

## Short-Lived Gains or Enduring Benefits? The Long-Term Impact of Full-Day Kindergarten

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VOLUME 3, NUMBER 4, SPRING 2005

Are students who attend full-day kindergarten better prepared for future academic success than their peers who attend half-day kindergarten programs? Much of the current research on full-day kindergarten programs suggests they are. Researchers cite gains such as increased academic achievement, lower grade retention rates, improved attendance, and improved social skills experienced by full-day kindergarten students at the end of the kindergarten year. This research has led to increased program and funding support by legislators around the country. Yet, there has been relatively little evaluation or discourse regarding the impact of full-day kindergarten on students' performance in subsequent grades. The research that has been conducted is far from conclusive. This Education Policy Brief will provide an update on full-day kindergarten in Indiana and examine what the existing, albeit limited, research says about the magnitude and duration of long-term benefits experienced by students who attend full-day kindergarten (FDK).

### UPDATE ON FULL-DAY KINDERGARTEN IN INDIANA

During the 2003-04 school year, approximately 25 percent of Indiana's 72,238 kindergarten students were enrolled in full-day (every day) kindergarten. Additionally, 140 of Indiana's 293 school corporations reported having at least one classroom offering full-day kindergarten at no cost to parents (Indiana Department of Education, Division of Prime

Time, personal communication, January 23, 2004). The state of Indiana does not mandate kindergarten attendance nor require school districts to offer full-day kindergarten programs, however it does require school districts to offer kindergarten programs (Education Commission of the States, 2005).

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For the 2003-2005 biennium, the Indiana General Assembly provided \$8.5 million per year for full-day kindergarten grants to Indiana school corporations. The grant program, administered by the Indiana Department of Education, provides funding assistance to school corporations with full-day kindergarten programs consisting of a minimum of five hours of instructional time per day during each school day of the week. During the 2003-04 school year, 120 school corporations and four charter schools were awarded grants. For the 2004-05 school

year, 154 school corporations are participating in the grant program (Indiana Department of Education, Division of Prime Time, personal communication, November 3, 2004).

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### Upcoming Policy Briefs. . .

- ✓ **Spring 2005 No Child Left Behind Implementation Update**
- ✓ **Is the Achievement Gap in Indiana Narrowing?**
- ✓ **Alternative Models of Teacher Compensation**

In recent years, several legislative proposals to fully fund implementation of full-day kindergarten statewide have been discussed by the Indiana General Assembly. However, the majority of these proposals did not make it out of their respective committees. Despite the benefits of full-day kindergarten demonstrated by research, skepticism remains in the minds of legislators as they consider whether the benefits of full-day kindergarten justify the expense of the programs.

## HOW DO FULL-DAY KINDERGARTEN PROGRAMS BENEFIT STUDENTS?

A significant amount of research has been conducted on the benefits of full-day kindergarten programs during the kindergarten year. In the January 9, 2004, report, *The Effects of Full-Day Versus Half-Day Kindergarten: Review and Analysis of National and Indiana Data*, the Center for Evaluation and Education Policy (CEEP) outlined research-based support for the benefits of full-day kindergarten enrollment. The analysis of national research

revealed several benefits for students who attended full-day kindergarten.

The CEEP report (Plucker et al., 2004) specifically indicated full-day kindergarten enrollment provides the opportunity for greater student academic achievement and social and behavioral development. Furthermore, the full-day kindergarten schedule gives teachers flexibility to devote greater amounts of time to research-based instructional methods. (For the complete Conclusions and Recommendations of the 2004 report, see page 6 of this Policy Brief.)

### STATES' POLICIES REGARDING FULL-DAY KINDERGARTEN

The apparent benefits of full-day kindergarten have led state policymakers around the country to consider legislation to require school districts to offer full-day kindergarten programs. It has also prompted parents to consider which program is best for their children, with many opting to enroll their children in full-day kindergarten programs. This increasing focus is illustrated through kindergarten enrollment trends, the expansion of full-day kindergarten programs by local education agencies, and recent deliberation of legislation in several states relating to full-day kindergarten programs.

#### Full-day Kindergarten Enrollment and State Policies for Kindergarten Programs

Since 1977, attendance in full-day kindergarten programs has more than doubled. Of the four- to six-year-olds enrolled in kindergarten, the proportion of students enrolled in full-day kindergarten programs (see Figure 1) had increased steadily from 27.5 percent in 1977 to 60.3 percent in 2001 (Wirt et al., 2004).

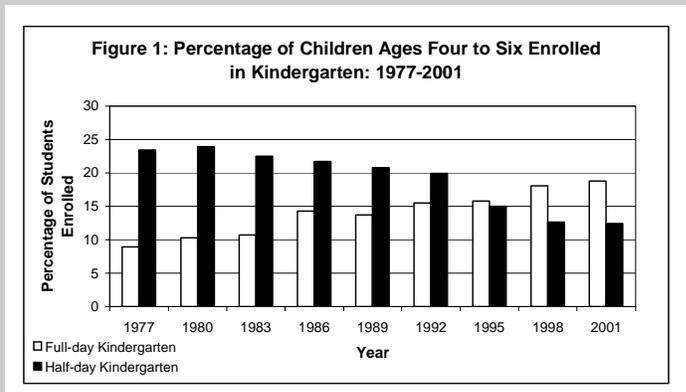


Figure adapted from Wirt et al. (2004).

Although nearly all of the 50 states mandate that school districts must offer kindergarten, only nine states (Alabama, Arkansas, Georgia, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, and West Virginia) mandate that school districts must offer full-day kindergarten programs (Education Commission of the States, 2005). Only Louisiana and West Virginia mandate student attendance in full-day kindergarten programs (Education Commission of the States, 2005).

#### Recent State Legislation Regarding Full-day Kindergarten Programs

In the past several years, much discussion has occurred among state policymakers regarding full-day kindergarten programs. States including Colorado, Delaware, Pennsylvania, and Wyoming have all passed legislation regarding full-day kindergarten programs (National Conference of State Legislatures, 2004). Full-day kindergarten legislation has ranged from the establishment, development, and implementation of programs, to additional funding for full-day kindergarten programs.

Several of the reviewed studies indicated improvement in student achievement and social and behavioral development. Areas of improved student achievement included increased performance on standardized tests, reduced grade retention, and reduced special education referrals. Indicators of increased social and behavioral development among full-day kindergarten students included independence, peer interaction, and originality.

Full-day kindergarten enrollment was also shown to help reduce the achievement gap for minority and low socioeconomic status students. The positive outcomes for minority and low socioeconomic status students appeared to be greater than for non-disadvantaged students. Thus, full-day kindergarten may be an effective means to help reduce the achievement gap.

Finally, the structure of full-day kindergarten facilitates an increase in teachers' use of instructional strategies recommended by researchers to promote learning in young children. A 1997 study by Elicker and Mathur supports this claim, indicating that in full-day classrooms approximately 85 minutes is spent per day in small-group teaching, one-on-one teacher-student interactions, and self-initiated activities. This was significantly more time than was spent on these types of activities in half-day kindergarten classrooms. Additionally, according to Denton, et al. (2003), full-day kindergarten teachers were more likely to spend time on skills including "letter recognition, letter-sound match, conventions

of print, vocabulary, making predictions based on text, using context clues for comprehension, rhyming words, reading aloud, reading multi-syllable words, and alphabetizing” (pg. 12) than half-day kindergarten teachers.

Other studies and reviews have reached similar conclusions regarding the effectiveness of full-day kindergarten programs (Larson, 2003; Walston & West, 2004; Weast, 2004). However, while these studies have shown benefits for students enrolled in full-day kindergarten, they fail to address the duration of benefits for students beyond the kindergarten year.

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### **DO THE BENEFITS OF FULL-DAY KINDERGARTEN EXTEND BEYOND THE KINDERGARTEN YEAR?**

A growing body of research documents the benefits of full-day kindergarten attendance in the areas of scholastic achievement, social and behavioral skills, and grade retention and special education referrals during the kindergarten year. Yet, the duration of the benefits experienced due to full-day kindergarten attendance through subsequent grades is not clear. Recent studies have continued to examine the length of time full-day kindergarten enrollment benefits students in the areas of scholastic achievement, grade retention, and special education referrals; however, there is clearly insufficient research and generalizable information in this area. A handful of studies conducted in Alaska, Indiana, Maryland, Pennsylvania, and Virginia have examined the longitudinal impact of full-day kindergarten on students. Although these studies indicate promising results, it is difficult to generalize their findings beyond the school district under study.

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### **Scholastic Achievement**

A longitudinal study of elementary school students in the School District of

Philadelphia through Grade 4 indicated that students who had attended full-day kindergarten earned higher marks on their report cards and performed better on reading, math, and science portions of standardized tests during Grade 3 than their peers who had attended half-day kindergarten. During Grade 4, students who had attended full-day kindergarten continued to outperform their peers who had attended half-day kindergarten on the science portion of a standardized test, but achievement in other areas was similar across the two groups (Del Gaudio Weiss & Offenber, n.d.).

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*... most of the research in this area addresses students' performance in Grades 1-2.*

*There is insufficient research regarding the duration of benefits experienced by students beyond Grade 3.*

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Full-day kindergarten students in the Evansville-Vanderburgh (Indiana) School Corporation outperformed their half-day kindergarten peers through Grade 3 in the areas of reading, mathematics, handwriting, spelling, and English. Full-day kindergarten students earned higher grade point averages than their half-day kindergarten peers in Grades 6-8, and in Grades 3, 5, and 7, full-day kindergarten students scored higher than half-day kindergarten students on average in every category of the Comprehensive Tests of Basic Skills (Evansville-Vanderburgh School Corporation, 1988).

Anchorage (Alaska) School District students studied through Grade 11 revealed performance differences between half-day and full-day kindergarten students.

During Grades 4-11, students who had attended half-day kindergarten generally scored at expected grade level on the Iowa Test of Basic Skills at higher rates than their full-day kindergarten peers (Stofflet, 1998). However, although half-day kindergarten students had higher GPAs, full-day kindergarten students showed greater improvement in GPA between Grades 7 and 8 than their half-day kindergarten peers (Stofflet, 1998).

The methodology of this study, which does not include random assignment of participants or control for several potential confounding factors, tempers the impact of the results. Potential confounding factors such as socio-economic status and mobility are not accounted for in the study design. These factors, and not full-day or half-day kindergarten enrollment, may account for the differences in students' performance. Without the benefit of a control group, the causal relationship between kindergarten program and student outcomes is difficult to determine.

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### **Grade Retention**

Grade retention for full-day kindergarten students in the School District of Philadelphia and the districts examined in Ohio was lower than for students who had attended half-day kindergarten. In Philadelphia, students who attended full-day kindergarten were 26 percent more likely to be promoted through Grade 3 and 22 percent more likely to be promoted through Grade 4 without being retained than their peers who attended half-day kindergarten (Del Gaudio Weiss & Offenber, n.d.). Similar results were found in Ohio, where retention rates for ongoing cohorts under study were 16 percent retained for half-day versus 10 percent retained for full-day in cohort 1, and 9 percent retained for half-day compared to 4 percent for full-day in cohort 2 (Ohio Department of Education, 1992).

## Special Education Referrals

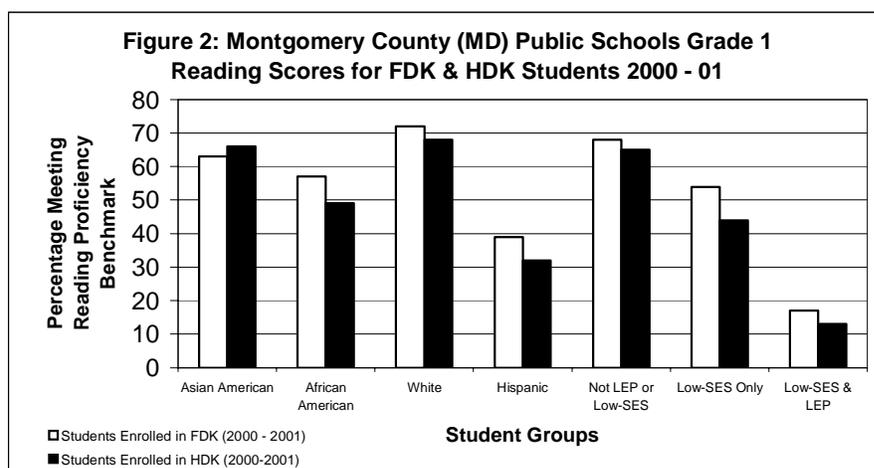
The Ohio Department of Education (1992) and the Evansville-Vanderburgh School Corporation (1988) found that full-day kindergarten students were less likely than their peers who attended half-day kindergarten to be identified as eligible for special education services through Grade 4.

In contrast, the Anchorage School District data showed that students enrolled in full-day kindergarten programs were slightly more likely to be identified as eligible for special education services. Additionally, students enrolled in full-day kindergarten were less likely to be identified as being gifted than their peers in half-day kindergarten programs (Stofflet, 1998).

## ARE THE LONG-TERM BENEFITS OF FDK GREATER FOR SOME STUDENT GROUPS?

As Plucker et al. (2004) noted, according to national and Indiana data, the benefits of attending full-day kindergarten appear to be greater for disadvantaged students. Weast (2004) also indicated that attending full-day kindergarten helped narrow the achievement gap between minority and disadvantaged students in the Montgomery County [Maryland] Public Schools (MCPS) school system. These instances suggest that attending full-day kindergarten may be especially beneficial for minority, low socioeconomic status (SES), and limited English proficient (LEP) students in helping to reduce the achievement gap. However, most of the research in this area addresses students' performance in Grades 1-2. There is insufficient research regarding the duration of benefits experienced by students beyond Grade 3.

Minority students who had attended full-day kindergarten also showed greater academic performance than their peers enrolled in half-day kindergarten



Adapted from Nielsen & Cooper-Martin (2002).

(see Figure 2). Overall, four percent more Grade 1 students who had attended full-day kindergarten achieved benchmark performance than their half-day kindergarten peers. African American and Hispanic Grade 1 students experienced the greatest gains, with eight percent and seven percent, respectively, more full-day kindergarten students achieving benchmark proficiency than their half-day kindergarten peers. By comparison, White Grade 1 students who had attended full-day kindergarten experienced a four percentage point increase in achieving benchmark proficiency in the four measures of reading ability (Nielsen & Cooper-Martin, 2002).

Additional reports by MCPS (2002, 2004) indicated that LEP and low-SES students experienced significant benefits from attending full-day kindergarten. Specifically, full-day kindergarten students showed improvement in foundational reading skills compared to their half-day kindergarten peers. Also, a greater number of Grade 1 students in LEP and low-SES groups who had attended full-day kindergarten achieved benchmark reading proficiency than those who had attended half-day kindergarten (Nielsen & Cooper-Martin, 2002).

Furthermore, MCPS reports indicated that low-SES and LEP students who attended full-day kindergarten reduced the achievement gap in reading by eight

percentage points from 2002 to 2003. Grade 2 MCPS students from all racial and ethnic groups in the schools with the highest poverty levels, who had attended full-day kindergarten, read an average of two to five text-reading levels higher than Grade 2 students from the previous school year who had not attended full-day kindergarten. The full-day kindergarten students also showed a 17 percentage point increase in the number of students meeting the text-reading benchmark. In comparison, all other MCPS students experienced a six percentage point increase (Weast, 2004).

Similar results were reported by a Fairfax (Virginia) County Public Schools (FCPS) study that followed students who had attended half-day and full-day kindergarten programs through Grade 3. Of the low-SES and LEP students in FCPS, those with at least one risk factor who had attended full-day kindergarten combined with other programs (including Project Excel, Success by Eight, and Two-Way Immersion) showed greater positive effects in the area of reading achievement in Grades 1-2 than their peers with no risk factors (Fairfax County Public Schools, 2004). However, as noted above, FCPS full-day kindergarten was combined with other programs, which makes it difficult to determine the magnitude of the effect full-day kindergarten played in students' increased achievement.

According to these results, the disadvantaged student groups mentioned above appear to experience greater benefits from attending full-day kindergarten than all students who attended full-day kindergarten programs. Additionally, the benefits experienced by these student groups appear to extend beyond the kindergarten year to at least Grade 2. However, since the studies outlined above were conducted in specific school districts, and in some cases combined full-day kindergarten with other programs, it is difficult to determine the true effect of full-day kindergarten on student achievement or to generalize the results beyond the school districts in which the studies were conducted.

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## CONCLUSIONS AND RECOMMENDATIONS

The short-term benefits of full-day kindergarten compared to half-day kindergarten are well-documented. However, the evidence for persistence of these benefits into subsequent grades is far from conclusive. Despite the promising findings of the few longitudinal studies conducted in schools and school districts across the United States, there is a lack of sound research regarding the persistence of benefits experienced by full-day kindergarten students.

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### **Conclusion:**

***There is little research examining the duration of full-day kindergarten benefits.***

The few longitudinal studies of full-day kindergarten have indicated promising data on the duration of benefits experienced by students who attended full-day kindergarten in the following years of elementary school. These studies have indicated that full-day kindergarten benefits persist past the kindergarten year through Grade 2 (Ohio Department of Education, 1992), Grade 3 (Del Gaudio Weiss & Offenberg, n.d.; Larson, 2003)

and even Grades 7 and 8 (Evansville-Vanderburgh School Corporation, 1988; Stofflet, 1998). However, there is not a clear consensus regarding the duration of these benefits. The lack of data past Grade 4 prevents a full understanding of the duration of benefits from attending full-day kindergarten.

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### **Recommendations**

- Longitudinal studies of full-day kindergarten programs should be commissioned within states and should follow full-day kindergarten students at least through elementary school. One of the most widely cited longitudinal studies on full-day kindergarten, conducted in the Evansville-Vanderburgh School Corporation, is nearly 20 years old. More current research within the state of Indiana would provide greater insight into the effects of full-day kindergarten on Indiana's students.
- The cost of full-day kindergarten can be a significant barrier to implementation. Additional research is needed to examine the cost/benefit ratio of full-day kindergarten programs. These analyses might include funds saved due to fewer special education referrals, less grade retention, and reduced transportation costs, as well as consider funds necessary for additional personnel, facilities, and supplies. These analyses could provide a more complete picture of the costs of full-day kindergarten implementation.
- The Indiana Department of Education's grant program providing financial assistance for full-day kindergarten should include an evaluation component for participating school corporations. This would be an effective way to gather more current data regarding full-day kindergarten programs in Indiana. With 154 school corporations participating in the program in 2004-05, including an evaluation component would provide legislators and educational leaders

with valuable empirical information regarding the impact of full-day kindergarten programs on Indiana's students.

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### **Conclusion:**

***Methodological issues may obscure the link between FDK and prolonged student benefits.***

Issues including a lack of random assignment and failing to control for variables, including family income level, mobility, and parents' education attainment, are the source of some skepticism regarding the positive results of this research (Elicker, 2000, cited in Brewster & Railsback, 2002). Additional research utilizing rigorous methodology including random assignment of subjects and control for variables such as those outlined above would allow for better understanding of the relationship between full-day kindergarten attendance and student outcomes.

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### **Recommendations**

- Rigorous methodology must be utilized in the design of full-day kindergarten research studies. Studies must control for other factors that could also account for student outcomes, such as student mobility, family income level, and parental educational attainment, and, where possible and appropriate, participants should be randomly assigned to full-day and half-day kindergarten groups. Additionally, multiple research designs and methods of data collection should be utilized. These may include experimental, non-experimental, and longitudinal methodologies, surveys, document analysis, and observation (Chatterji, 2004).

**The Effects of Full-Day Versus Half-Day Kindergarten:  
Review and Analysis of National and Indiana Data**  
Jonathan A. Plucker, et al. (January 9, 2004)

The Indiana Association of Public School Superintendents contracted with the Center for Evaluation and Education Policy to conduct a review of research on full-day kindergarten. The goal of the report was to provide useful information to Indiana policy-makers as they debated the merits of full- versus half-day programs during the 2004 legislative session.

The report sought to answer three questions: What does the national research say about the effectiveness of full-day kindergarten? What does the Indiana data say about full-day kindergarten? And how is time used within full-day kindergarten programs? The report concludes with a series of recommendations regarding Indiana policy on full-day kindergarten.

**Conclusions and Recommendations**

1. Both the Indiana and national data collected and analyzed for this report provide evidence that, relative to half-day programs, full-day kindergarten is associated with a wide range of positive outcomes, including increased student achievement and social and behavioral development.
  - In both our site visits and several of the published studies, teachers reported that the full-day format allowed time to address state standards more effectively and address the diverse learning needs of students of differing abilities. This effect cannot be assessed for a few years, but the impact on ISTEP+ scores could be substantial if teacher perceptions are accurate.
  - Any state-funded full-day kindergarten program should include an evaluation component to promote accountability. Although evaluation is critical to the success of any educational program, evaluation is especially important in situations where programs should result in significant new expenditures and new savings - a system should be put in place to ensure that savings related to, for example, reduced special education referrals are being realized.
2. The positive outcomes associated with full-day kindergarten appear to be larger for disadvantaged students in both the national and Indiana research.
  - Full-day kindergarten appears to be effective in reducing achievement gaps. If funding for universal full-day kindergarten is not available in the current economic climate, funding could be focused on providing full-day kindergarten to schools with low achieving subgroups of students. National research suggests that minority students and students of lower socioeconomic means are more likely to benefit from full-day programs if the class size is fewer than 25 and an aide is available in the classroom.
3. Full-day kindergarten, regardless of its organization and funding mechanism, is expensive relative to half-day programs. Costs include additional teachers, instructional aides, and classroom space (Harding, 1988; Rothenberg, 1984). In Indiana, the most widely cited current estimate for the costs of a full-day kindergarten initiative is roughly \$110 million.
  - Schools, both nationally and in Indiana, use a range of strategies to pay for full-day kindergarten programs. The most common sources of funding are the state general fund, existing Title I funds, and parent fees (often calculated on a sliding scale relative to family income).
  - Savings resulting from full-day kindergarten are difficult to determine. Substantial savings should be realized over the long-term due to reduced special education referrals and the need for less remediation, reduced need for midday transportation and crossing guards, and reduced need for half-day childcare programs. However, childcare costs will not be entirely eliminated (Elicker, 2000), as many families may still rely on childcare both before and after students attend full-day programs each day.
  - A number of existing "full-day" programs may actually be extended day programs, which are often staffed with aides. Any anticipated savings based on the existence of current programs may prove to be smaller than anticipated.
  - Alternate day full-day programs are appealing due to the potential for reduced costs, but this type of program is generally not associated with positive outcomes relative to every day full-day or every day half-day programs.
4. The literature contains many comments about the importance of quality versus quantity of kindergarten experience (i.e., it's not full-day, it's what happens in full-day that counts). Although this perspective is valid, it oversimplifies the research on instructional activities in full-day classes. A better perspective is that the added time in a full-day program fundamentally changes the nature of activities that occur in that program. Not only do teachers tend to do more in full-day programs, they tend to do more of the instructional strategies that researchers recommend to promote young children's learning.
  - Although a few studies suggest that small class sizes are more effective than full-day kindergarten in raising student achievement, other studies provide evidence that full-day classes of moderate size (e.g., fewer than 25 students) are optimal. Indeed, Walston et al. (2002) found evidence that full-day kindergarten does not necessarily mitigate the negative effects of large class sizes on student achievement.

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## WEB RESOURCES

Clearinghouse on Early Education and Parenting: Full-day Kindergarten

[http://www.nwrel.org/cfc/newsletters/vol2\\_is2.asp](http://www.nwrel.org/cfc/newsletters/vol2_is2.asp)

Education Commission of the States: Kindergarten

<http://www.ecs.org/html/issue.asp?issueid=77>

National Center for Education Statistics: Full-day and Half-day Kindergarten in the United States: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99

<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2004078%20>

National Council of State Legislatures: Resources on Full and Half-day Kindergarten

<http://www.ncsl.org/programs/educ/fulldaykinder.htm>

Northwest Regional Education Laboratory Newsletter: Full-day Kindergarten

[http://www.nwrel.org/cfc/newsletters/vol2\\_is2.asp](http://www.nwrel.org/cfc/newsletters/vol2_is2.asp)

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