

Full-day vs. Half-day Kindergarten

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People have a lot of opinions about kindergarten, ranging from being great for children, to being daycare which shouldn't be paid for with tax dollars. Individuals have singular experiences that should not be used to decide whether kindergarten should be full-day or half-day, or whether all school districts should offer it. This is an attempt to objectively look at the research.

In full disclosure, I am an educational researcher. I have been a reviewer of journal articles for many years and won an award for best reviewer in 2014. The more I read educational research, the more disillusioned I have become about the veracity of studies and the presentation of their results. One of the reasons is that it is very hard to do controlled studies on people – the confounding factors of individual lives cannot be controlled for in a study. This review on kindergarten research discusses some of these problems.

During this review, I found that for any claim made by one study, there's another study that makes the opposite claim with equal quality. Therefore, while the research can make one aware of the issues, it should not be relied upon to make policy decisions. Other processes are needed on which to base policy decisions. Some are suggested in the conclusions.

This report addresses two needs:

1. Croydon needs to decide whether to have full-day or part-time kindergarten. Until recently, we had kindergarten three full days a week. This made it hard for children to remember procedures, so we tried full-day kindergarten for a year. We didn't try half-day kindergarten. We also question whether some children should delay entry until they are ready.
2. The legislature is considering whether to fund full-day kindergarten.

People on all sides of the argument agree that [kindergarten started](#) as a place where children would learn through play and experience and where developing the whole child was of major importance. In the 1970s, kindergarten shifted toward academics, and the movement toward standards in the 1990s solidified this direction.

The questions this review addresses are:

1. What is the goal of kindergarten? (page 2)
2. How is kindergarten different from daycare? (page 2)
3. How do half-day and full-day kindergarten compare? (page 2)
4. Should kindergartens focus on academics? (page 4)
5. Are there any screenings to make sure a child is ready for kindergarten? (page 7)

It ends with **Conclusions** drawn from this review. (page 8)

Some readers might prefer to read the conclusions first.

1. What is the goal of kindergarten?

There is no consensus about what kindergarten is for. Some argue that the goal of kindergarten is to prepare children for first grade. Some people think that children will learn the same skills at home if they don't attend kindergarten. Some people use kindergarten as daycare. In fact, the Governor is proposing this as one of the reasons for offering full-day, every-day kindergarten – for the benefit of employers, in an attempt to attract more businesses to the state.

Goals need to be defined by each school district, since the needs and desires may be different everywhere.

2. How is kindergarten different from daycare?

This is an important question because taxpayers do not pay for daycare prior to kindergarten. One of the reasons Governor Sununu wants full-day kindergarten is to attract businesses to New Hampshire. Businesses would be interested in full-day kindergarten so workers don't have to worry about daycare for a single year for each of their children. Since businesses will be the ones benefiting from it, shouldn't they pay for it? It is not equitable to add to the tax burden of people on fixed incomes to support businesses or people who are out earning money. On top of that, requiring full-day kindergarten will reduce the number of private daycare and kindergarten businesses.

That said, let's look at the actual differences. The vast majority of *daycare centers* provide play-based learning environments. Some of them follow curricula, such as High Scope, and their teachers are often certified.

Kindergarten runs the gamut from play-based learning to teacher-directed learning, the latter of which limits the play that young children experience.

If kindergarten is play-based, it is not much different from daycare. If it is academically-based, it is not clear what sets it apart from first grade.

3. How do half-day and full-day kindergarten compare?

The studies are mixed. [Many studies in the 1980s compared half-day and full-day kindergarten, and most of them fell short in terms of scientific rigor](#) with small sample sizes, unmatched samples, unique populations, a limited range of controls, a paucity of longitudinal designs, and inappropriate analysis methods. They focused on academic outcomes and not growth, and very few explored social and behavioral outcomes or parent and teacher attitudes. In addition, the results of these studies often contradicted one another.

When evaluating study results, it is important to consider confounding factors, which none of these studies did. For example, full-day kindergarten may have shown better performance in later grades because of self-selection, where parents chose to send academically-oriented children to full-day kindergarten.

The following study had a large population sample, but did not look at any data beyond the two years that Canadian children spend in kindergarten, which they start at four years old. The

available report recognized the value of doing a longitudinal study, but there has not been any progress in that area.

In 2010, [Ontario, Canada, funded full-day kindergarten to the tune of \\$1.5B and tracked children over a two-year period](#). The educator teams used play-based learning and inquiry because they are more responsive to the needs of younger children. One reason parents support it is so they can sustain a job. Studies found that **children marked by low income and/or poor test scores showed improvement in some categories** after participating in full-day kindergarten. However, **some children appear to have done worse with full-day kindergarten**. The biggest failings were in the categories of emotional maturity, communication skills and general knowledge, which is attributed to removing them from familial care too early.

This is a troubling result. The following 2006 study claimed to have a better design than the earlier 1980s studies.

Using a nationally representative sample of 8,455 kindergartners and 504 U.S. public schools, [students were tracked from the beginning to the end of kindergarten](#).

This study did not focus on long term effects, something the authors cited as being critical to understanding how kindergarten affects children. However, since their population sample is large, it is worth exploring.

The authors claim that children who attend schools that offer full-day programs learn more in literacy and mathematics in that year than their half-day counterparts. However, **the data they present do not tell that story**. The differences in scores from fall to spring for math and literacy look almost identical, as is highlighted in Table 1 (table 2 in the article).

Table 1. Characteristics of Kindergarten Children in Half-Day and Full-Day Schools

	Half-Day Kindergarten (standard deviation)	Full-Day Kindergarten (standard deviation)
Unweighted sample size	3,855	4,600
Weighted percentages	44.3	55.7
Average SES	.14***	.13
	(.72)	(.75)
Average age (months)	66.0	66.6***
	(4.3)*	(4.2)
Average fall math score	20.2***	19.0
	(7.1)**	(6.8)
Average spring math score	28.0*	27.6
	(8.4)	(8.5)
Average fall literacy score	22.3***	21.6
	(8.3)**	(7.7)
Average spring literacy score	31.8	32.0
	(9.8)	(9.9)
Average days between testing	185	187**
	(21.2)*	(20.8)

NOTE: significance levels are indicated on the larger of the two numbers.

* p < .05; ** p < .01; *** p < .001.

Instead of explaining these results, the authors do a multi-level analysis on their data. Hierarchical Linear Modeling (HLM) is a statistical technique that analyzes data in a clustered or “nested” structure, in which lower-level units of analysis are nested within higher-level units of analysis. For example, students are nested within classrooms, which are nested within schools. **They ended up showing the results for differences between schools, which is counter to what they said they were evaluating – namely, differences in individual student growth.** This sounds like they did not like the results they got at the individual or classroom levels, so they looked for something that would give them the conclusions they wanted. When studies start with the conclusions they want to reach and then look for a way to interpret the data to support it, it is called advocacy and not research.

Scores should be higher for full-day kindergarten because of the amount of time each group spent in class. The authors address this near the end of their article: twice the amount of time in school does not amount to double the time spent on reading and math. Full-day kindergarten spends 30% more time on language arts (5.7 hours per week vs. 4.4 hours per week) and 46% more time on mathematics (3.8 hours per week vs. 2.6 hours per week) than their half-day counterparts. That is only 1.3 more hours of instruction per week in reading and only 1.2 more hours per week of mathematics instruction. If that is the case, **what are they doing the rest of the time?**

How can this unexpected result of there being little difference in academic improvement between full-day and half-day kindergarten be explained? [Perhaps it is because children at this age are learning this material whether they are in kindergarten or not.](#)

Finally, this study did not focus on other outcomes, such as social and emotional issues. The authors recognized their importance and pointed out that any policy decisions should not be based solely on the results of their focus on academic improvement.

In a [set of studies that focused on social and behavior aspects,](#)

... children who attend full-day kindergarten were found to engage in more child-to-child interactions, experience greater improvement in social skills, and have better self-concepts than children who attend half-day kindergarten. However, other studies showed no behavioral or social differences between children in full-day and half-day kindergarten.

Given these mixed sets of results in behavioral results, what are we to believe?

4. Should kindergartens focus on academics?

[Accountability pressures have trickled down into the early elementary grades.](#) Kindergarten teachers devote more time to advanced literacy and math content, teacher-directed instruction, and assessment and substantially less time to art, music, science, and child-selected activities, possibly because of the Common Core standards. [The Common Core has many kindergarten standards that used to be first grade standards.](#) For example, they expect students to “read emergent-reader texts with purpose and understanding” while children at this age are typically early readers.

Should kindergarten focus this much on academics?

[Peter Gray, Ph.D. reports](#) that:

“A number of controlled studies have compared the effects of academically oriented early education classrooms with those of play-based classrooms. The results are quite consistent from study to study: Early academic training somewhat increases children’s immediate scores on the specific tests that the training is aimed at (no surprise), but these initial gains wash out within 1 to 3 years and, at least in some studies, are eventually reversed. Perhaps more tragic than the lack of long-term academic advantage of early academic instruction is evidence that such instruction can produce long-term harm, especially in the realms of social and emotional development.”

This sounds really compelling especially if you do not want full-day kindergarten, but it is healthy to be skeptical. What follows is a review of some of these studies, with a focus on their results and some of their shortcomings.

[A study in Ypsilanti, MI](#), randomly assigned 68 children from low-income homes to three nursery groups: traditional play, High Scope (also play-based), and direct instruction. These children were followed until age 23. They found that 47% of the children assigned to the direct instruction classroom needed special education for social difficulties versus only 6% from the play-oriented preschool classrooms. By age 23, police records showed a higher rate of arrests for felony offenses among those who were previously in the instructional program (34%) compared to those in the play-based programs (9%).

While these are startling outcomes, this study found no academic differences for a decade. Even though this was a controlled study, there were likely confounding factors that led to these results. That is, each child has a life story in addition to the nursery group to which they were assigned. Most importantly, even though some high percentages were reported, **the population sample is too low to make any generalizations.**

This longitudinal study has a larger sample size:

[Another study found negative effects of overly directed preschool instruction on later school performance](#) in a study of three different curricula, where 343 students (96% African American, 75% in low-income families) were followed in three different curricula, labelled either “academically-oriented” or “child-initiated”. By third grade, they displayed no differences in academic achievement, though teachers reported **more behavior problems** in students who were in academically-oriented preschool classes. **By sixth grade, those in the academically-oriented preschool students were performing more poorly than their peers in the child-initiated preschool programs.**

To their credit, the authors suggest that these results could be more related to family income factors than to type of preschool experience or being advanced in school when they had not yet mastered all the necessary skills. However, in a review done by an advocate of child-initiated preschool, those confounding factors were not mentioned.

The [author continues](#):

“This finding was consistent with the developmental assumption that, by the end of third grade, most children will have attained the basic academic skills. Earlier limitations [...] had been overcome, and children were generally academically comparable and on ‘even footing’ when they entered the transition to the later elementary school grades.

“Why did academic performance of children from academically directed preschool classes begin to decline? [...] Perhaps the answer can be found in new demands characteristic of the later elementary school grades. Through the primary grades, children are learning to read. An academically directed approach typically emphasizes the act of reading over comprehension. Beginning in fourth grade, children are reading to learn; comprehension is critical. In fourth grade, they start to encounter more abstract concepts that do not necessarily match up with their everyday experiences. Additionally, fourth-grade teachers and beyond expect children to be more independent in the learning process, to assume more responsibility for their learning, and to show greater initiative. Perhaps teachers foster this independence by stepping back somewhat and shifting their instructional approach to be less didactic. It is at this point that motivation and self-initiated learning become crucial for children's later school success. [...] Important lessons about independence and self-initiative are being learned in the early childhood years. Overly teacher-directed approaches that tell young children what to do, when to do it, and how to do it most likely curtail development of initiative during the preschool years. [...] Such an approach produces passive students who wait to be told what to think next. Therefore, it is not surprising that children whose preschool experience may have curtailed initiative would find the transition to the later elementary school grades more difficult. The foundation of critical thinking may be found in early childhood experiences that foster curiosity, initiative, independence, and effective choice.”

Finally, **the authors recommend caution in interpreting the results because the study design relied on correlations**, and do not imply causality.

The following study could not be found online, so the review was taken from a review article:

[In a similar study in Germany](#), students from 50 kindergarten classes were followed through the fourth grade. **Those from play-based classes performed better on all measures than the academic-oriented kindergarten classes**, including being more advanced in reading and mathematics and being better adjusted socially and emotionally in school. After this study, Germany changed their kindergarten policy to have more play.

Notwithstanding confounding factors, these studies provide some compelling results that play-based learning in kindergarten will better prepare students for later schooling. **The common core standards focus on academics that expect kindergarteners to read emergent reader text with purpose and understanding, hurrying the reading process.** [According to Bank Street](#) the “emergent reader” understands *that* written language conveys messages, and the child often pretends to read and write. They begin to match spoken words with print and may know some letter names and some letter sound associations. They may recognize some words and letters in one environment but not in another. They can write some letters, usually those in their own

names, and some words, but may still reverse letters. They mostly use upper case letters. This alone is in great contrast to the common core kindergarten standards which require that children know all the alphabet, both upper and lower case.

While kindergarten teachers believe they are doing a good job teaching their students and following the common core standards to teach academic skills early, they have no idea how it will affect the children in sixth grade or later. Think about this: Children learn to walk during a range of ages, all considered normal. By the time they are three years old, they can all walk. **Early walkers are not better walkers than late walkers.** The same is true of children learning academic skills like literacy and numeracy. It is sad to think that these early good intentions might actually harm the children later.

There is also an opportunity cost of learning academics in kindergarten: Even if a child learns to read or do arithmetic, what did that child *not do* that could have made other improvements or developments?

These studies all support the idea of play-based learning in pre-school grades. People on both sides of the argument agree: **Full-day programs designed to push children to learn academic skills before they are really ready are likely to backfire.**

5. Are there any screenings to make sure a child is ready for kindergarten?

Yes, there are [kindergarten readiness screenings](#). Some parents already choose to delay their children's [entry to kindergarten](#). Estimates of delayed entry rates range between 3.5-5.5 percent of children eligible to enroll in kindergarten based on their age. But how many children enter kindergarten who are not ready? This is not only a disservice to them, but it is also a disservice to the other children.

How can “ready” be defined? A child who is already an emergent reader might actually be ready for first grade.

In addition, the results of a [disheartening study](#) reinforce the idea of how important it is to be ready for kindergarten. Using a sample of nearly 12,000 children, the author examined the difference in ADHD diagnosis and medication rates between the youngest and oldest children in a grade. They found that the youngest kindergartners were 60 percent more likely to be diagnosed with ADHD than the oldest children in the same grade. For instance, in one state where the kindergarten cutoff date is Dec. 1 – students born Dec. 1 had much higher rates of ADHD than children born Dec. 2. (The students born Dec. 1 were the youngest in their grade; the students born Dec. 2 enrolled a year later and were the oldest in their grade.) The results were definitive. Overall, the study found that about **20 percent – or 900,000 – of the 4.5 million children currently identified as having ADHD likely have been misdiagnosed.**

How many parents will send their children to kindergarten simply because it is available? Screening for readiness is very important.

Conclusions

These studies, even with their limitations, **all support the idea of having play-based learning** in pre-school grades. People on both sides of the argument also agree that full-day programs designed to push children to learn academic skills before they are ready will likely backfire.

Kindergarten is perplexing. If it is play-based, parents could send their children to daycare; many preschool daycare centers teach basic skills through play and student-centered learning. If the focus of kindergarten is academics, it is more like first grade. It leads one to wonder why we should have kindergarten at all.

People would probably say that the purpose is somewhere in the middle, to prepare children for first grade.

One approach to figuring out what should be learned in kindergarten is to ask what it supports. For example, what are the obstacles to succeeding in first grade and how can kindergarten help them? What are the things you need to know on the first day of first grade? One example is knowing numbers and the letters and their sounds.

Then one must ask: What are the obstacles to succeeding in kindergarten? The strongest lesson from this review is that **any child who enters kindergarten needs to meet some minimum readiness requirements**. The teachers would know best what those should be, after all these other considerations are addressed.

Each school district should decide – with input from all the stakeholders, including students, parents, teachers, administrators, and taxpayers – what the balance of play and academics should be, and make sure it is always developmentally appropriate for each child.

It seems natural to inform that balance by **adapting learning progressions to the children**. While many kindergartens today are using the **common core standards**, they are **very misguided with respect to kindergarten**. And they are not standards in any sense of the word. Let's call them what they actually are: end-of-year suggestions. Standardizing everything is counter to how people actually learn, which is most apparent in early childhood. **The state Department of Education should recommend, but not mandate, other options that would meet the range of goals while supporting learning progressions for small, medium, and large school districts.**

The ultimate question of this research was to help Croydon decide whether to have full-day kindergarten. However, **the research does not support having or not having full-day, half-day, or any other version of kindergarten**. Full-day kindergarten does not seem to offer a benefit over half-day, and in some cases might even be detrimental. One solution could be to have half-day kindergarten with a focus on play and student-centered learning. But given that only some percentage of it seems to be academic, with much of it being play, another approach could be that the town pay the academic part of the cost, with the remaining portion be paid by parents directly if they choose that part. Another option is that parents pay for all of it since it's

not mandated by the state, which would then open the option of competition by local daycare businesses.

It is also important to **remember the taxpayers**. If there is not sufficient benefit to children to offset the harm to taxpayers, then it should not be done.

Regarding whether the state should fund full-day kindergarten: First and foremost, **it will take away the local educational control that New Hampshire cherishes** and reduce the number of private daycare and kindergarten businesses, which will also reduce the choices parents have for their children. The costs will be passed on to the towns to fund it and it will eventually trickle down to pre-K daycare. This will all happen while moving toward more academics at younger ages and less play-based learning, which is most beneficial for children. **This is a slippery slope that should not be started.**

Too many things are already put under the public-school umbrella to get funded. It is one thing to fund academics, but it an entirely different thing to fund daycare.