

The Impact and Implementation of Full-Day Kindergarten

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In 1984 the Ohio Department of Education (ODE) initiated a comprehensive effort to evaluate the effects of various kindergarten schedules and preschool attendance that were relevant to statewide policy making in the area of early childhood education.

Existing studies that focused on the effects of different kindergarten schedules involved only small samples or unique populations and generally failed to apply rigorous standards, pointing to the need for data on large numbers of children representing the entire range of socioeconomic circumstances found in the state. Additional factors promoting success in Ohio elementary schools also needed to be identified. As a result, a series of statewide **Impact Studies** was conducted from 1985 to 1991.

Following these studies, the Ohio General Assembly funded several initiatives to increase instructional attention for students from kindergarten through grade three, and to provide a safe learning environment. An **Implementation Study** examined the challenges that school districts faced in implementing these initiatives, providing a thoughtful look at the issues for policy-makers. Both the impact studies and the implementation study are summarized in this paper.

IMPACT STUDIES

Two studies were conducted by the Ohio Department of Education's Division of Early Childhood Education to examine the impact of full-day schedules on child outcomes. The first was a **Retrospective Impact Study** of 8,290 children who entered kindergarten in the fall of 1982, 1983 or 1984. The second was a **Prospective Longitudinal Impact Study** of two groups, totaling almost 6,000 children entering kindergarten in the fall of 1986 or 1987. The effects of attending one of three kindergarten schedules were examined:

- Half-day, typically 5 days per week, 2.5 hours per day
- Alternate day, typically 5 days every 2 weeks, 5 hours per day
- Full day, typically 5 days per week, 5 hours per day

Data collected in both the retrospective and prospective studies included:

- Kindergarten schedule
- Gender
- Age at initial kindergarten entrance
- Previously existing standardized test data
- Incidence of grade retention
- Incidence of Chapter 1 placement
- Incidence of special education placement

Additional data gathered during the prospective longitudinal study included:

- Standardized test data on Metropolitan Readiness Tests
- Standardized test data on Metropolitan Achievement Tests (MAT) in first (1986 cohort) or second (1987 cohort) grade
- Kindergarten teacher observations of children's behavior in kindergarten
- Preschool attendance in the year prior to kindergarten entrance
- Kindergarten teacher ratings of children's behavior
- Kindergarten teacher activities by schedule

Data Collection

Retrospective data were gathered in 1986 and reflected outcomes in kindergarten and grades 1, 2, 3 and 4. Prospective data were gathered from 1986 to 1990. Children in the prospective study who had not been retained (i.e., held back) were in grade 4 (1986 cohort) or grade 3 (1987 cohort) in the fall of 1990.

Participating School District Characteristics

Schools were selected based on geographic location and demographic characteristics using the following sampling procedures:

- Those districts having two or more current kindergarten scheduling options (excluding Chapter 1 extended-day kindergartens) were asked to participate whenever possible.
- Because only a small number of Ohio districts offered full-day kindergarten programs (excluding Chapter 1 full-day classrooms), all districts offering full-day kindergarten (excluding Chapter 1 full-day classes) were invited and matched with demographically equivalent districts in the same county offering an alternative kindergarten option. Demographic variables considered in matching the districts included socioeconomic status (SES), per pupil expenditures, district size, number of schools, and number of kindergarten classes.
- Adequate geographic balance and representation of urban/central, urban, suburban, and rural school districts was achieved by matching districts that offered only half-day kindergarten with demographically equivalent districts in the same county that offered alternate-day kindergarten. Demographic variables considered in making the matches included SES, per pupil expenditures, district size, number of schools, and number of kindergarten classes.

Research Designs

Retrospective study. The study involved identifying kindergarten teachers in 27 diverse districts throughout Ohio, selected on the characteristics noted above. Cumulative folders of children who had graduated from those 120 kindergarten classes two, three and four years earlier were then located and analyzed. A total of 76,313 unique test scores were obtained for 8,290 children.

Prospective study. Using the selection characteristics noted above, 27 districts and 120 kindergarten classes were identified in the fall of 1986; 32 districts and 130 classes were identified in the fall of 1987. Using a systematic observation tool researchers conducted three observations in each class, observing length of day, coding teacher behaviors at five-minute intervals, and randomly sampling children at 15-minute intervals. Each child was then tested in the spring of each year, beginning with the kindergarten year and running through grade 3. Additionally, teacher analyses of children's behaviors, prior preschool attendance data and questionnaires mailed to those preschools were obtained. Cumulative folders for all pupils (2,821 in the 1986 cohort and 2,891 in the 1987 cohort) were then reviewed to determine the incidence of grade retention, Chapter 1 placement and special educational services.

Limitations of the Impact Studies

Retrospective study. This study has a number of limitations inherent in research conducted "after the fact" or based on respondent recollection. The quality of the various kindergarten programs could not be controlled or described, nor could the researchers describe why the schedules were selected for each child in the study. Enrollment in the full- and half-day programs may or may not have been elected due to parent work schedules. The extent to which subsequent school performance may have been related to the unknown selection process is not known. One encouraging factor is that pupil gender was quite similar across the various schedules.

The researchers recognize that classes in one type of kindergarten schedule may have varied from classes of another schedule in ways that are unrelated to the schedule, and attempted to control for this occurrence by careful selection of districts. This selection, however, was based upon district assessments made in the year prior to the study. Nevertheless, an encouraging similarity has been found in comparing retrospective to prospective data.

Finally, districts and classrooms were chosen primarily to provide a comparison of classroom schedules. Although a good geographic balance of school districts was obtained, the findings are not completely generalizable throughout the state of Ohio with scientific assurance. For example, no pre-existing full-day classes could be found in certain geographic locations. Thus, the study contains more full-day classes in the northeast section than it does in the southwest.

The researchers caution that retrospective research conducted after the fact without the benefit of random assignment should be cautiously interpreted. Although such data cannot provide a definitive answer to research questions, they do provide a strong indication (when strengthened by subset analyses of replication studies) of the possible effect of kindergarten schedules.

Prospective study. Although the prospective study shares some of the limitations found in the retrospective study, such as no benefit of random assignment of subjects to the schedules, these limitations are partially offset by subset analyses and matching. Additionally, the observational data provide a check in determining the instructional quality across the various schedule types. To the extent that children and classrooms in various kindergarten schedules are similar to those in this study, the study findings can be generalized. However, as with findings from the retrospective study, the prospective study findings cannot be generalized to the entire state of Ohio. In year two of this study (1987-88) six districts were

added and two were removed; expanding the base of districts increases, somewhat, the ability to generalize findings.

Findings Related to Kindergarten Schedules

Data from both the retrospective and prospective studies provide remarkably clear evidence that participation in full-day kindergarten is positively related to subsequent school performance. This strong beneficial relationship is evidenced in standardized test performance, grade retentions and Chapter 1 placements, with the effect of participation appearing to last at least to the second grade. The test performance of pupils in kindergarten through second grade is summarized in Figures 1, 2, and 3.

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Chapter 1 placement and grade retention variables define more clearly the impact of kindergarten schedules. As indicated in Figures 4 and 5, half-day kindergarten pupils experience higher grade retention and Chapter 1 placement level than pupils in the other schedules. Children in full-day schedules experience the lowest Chapter 1 placement in both the prospective and retrospective studies, and show a lower retention rate in all comparisons with half-day children. Alternate-day pupils showed the lowest retention rates only in the retrospective study.

The quantitative differences that occur across the several studies are understandable in light of data collection timing and the grade level of children in the study. For example, the retrospective study children had been in school the longest (in some cases through the fourth grade) when data were collected, increasing the opportunity for retention or placement in Chapter 1. Children in the 1987 cohort of the prospective study were in school the shortest period of time (typically three years) when data were collected and were least likely to have experienced retention or placement.

Qualifications of the findings. Very few qualifications need be noted for the findings regarding impact of full-day kindergarten. Only a small percentage of pupils in the studies had to pay more for the full-day option; in most cases the total cost was covered by the district. One large school district offered one half-day and one full-day class in each of eight buildings with full-day enrollment provided on a space-available basis to any parent requesting it. Subset analysis results for that district were entirely consistent with the overall results noted in this report.

Figure 1
Performance on Standardized Tests:
Kindergarten

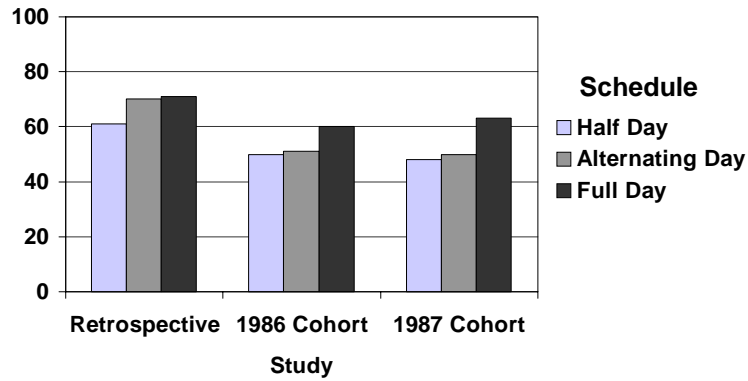


Figure 2
Performance on Standardized Tests:
First Grade

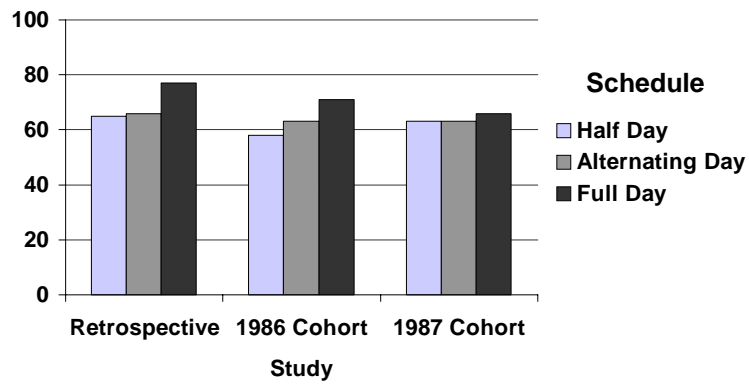


Figure 3
Performance on Standardized Tests:
Second Grade

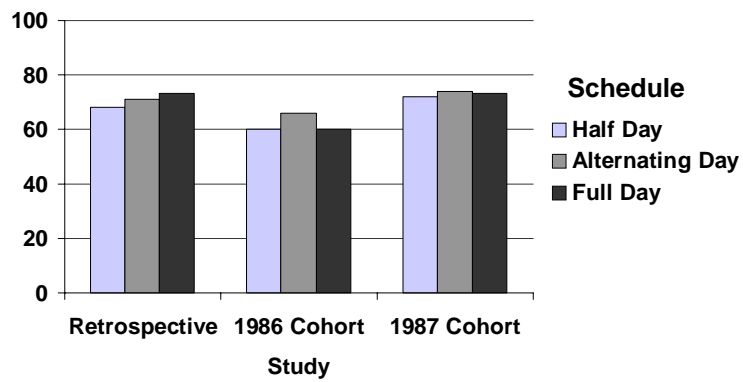


Figure 4
Percent of Students
in Chapter 1 Placement

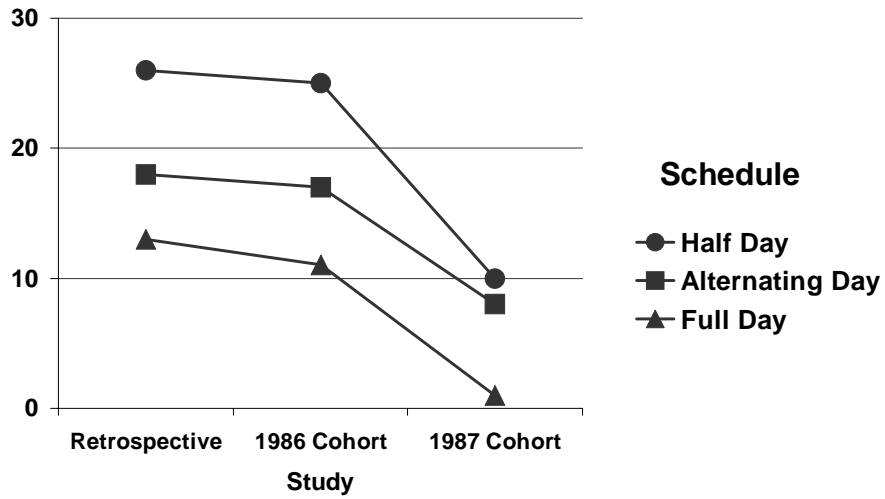
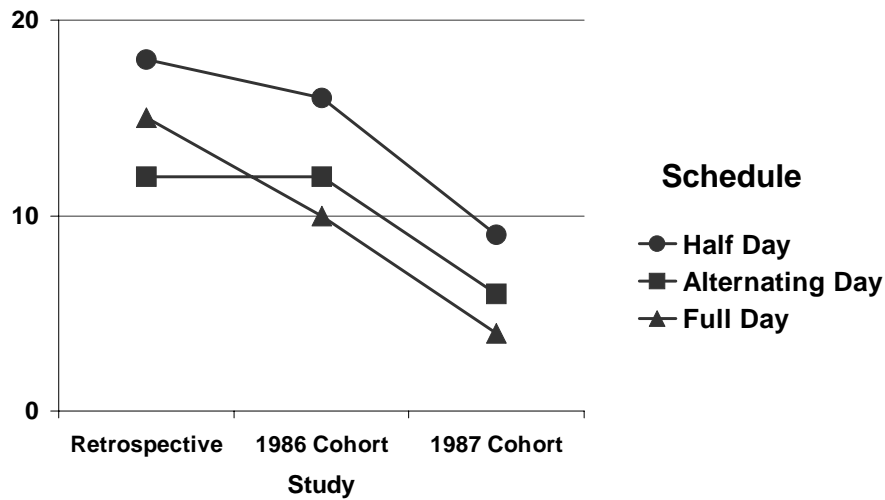


Figure 5
Percent of Students
Held Back



We found no interactions with regard to the impact of kindergarten schedule: the effects are consistent for boys and girls, for children attending preschool and those with no preschool experience, and for children irrespective of their age at kindergarten entrance.

Findings comparing the performance of full-versus half-day pupils probably underestimate the value of a full day's exposure to an educational environment. Previous research (Sheehan, 1988) indicates that more than half (56 percent) of half-day kindergarten pupils in Ohio spend at least some of the rest of their day in child-care programs outside the home. Some of these child-care programs are likely to have an educational component similar to the full-day programs that complements the impact of half-day kindergarten.

Findings comparing schedules are based upon a large number of children in a variety of school districts over a number of years. Subset analyses reveal no instances in which the average performance of full-day kindergarten pupils was lower than half-day pupils in the same district. In almost all instances the full-day pupils performed better than half-day pupils. We found no interactions with regard to the impact of kindergarten schedule: the effects are consistent for boys and girls; for children attending preschool and those with no preschool experience; and for children irrespective of their age at kindergarten entrance.

Findings Regarding School Behavior

As mentioned previously, the school behavior of kindergarten pupils in the prospective study was assessed in the winter and spring of the kindergarten year. Teachers used the Hahnemann Elementary School Behavior Rating Scale to evaluate children's classroom behavior along 14 dimensions:

Originality	Irrelevant talk
Independent learning	Social (over) involvement
Involvement	Negative feelings
Productive with peers	Holding back/withdrawn
Intellectual dependency	Critical/competitive
Failure anxiety	Blaming
Unreflectiveness	Approach to teacher

School Behavior As It Relates To Kindergarten Schedule Direction and Magnitude of The Impact

Both cohorts of the longitudinal study revealed a clear relationship between kindergarten schedule and classroom behavior. Compared to half-day pupils, teachers perceived full-day pupils to be:

- More original
- More independent in learning
- More involved in classroom activities
- More productive with peers
- Less intellectually dependent
- Less prone to failure anxiety
- Less unreflective
- Less holding back or withdrawn
- Less blaming
- More willing to approach the teacher

Table 1 and Figure 6 indicate no dimensions in which full-day pupils exhibited less-positive behavior than their half-day or alternate-day peers.

Figure 6
Ratings of Children's Behavior

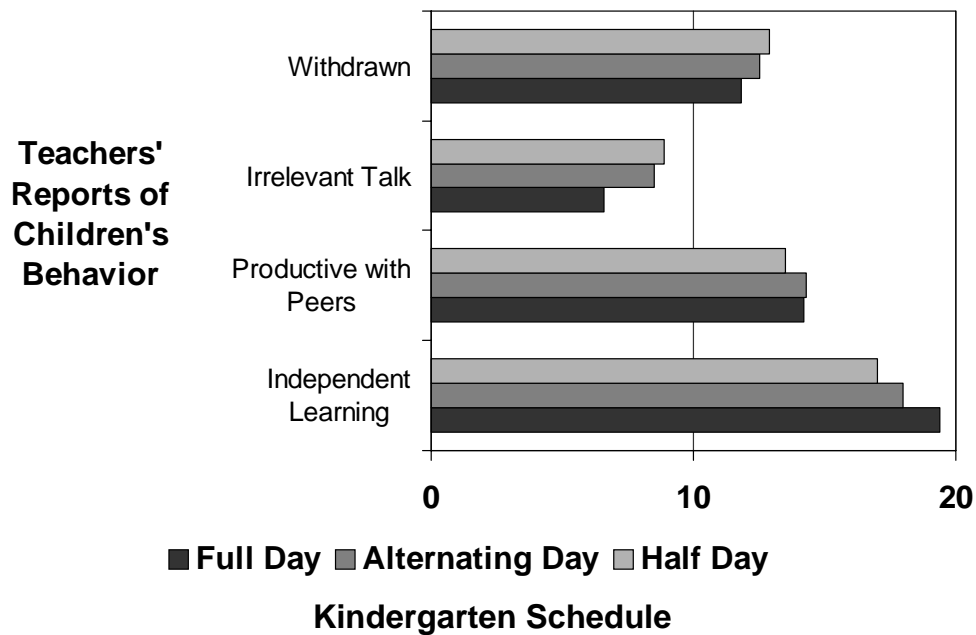


Table 1
Kindergarten Pupils' Reported Behaviors by Kindergarten Schedule

Teacher Perception of Children's Behavior	1986 Cohort			1987 Cohort		
	Schedule			Schedule		
	Half	Alt.	Full	Half	Alt.	Full
*Originality	11.1	11.0	12.4	10.8	10.0	11.6
*Independent Learning	17.0	18.0	19.4	17.5	17.5	18.5
*Involvement	17.3	18.2	19.0	17.0	17.5	18.5
*Productive with Peers	13.5	14.3	14.2	13.5	13.5	14.1
Intellectual Dependency	12.6	12.4	10.6	11.2	11.2	10.4
Failure Anxiety	12.8	11.2	10.9	11.0	10.5	10.0
Unreflectiveness	8.0	7.6	6.4	7.2	6.9	6.6
Irrelevant Talk	8.9	8.5	6.6	8.0	8.0	7.6
Social (Over) Involvement	11.2	10.6	9.1	10.0	10.0	9.6
Negative Feelings	8.5	7.2	7.2	7.5	7.5	7.5
Holding Back/Withdrawn	12.9	12.5	11.8	11.5	11.5	10.5
Critical/Competitive	8.7	8.0	8.0	8.0	8.0	8.0
Blaming	8.2	6.6	6.9	7.2	6.8	6.8
*Approach to Teacher	16.1	15.9	16.3	15.6	15.2	17.2

*A high score for each of these items indicates positive behavior.

Qualifications of the findings. There is little room for doubt about the nature of the impact of schedule on children's classroom behavior based on the consistency of these findings across two cohorts of children and the many dimensions of the standardized rating scale. The averages noted in the above table are well within normal ranges of expected behavior, but the full-day pupils exhibited more positive behavior than those in half- or alternate-day schedules.

Findings Regarding Teaching Practices and Observed Learning Behaviors

The behavior of both teachers and children differs in several ways based on kindergarten schedule. Overall, teachers in half-day kindergarten spend more time on administrative activities and large-group learning activities than do teachers on alternate- or full-day schedules. As noted in Table 2, half-day kindergarten teacher behaviors did not vary significantly between morning (a.m.) and afternoon (p.m.) sessions except in the area of circulating behavior.

Table 2
Teacher Activities by Type of Kindergarten Schedule
(as percent of observed activity)

	Half Day a.m.	Half Day p.m.	Alternate Day	Full Day
Administrative work	11%	12%	8%	9%*
Large-group learning activity	33	35	27	27*
Small-group learning activity	10	10	11	11
Out of room	7	6	16	13*
Transitional	12	13	10	13*
Clean-up	3	3	3	4
Circulating	12	9	11	12*
Other	11	12	13	11

*p<.05 (statistically significant difference related to full day)

Children's behaviors also varied by kindergarten schedule. Consistent with the observed teacher behavior, children in half-day schedules spent more time in teacher-led large group learning activities. Alternate- and full-day pupils spent a greater percentage of their time in active free play than did half-day pupils. Note that children in alternate- or full-day schedules understandably spent more time eating than those in half-day schedules. Table 3 summarizes these data.

Table 3
Children's Activities by Type of Kindergarten Schedule
(as percent of observed activity)

	Half Day a.m.	Half Day p.m.	Alternate Day	Full Day
Teacher-led large group	40%	40%	35%	33%*
Teacher-led small group	5	4	5	4
Non-teacher-led learning activity	5	4	4	4
Seat work done alone	13	11	12	13
Transitional activities	14	18	10	14*
Socio-dramatic play	1	1	1	1
Active free play (recess)	8	8	12	10*
Eating	5	4	8	8*
Other activity	4	5	6	8*
Out-of-room	4	4	7	4*

*p<.05 (statistically significant difference related to full day)

Summary and Conclusions

Designed to investigate the effects of kindergarten schedule and prior preschool attendance on elementary schoolchildren's success in Ohio, this statewide research effort included two studies: a retrospective analysis of children's outcomes related to kindergarten attendance in 1982, 1983 and 1984; and a prospective analysis of two cohorts of children entering kindergarten in the fall of 1986 and 1987. Student records were analyzed for the retrospective analysis, while outcome data for the ongoing study were gathered from the Metropolitan Readiness and Achievement tests.

A number of interactions were hypothesized for the findings in planning these studies and initiating the data analyses. There were, however, NO interactions in the results: each factor discussed in this report operated independently as a powerful main effect. Results from both studies indicate that full-day kindergarten participation is positively related to subsequent school performance.

It helps to be a girl in the elementary grades and it is risky to attend kindergarten as one of the youngest children in the class. The variables are additive: The child most likely to succeed in the elementary grades is a girl who attended preschool, turned five in January of the year preceding kindergarten entrance, and attended a full-day kindergarten. The child at greatest risk is a boy, younger than most of his peers, who attended half-day kindergarten without benefit of prior preschool attendance.

Implications

- Full-day kindergarten experience is beneficial for children, resulting in lower retention rates and fewer placements in Chapter 1 remedial programs.
- Full- or alternate-day schedules provide continuity and consistency for a child spending all day with the same person, especially if that child is considered young at kindergarten entrance.
- Reduced retention and Chapter 1 placement rates result in educational and long-term cost benefits.
- Full-day kindergarten programs should provide an unhurried learning environment that reflects a developmental program and resists the inclination to increase academic pressure.

Full-day kindergarten participation is positively related to subsequent school performance.