, students scoring between K.0 to 1.1 were considered below level. Students scoring 1.2 were considered at grade level. Students scoring 1.3 or more were considered above grade level.

For students who had attended both kindergarten models, more than 50% were at or above grade level in all three academic domains at mid-year. A slightly greater percentage of students who had attended the part-day kindergarten model were at or above grade level (see Table 23 for details).

Table. 23 Percentage of first grade students who attended one of two kindergarten models at or above grade level on three sub-scales of the *Woodcock-Johnson III Tests of Achievement* at mid-academic year.

Kindergarten Model: Achievement Areas:		Full-day Kindergarten (N=149)	Part-day Kindergarten (N=155)
Understanding	n	124 students	135 students
Directions	%	83.2%	87.1%
Picture	n	89 students	103 students
Vocabulary	%	59.7%	66.4%
Academic	n	91 students	103 students
Knowledge	%	61.1%	66.4%

Academic and Intellectual Skills: *Students' Report Card Grades*

Mid-year report cards for the first graders were collected in March 2006 to describe the first grade students' academic outcomes. Due to the variety of report cards and the large number of school districts involved in the program evaluation, it was possible to collect report card grade data from twelve (12) school districts. Mid-year data was analyzed for 174 first grade students who attended school district full-day kindergarten and 175 first grade students who attended school district part-day kindergarten. Data was available for 28 first grade performance indicators.

At mid-year of first grade, a higher percentage of the first graders who attended full-day kindergarten in 2004-05 school were rated as proficient on 15 of the indicators in comparison to the first graders who attended part-day kindergartens. For eleven of the indicators, students who had attended full-day and students who had attended part-day kindergarten had similar proficiency at mid-academic year. For two of the performance indicators, a greater percentage of students who attended part-day kindergarten were rated as proficient in comparison to the students who had attended full-day kindergarten (see Table 24 for details).

Table 24. Summary of comparison of first grade students who had attended two kindergarten models on the achievement of 28 performance indicators from the Delaware First Grade Standards (↑--indicates proportionately more of the full-day students met the performance indicator; ↓--indicates proportionately fewer full-day students met the performance indicator; = indicates a similar proportion of students from both models met the performance indicator).

First Grade Performance Indicator	Comparison
Uses complete Sentence (1.101)	↑
Writes upper- and lower-case letters (1.102)	=
Writes using invented/temporary spelling, demonstrating letter/sound associations for most sounds in words (1.103)	↑
Uses correct spelling for simple words with regular spelling patterns (1.104)	↑
Capitalizes the first word in a sentence and the pronoun "I"(1.105)	↑
Uses periods and question marks correctly. (1.106)	↑
Uses a logical order of presentation (beginning, middle and end) (1.109)	↑
Build sight vocabulary (1.135)	↑
Reads appropriate first-grade texts fluently orally (1.136)	↑
Selects a non-standard unit and use it to estimate, measure, and compare length, height, width, and distance around (1.205)	↑
Estimate, measure, and compare mass/weight using non-standard units of measure (1.206)	=
Measures/describes (e.g. yesterday/today/tomorrow/before/after (1. 207)	↑
Identifies the value of a penny, nickel, dime, quarter, and dollar (1.208)	=
Knows and uses addition and subtraction fact families to 12 (1.210)	=
Develops/uses/explains strategies to add/subtract single digit & two-digit whole numbers; add 3 single-digit addends (1.211)	↑
Selects appropriate methods of calculation from among mental math, paper and pencil, calculators, or computers (1.212)	↑
Makes estimates before measuring, counting, and computing (1.213)	↑
Connects representations of numbers less than 100 (e.g., concrete materials, mathematical symbols) (1.214)	=
Builds whole numbers less than 100 using groups of 1's and 10's (1.216)	=
Identifies equal parts of a whole and equal parts of a set using halves (1.217)	↑
Counts sets of objects and non-standard units of measure up to 100 by 1's, 2's, 5's, and 10's (1.218)	↓
Demonstrate an understanding of order relations for whole numbers less than 100 (1.219)	=
Names and sorts plane figures by size and shape (1.221)	↑
Matches figures by size and shape (1.224)	↓
Collects data by observing, measuring, surveying, and counting (1.225)	=
Interprets data by making comparisons (e.g., never, sometimes, always) (1.227)	=
Recognizes, creates, and extends visual symbolic, oral, and physical patterns (1.229)	=
Sorts and classifies objects by 1 or 2 attributes (1.230)	=

Summary of Findings for First Grade Students

First grade students who had attended two different kindergarten models showed few signs of academic differences at mid-academic year. Except for a noted number of students who had attended full-day kindergarten being rated as more proficient at 15 of the first grade performance indicators of the Delaware educational standards, there were few signs of academic differences between the two groups of students.

Despite having more students who were eligible for special education and more students who were eligible for free and reduced school meals in the group, students who had attended full-day kindergarten performed at or near the same level as students who had attended part-day kindergarten. Both groups of students showed the same levels of literacy proficiency, and almost identical proficiency in math skills. Likewise, the writing skills of the two groups of students were also similar and their academic skills were also assessed as similar using a national norm-referenced academic achievement measurement.

Program Evaluation Limitations

As with any program evaluation, there are limitations to these findings. The most significant limitation to this evaluation is the lack of randomization of the school district full-day kindergartens, the charter schools, and comparison part-day kindergartens. There are also important contextual and community variables that were not assessed for during this evaluation. These include such variables as students' child care experiences and other out-of-home activities in which children and families participate. In order to have a more complete understanding of the impact of full-day kindergarten, more data and analysis should occur related to students' outcomes and contextual variables.

An important difference between the comparison groups was the incidence of students with risk factors in the full-day kindergartens. Because of the presence of more students with risk factors it is difficult to accurately assess the differential impact of full-day kindergarten. It is significant to note that while there was this differential in the risk factors of the two groups of students, the academic outcomes for the two groups at mid-academic year in the first grade, are very similar. It is possible that full-day kindergarten models may have shown more benefits if the two groups of students had been better matched in terms of risk factors.

Conclusions

First and foremost, at this point in time, full-day and part-day kindergarten models are serving different populations of students. As can be seen in both the 2004-2005 kindergarten evaluation (Amsden et al., 2005) and in this current evaluation, full-day kindergarten serves four times more students with disabilities and three times more students eligible for free or reduced school meals. While the stated long-term goal may be to make full-day kindergarten available to all students, presently, the model serves a disproportionate number of students with poverty and disability risk factors. Any discussion of the outcomes and benefits of a full-day kindergarten model need to take these factors into account.

Charter school full-day kindergarten is distinctly different than other full-day kindergarten because of the large number of children at-risk due to poverty. More than 60% of the students attending full-day charter school kindergarten in Wilmington are eligible for free or reduced school meals. This is twice the rate of part-day kindergarten and 50% greater than the rate of school district full-day kindergarten.

The findings of this evaluation indicate that at the end of the kindergarten, both part-day and full-day kindergarten students are achieving academically at similar levels, despite full-day kindergarten students having more risk factors than students attending part-day kindergarten.

As documented by the 2005 kindergarten evaluation (Amsden et al., 2005) and confirmed by this evaluation, a significant amount of time is spent on literacy activities for students participating in both full-day kindergarten and part-day kindergarten. The absolute amount of time spent learning literacy skills is almost twice as much in school district full-day kindergarten (12.5 hours per week) as in part-day kindergarten (6.6 hours per week). With this strong emphasis on literacy instruction, students who have begun their school experiences at-risk for academic success, are achieving at similar rates as those students without poverty and disability risk factors.

This trend appears to continue into first grade. Students who attended full-day kindergartens in 2004-2005 were found to be achieving at approximately the same levels as students who attended part-day kindergartens, despite having increased numbers of risk factors. This was also true for mathematics skills, writing skills, and general academic skills. The full-day kindergarten focus appears to be supportive of students with poverty and disability risk factors achieving similar outcomes in first grade as students attending part-day kindergarten who have fewer of those risk factors.

When asked about preparedness for kindergarten or for first grade, teachers indicated that few children are “ready” for school. At the kindergarten level, when teachers are asked about children’s proficiency in such areas as listening or following directions, the teachers indicated that fewer than 20% of children were proficient in those areas. A year later, after children had participated in kindergarten, first grade teachers

reported that more than 50% of students were not proficient in specific skills expected of entering first graders, despite whether they attended full-day or part-day kindergarten.

When first grade performance indicators for Delaware educational standards were used to compare the academic outcomes of students attending full-day kindergarten with students attending part-day kindergarten, for 15 of the 28 performance indicators, students attending full-day kindergarten had more positive outcomes and for eleven of the performance indicators there was no difference between students attending full-day and part-day kindergartens. Eight of the 15 performance indicators where students attending full-day kindergarten had more positive outcomes were performance indicators related to literacy skills.

With the similar academic outcomes for students using standardized, norm-referenced assessment measures despite the model of kindergarten they attended, this difference in outcomes on performance indicators of the Delaware educational standards may reflect the increased amount of time teachers had during kindergarten to provide instruction in the area of literacy.

There are a number of issues related to program offerings and program quality that were raised during this evaluation. Aside from the massive difference in literacy instructional time between full-day and part-day kindergarten, the availability of intervention services for students is also great. Students attending full-day kindergarten have twice as many opportunities to participate in reading interventions in addition to the already significantly greater intensity of reading instruction they receive. Students in full-day kindergarten are also far more likely to have speech-language interventions, counselor interventions, and English language learner interventions available to them than do students attending part-day kindergarten. The availability of these supports are especially important to students with risk factors such as poverty or disabilities.

Because of the comparably less intense instruction students in all three kindergarten models received in mathematics, student outcomes in mathematics are uniformly low. When compared to the kindergarten mathematics standards, the students in all three kindergarten models do not appear to be gaining the expected skills. This is reflected in the time spent on math instruction as reported by the kindergarten teachers. It is unclear from the data collected for this evaluation, however the trend may also be true for science outcomes as well.

The low estimates by first grade teachers about the preparedness of students entering their classrooms, despite the model of kindergarten which students attended is important to consider. While there was a slight trend that first grade teachers assessed students who attended part-day kindergarten as more proficient in expected social, school, and perceptual-motor skills, less than 50% of the students from both groups had the expected skills according to the first grade teachers. This means that students leaving kindergarten, despite attending full-day or part-day kindergarten, are not leaving with the skills expected for rising first graders. This may call for an examination of the focus of

the curriculum and the instructional strategies being implemented in all kindergarten models.

Because the risk factors of poverty and learning disabilities experienced by many of the children in the full-day kindergartens, it would have been expected that they would not have achieved the same academic outcomes as kindergarteners without these risk factors. It is an accomplishment for those children in full-day kindergarten to be performing at a similar academic level as children who attended part-day kindergarten without those risk factors.

Finally, poverty and other risk factors exert a powerful influence on children's school adjustment and achievement. Many interventions seek to contravene these influences in order to support children's success in school. Based on the data collected for this evaluation, it appears that part-day kindergarten programming is least effective in ameliorating the negative impacts of poverty and risk. Full-day kindergarten, however, appears to have great benefits for students with the risk factors of poverty and disability.

References

- Amsden, D.; Buell, M.; Paris, C.; Bagdi, A.; Cuevas, T.; Edwards, N.; Tressell, P.; Gamel-McCormick, M.; Hartranft, D.; Walker, E.; Qiu, W.; Kamphaus, J.; Turner, J. (2005). *Delaware Pilot Full-day Kindergarten Evaluation: A Comparison of Ten Full-day and Eight Part-day Kindergarten Programs School Year 2004-2005*. Newark, DE: University of Delaware.
- Bowman, B.; Donovan, S.; & Burns, M. (2001). *Eager to Learn: Educating our Preschoolers*. Washington, DC: National Academy Press.
- Brosterman, Norman. (1997) *Inventing Kindergarten*. Harry N. Abrams, Inc., New York
- Clark, P., Kirk, E. (2000) All-day kindergarten: Review of research. *Childhood Education*, 76(4), 228-231.
- Fabes, Richard. (2006) Readiness checklist: Review of research. Tempe, AZ: University of Arizona.
- Goffin, Stacie G. & Wilson, Catherine S. (2001). *Curriculum Models and Early Childhood Education, Appraising the Relationship*. Merrill Prentice Hall. New Jersey.
- Good, R. & Kaminski, R. (2002). *Dynamic Indicators of Basic Early Literacy Skills* (6th Ed.): *Administration and Scoring Guide*. Eugene, OR: University of Oregon.
- Good, R.; Simmons, D.; Kame'enui, E.; Kaminski, R.; & Wallin, J. (2002). *Summary of Decision Rules for Intensive, Strategic, and Benchmark Instructional Recommendations in Kindergarten through Third Grade* (Technical Report No. 11). Eugene, OR: University of Oregon.
- Griffin, S. (2004) The development of math competence in the preschool and early school years: Cognitive foundations and instructional strategies, *Mathematical Cognition, Chapter 1* 1-32
- Hausken, E.G. & Rathbun, A.H. (2002) *Adjustment to Kindergarten: Child, Family, and Kindergarten Program Factors*. ED 463849.
- Hresko, W.; Herron, S.; & Peak, P. (1996) *Test of Early Writing Language – 2*. Pearson Education, Inc.: Bloomington, MN.
- Jordan, N. C.; Kaplan, D.; Nabors Oláh, L.; and Locuniak, N. (2006) Number Sense growth in kindergarten: A Longitudinal investigation of children at risk for mathematicx difficulties. *Child Development*, 77, 153-175.

Levine, S. C., Jordan, N. C., & Huttenlocher, J. (1992). Development of calculation abilities in young children, *Journal of Experimental Child Psychology*, 53, 72-103

NAEYC/NAECPSD. (2003). Joint Position Statement: Early childhood curriculum, assessment, and program evaluation. <http://naecs.crc.uiuc.edu/position/pscape.pdf>

National Board for Professional Teaching Standards. (2001). Early Childhood NBPTS Generalist Standards for Teachers of Students Ages 3-8. (2nd Ed.). Washington, DC: NBPTS.

Woodcock, R.; McGrew, K.; & Mather, N. (2001). *Woodcock-Johnson III Tests of Achievement*. Itasca, IL: Riverside Publishing.

Appendix A

Purpose of Kindergarten

Appendix A

The Purpose of Kindergarten

Historically, kindergarten has had two primary purposes:

1. to address children's physical, behavioral and emotional development in order to be ready for formal schooling and
2. to begin cognitive instruction to meet specific academic goals (eg. Frobel, *The Education of Man*, 1887; Montessori, *The Montessori Method*, 1912).

These two purposes have often been argued to be mutually exclusive. In actuality, the two purposes, or goals, are mutually supportive. Strong academic instruction cannot take place without addressing children's social and emotional needs and strong developmental instruction must address children's developing cognitive skills. For the past 100 years theorists and practitioners have recognized that learning occurs in social contexts and those contexts must support learning.

Vygotsky's socio-cultural theory emphasizes that cognitive activity and development occur in social situations. Children engage in problem-solving activities in collaboration with an adult who structures and models ways to solve problems (Goffin and Wilson, 2001).

The integration of the two purposes (social and cognitive development) has been further emphasized as an essential tenet of developmental interaction theory (eg. Biber, 1977; Shapiro & Biber, 1972). This is where teachers work "to integrate thought and feeling, thought, and action...spontaneous and ritualized forms of response...[to]...help children see connections (and) appreciate learning situation[s] more completely." The process of integration of social and cognitive learning is seen as especially critical to creativity and maximum engagement in learning (Goffin and Wilson, 2001).

These points were emphasized more recently in a 1999 study with Delaware's kindergarten teachers that asked them to identify the purpose of kindergarten. Kindergarten teachers overwhelmingly stated that it was as important for children to learn strong social-emotional skills as it was to address their academic skills (Lovett, Foley & Gamel-McCormick, 1999).

High Quality Kindergarten

With the above purposes of kindergarten in mind, it is necessary to define what constitutes good quality kindergarten. As many early childhood researchers have pointed out, curriculum design, teacher quality, and resources are very important compared to the length of the day. Children who spend more time in low quality programs do not necessarily gain skills and knowledge.

High quality kindergarten programs can have significant positive outcomes for children. Programs that embed content into meaningful contexts and that are responsive to the interests and developmental needs of young children and use engaging, child-oriented, active teaching practices tend to produce children who learn more and “are better prepared to master the complex demands of formal schooling” (Bowman, Donovan, & Burns, 2001, p.307).

High quality kindergarten programs have specific characteristics. These include well designed curriculum content; instructional strategies that are engaging and meaningful for children; assessment that uses systematic observation and multiple sources of evidence over time, teacher interactions with children that are sensitive and responsive; and strong, positive family and community interactions (NAEYC, 2003; NBPTS, 2001).

Curriculum Content and Child Engagement

High quality programs recognize that children learn best when they are actively engaged within positive social contexts. As stated in a comprehensive review of children’s early development:

Advances in cognitive abilities do not simply unfold with age; nor is the child a passive receptacle for knowledge delivered by others. Rather, current understandings suggest that cognitive development takes place in the context of the child’s interactions with others and within the environment-interactions which the child is a very active participant.” (Bowman, Donovan, & Burns, 2001, p.39).

High quality kindergarten programs recognize the importance and efficiency of integrating curricular content across subject areas while employing a wide variety of instructional strategies that engage all developmental domains in order to meet the needs of all children. Quality kindergarten programs recognize the need to adapt curriculum and teaching strategies to meet the varied needs of the children served in those programs. “Because children differ in so many respects, teaching strategies with any curriculum need to be flexibly adapted to meet the specific needs and prior knowledge of the individual children within the group. (Bowman, Donovan, & Burns, 2001, p.315).

Teacher Directed/Child Initiated Instruction

Teachers in high quality kindergartens need to provide different levels of instruction in activities and use a range of techniques including direct instruction, scaffolding, indirect instruction (taking advantage of moments of opportunity), and opportunities for children to learn on their own (self-directed learning)” (Bowman, Donovan, & Burns, 2001, p.315). The developmentalist, Urie Brofenbrenner, describes that the proximal processes that are favorable to optimal cognitive development (and brain development) are ones in which the child can construct meaning from the experiences, a child must be an active agent in the process, there

must be choices for the child to make, and the social and physical environment must provide informational feedback to the child. (Bowman, Donovan, & Burns, 2001, p. 41)

Cognitive Complexity

High quality kindergartens address the multiple developmental levels of the children in their programs. There is the opportunity for children to work at a knowledge level (e.g., identification of objects, naming pictures, making observations) as well as opportunities to synthesize information, make comparisons and draw conclusions. No matter the age of the children, teachers in high quality kindergarten programs provide the opportunities to learn both discrete facts, tasks, and skills and to learn how to ask questions, make observations, combine information, state hypotheses and draw conclusions. Again, as summarized in a major review of research in 2001, Bowman and her colleagues concluded that “the metacognitive skills that allow students to learn more deliberately and have been shown to raise achievement in all (literacy, mathematics, science) academic areas can be introduced in preschool curriculum. Curricula that encourage children to reflect, predict, question, and hypothesize set them on course for effective, engaged learning” (Bowman, Donovan and Burns, 2001, p. 231).

Group Size

The number of students in a class is also related to the quality of the instruction in the class. Small class sizes have an impact on teacher-child interactions, the social and behavioral guidance used by teachers and the level of cognitive complexity provided in the class. Small classes with low teacher-child ratios “are associated with higher scores on global measures of quality and, more specifically, more extensive teacher-child interaction, more individualization, less restrictive and controlling teacher behavior, and children engaging in more social interaction, more extensive and complex language, and more complex play (eg. McGurk et al., 1995; Layzer et al., 1993; Clark-Stewart and Gruber, 1994; Howes, 1997; Kontos et al., 1997; Howes et al., 1992). Small class size is also clearly correlated with children’s performance outcomes and “were found to increase student achievement” especially for “children from lower-income families” (eg. Achilles et al., 1995; Ferguson, 1998; Krueger, 1997; Wenglinsky, 1997; Mosteller, 1995) (Bowman, Donovan and Burns, 2001, p.145).

Assessment

The role of assessment in early childhood education is threefold:

1. assessment to inform instruction,
2. assessment for diagnostic and selection purposes, and
3. assessment for accountability and program evaluation.

High quality kindergarten programs carefully select and use each assessment in the way in which it was designed and intended. Recognizing how “development in young children is uneven and episodic,” early childhood educators understand how standardized test results can be easily misused and misinterpreted. High quality kindergarten programs recognize that “important educational decisions should be grounded in multiple sources of information,” and that, “no test score should be looked at as infallible” (Bowman, Donovan and Burns, 2001, p.306). For the purpose of using assessment to inform instruction, “there must be sustained opportunities for the interactions between teacher and child to occur, and, second, these interactions must occur over time, rather than on a single occasion... learning can be assessed only over time and in context” (Bowman, Donovan and Burns, 2001, p.249-250).

Positive Family - School Communication and Collaboration

Finally, high quality kindergarten programs recognize how valuable the home-school relationship is in understanding the child as an individual within the context of family and culture. In Bowman’s review of 30 years of early childhood education research, she and her colleagues concluded that “[c]hildren who do well in school tend to have parents who have close relationships with teachers and caregivers, reinforcing the traditional belief in the importance of such partnerships. The teacher who has extensive contact with the child’s family can better understand the child as an individual and have an appreciation for the contexts in which the child functions, the parents’ aims and hopes for the child, and the values of the child’s culture” (Bowman, Donovan and Burns, 2001, p. 181).

References

- Bowman, B., Donovan, S., & Burns, M. (2001). *Eager to Learn: Educating our Preschoolers*. Washington, DC: National Academy Press.
- Goffin, Stacie G. & Wilson, Catherine S. (2001). *Curriculum Models and Early Childhood Education, Appraising the Relationship*. Merrill Prentice Hall. New Jersey.
- Lovett, K., Foley, J., & Gamel-McCormick, M. (1999). *Transitions from Pre-Kindergarten to Kindergarten: Teachers’ Perceptions*. Newark, DE: Center for Disabilities Studies/Interagency Resource Management Committee.
- NAEYC/NAECPSD. (2003). Joint Position Statement: Early childhood curriculum, assessment, and program evaluation. <http://naecs.crc.uiuc.edu/position/pscape.pdf>
- National Board for Professional Teaching Standards. (2001). *Early Childhood NBPTS Generalist Standards for Teachers of Students Ages 3-8*. (2nd Ed.). Washington, DC: NBPTS.

Appendix B

Full-day and Part-day Kindergarten
Classrooms
in the Schools Participating
in the
Delaware Pilot
Full-day Kindergarten Evaluation
2006

Appendix B

Full-day and Part-day Kindergarten Classrooms in the Schools Participating in the Delaware Pilot Full-day Kindergarten Evaluation 2006

Table B1. Comparison of kindergartens and the number of part-day and full-day classrooms in the school.

School District	School Name	Number of Classes	
		Part -Day	Full-Day
Full-day Kindergartens in the Evaluation:			
Appoquinimink	Appoquinimink Early Childhood Center	9	1
Capital	Fairview Elementary School	0	3
Indian River	Frankford Elementary School	0	4
Laurel	Dunbar Elementary School	0	8
Seaford	West Seaford Elementary School	0	3
Smyrna	Smyrna Kindergarten Center	0	5
Woodbridge	Woodbridge Elementary School	0	7
Part-day Kindergartens in the Evaluation:			
Appoquinimink	Cedar Lane Elementary School	9	1
Indian River	East Millsboro Elementary School*	6	2
Both Part-day and Full-day Kindergartens in the Evaluation:			
Cape Henlopen	H. O. Brittingham Elementary School	4	1
Lake Forest	Lake Forest South Elementary School	4	2
Red Clay Consolidated	Baltz Elementary School	1	4
Full-day Kindergartens in Charter Schools in the Evaluation:			
Charter	East Side Charter School	0	3
Charter	Kuumba Academy Charter School	0	2
Charter	Marion T. Academy Charter School	0	3
Charter	Thomas A. Edison Charter School	0	5

* East Millsboro's students receiving special education services attend an inclusive kindergarten class in the morning and then attend a separate afternoon class. East Millsboro has 3 morning classes, 2 afternoon classes, and 1 afternoon special education class plus 2 full-day kindergarten classes.

Appendix C

Kindergarten Readiness Checklist

26. Uses elaborate language to describe objects and events	1	2	3	4
27. Uses language to initiate and maintain interactions with adults and peers	1	2	3	4
28. Uses language to gather information and solve problems (asks questions)	1	2	3	4
29. Understands and uses such concepts as many, more, less, etc.	1	2	3	4
30. Uses appropriate labels (one, two, etc) when counting objects	1	2	3	4
31. Uses counting reliably to quantify perceptual (< 5) numbers	1	2	3	4
32. Uses counting reliably to quantify elementary (5 to 12) numbers	1	2	3	4
33. Uses counting to quantify larger number (20+) objects	1	2	3	4

V. PERCEPTUAL-MOTOR DEVELOPMENT

34. Demonstrates a positive disposition toward movement activities, enjoys, and feels confident during physical activities	1	2	3	4
35. Demonstrates age-appropriate static and dynamic balance (can stand on one foot, traverse a low walking board or balance beam, etc.)	1	2	3	4
36. Demonstrates age-appropriate locomotor patterns (walking, running, hopping, jumping, climbing, creeping)	1	2	3	4
37. Demonstrates age-appropriate fine motor movement differentiation (manages small manipulative toys, cuts efficiently, etc)	1	2	3	4
38. Demonstrates age-appropriate eye-hand coordination (drawing strokes are fluid and confident, closes figures when drawing and printing)	1	2	3	4

VI. STUDENT PROFILE

For each item below, indicate whether the statement is TRUE or FALSE for this child as you have come to know the child.

	TRUE	FALSE
39. Has problems speaking clearly and effectively	<input type="checkbox"/>	<input type="checkbox"/>
40. Is intellectually gifted and talented	<input type="checkbox"/>	<input type="checkbox"/>
41. Is eager to learn new things	<input type="checkbox"/>	<input type="checkbox"/>
42. Is often pulled out from the group because of behavioral problems	<input type="checkbox"/>	<input type="checkbox"/>
43. May have a learning disability	<input type="checkbox"/>	<input type="checkbox"/>
44. Is creative	<input type="checkbox"/>	<input type="checkbox"/>

For each of these items below, please complete these statements as you have come to know the child:

45. Overall, how would you rate this child's academic skills

- Far Below Average Below Average Average Above Average Far Above Average

46. Some children have an easy time adjusting to the demands of kindergarten. In contrast, other children have difficulty making this adjustment. Based on your experience, how easy or difficult will this adjustment be for this child?

- Far Below Average Below Average Average Above Average Far Above Average

47. Based on your experience, how intellectually ready is this child for kindergarten?

- Far Below Average Below Average Average Above Average Far Above Average

48. Based on your experience, how socially ready is this child for kindergarten?

- Far Below Average Below Average Average Above Average Far Above Average

49. How many days was this child absent from school? _____ days

50. Why was this child absent from school? Check as many as apply.

- Due to illness
- Other

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Appendix D

First Grade Readiness Checklist

Appendix D

First Grade Readiness Checklist

Instructions: Please read carefully before beginning.

Please rate the child based on your expectations of the skills that a student should have when he/she starts first grade at the beginning of the school year. Please circle the appropriate response to the right of each statement. Please use the following scale to identify your response:

1 =	2 =	3 =	4 =
Not Apparent	Early Stage of Development	Intermediate Stage of Development	Proficient

I. SOCIAL DEVELOPMENT

1. Uses appropriate strategies to initiate interactions with peers and uses alternate strategies when initial attempts fail	1	2	3	4
2. Responds appropriately to other's expressed emotions and intentions	1	2	3	4
3. Overall emotional tone is positive when interacting with peers and adults	1	2	3	4
4. Displays age-appropriate impulse control and regulation during challenging situations	1	2	3	4
5. Peer relationships are generally positive and satisfying	1	2	3	4
6. Effectively uses adults as sources of support, comfort, and assistance	1	2	3	4

8. II. SCHOOL-SPECIFIC INSTRUMENTAL DEVELOPMENT

9. Focuses attention during large group teacher-directed activities	1	2	3	4
10. Can work independently	1	2	3	4
11. Demonstrates willingness to try new things	1	2	3	4
12. Generally completes tasks in allotted time	1	2	3	4
13. Understands and generally follows playground and classroom rules	1	2	3	4
14. Enjoys being in school	1	2	3	4
15. Can work effectively in a group	1	2	3	4
16. Actively participates in class activities	1	2	3	4

18. III. READING AND WRITING

19. Chooses books and stories during free-choice activities	1	2	3	4
20. Recognizes most upper and lower case letters and knows most of their sounds	1	2	3	4
21. Uses some initial letter-sound associations to predict meaning	1	2	3	4
22. Uses context clues to predict meaning	1	2	3	4
23. Recognizes some common words	1	2	3	4
24. Draws and paints pictures	1	2	3	4
25. Writes name	1	2	3	4
26. Writes using upper and lower case letters with few or no reversals	1	2	3	4
27. Writes numerals with few or no reversals	1	2	3	4

29. IV. LOGICAL THINKING AND USE OF NUMBERS

30. Actively uses all senses to examine and explore familiar or unfamiliar objects	1	2	3	4
31. Shows interest in and understanding of the concept of comparing. (e.g. more or less, full or empty, taller or shorter, etc.)	1	2	3	4

32. Uses elaborate language to describe objects and events	1	2	3	4
33. Uses language to initiate and maintain interactions with adults and peers	1	2	3	4
34. Uses language to gather information and solve problems (asks questions)	1	2	3	4
35. Understands and uses such concepts as many, more, less, etc.	1	2	3	4
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37. Uses counting reliably to quantify perceptual (< 5) numbers	1	2	3	4
38. Uses counting reliably to quantify elementary (5 to 12) numbers	1	2	3	4
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V. PERCEPTUAL-MOTOR DEVELOPMENT

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43. Demonstrates age-appropriate fine motor movement differentiation (manages small manipulative toys, cuts efficiently, etc)	1	2	3	4
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47. Is eager to learn new things	<input type="checkbox"/>	<input type="checkbox"/>
48. Is often pulled out from the group because of behavioral problems	<input type="checkbox"/>	<input type="checkbox"/>
49. May have a learning disability	<input type="checkbox"/>	<input type="checkbox"/>
50. Is creative	<input type="checkbox"/>	<input type="checkbox"/>

For each of these items below, please complete these statements as you have come to know the child:

51. Overall, how would you rate this child's academic skills
 Far Below Average Below Average Average Above Average Far Above Average
52. Some children have an easy time adjusting to the demands of first grade. In contrast, other children have difficulty making this adjustment. Based on your experience, how easy or difficult will this adjustment be for this child?
 Far Below Average Below Average Average Above Average Far Above Average
53. Based on your experience, how intellectually ready is this child for first grade?
 Far Below Average Below Average Average Above Average Far Above Average
54. Based on your experience, how socially ready is this child for first grade?
 Far Below Average Below Average Average Above Average Far Above Average

55. How many days was this child absent from school? _____ days

56. Why was this child absent from school? Check as many as apply.

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