The Bush Administration is moving to change the mission of Head Start, from one of providing social services and care to low-income preschoolers and their families to also emphasizing early literacy skills. Is preschool too early to learn academic skills? In the following essays, David Elkind and Grover Whitehurst weigh the evidence, then respond to one another.

Young Einsteins

Much Too Early

by DAVID ELKIND

Children must master the language of things before they master the language of words."

—*Friedrich Froebel,* Pedagogics of the Kindergarten, *1895*

In one sentence, Froebel, father of the kindergarten, expressed the essence of early-childhood education. Children are not born knowing the difference between red and green, sweet and sour, rough and smooth, cold and hot, or any number of physical sensations. The natural world is the infant's and young child's first curriculum, and it can only be learned by direct interaction with things. There is no way a young child can learn the difference between sweet and sour, rough and smooth, hot and cold without tasting, touching, or feeling something. Learning about the world of things, and their various properties, is a time-consuming and intense process that cannot be hurried.

This view of early-childhood education has been echoed by all the giants of early-childhood development—Froebel, Maria Montessori, Rudolf Steiner, Jean Piaget, and Lev Vygotsky. It is supported by developmental theory, which demonstrates that the logical structure of reading and math requires syllogistic reasoning abilities on the part of the child. Inasmuch as most young children do not attain this form of reasoning until the age of five or six, it makes little sense to introduce formal instruction in reading and math until then. The theory is borne out by a number of longitudinal studies that show that children who have been enrolled in early-childhood academic programs eventually lose whatever gains they made vis-à-vis control groups.

Yet there is a growing call for early-childhood educators to

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Much Too Late

by GROVER J. WHITEHURST

Brianna and her four-year-old classmates are sitting in a circle around their preschool teacher. The teacher asks, "Who can tell me what they're going to do when we go to our play centers?"

"I'm going to work with Play-Doh," Brianna answers.

"Tell us what you're going to make," her teacher responds.

"I want to make a plate for my mom," says Brianna.

"That's wonderful," says the teacher. "I'm sure your mom will really like that."

Several other children chime in with similar plans. Circle time breaks up, and the children go to the interest centers of their choice. Their teacher circulates, engaging the children in conversations about their work and sometimes taking on the role of a play partner. When center time comes to a close, the children gather around their teacher for a review of what they've done. The conversation focuses on the Play-Doh gifts the children have made, with the teacher encouraging them to describe how they think people feel when they get a nice gift.

The activities of Jamel's preschool classroom stand in stark contrast. He and his classmates sit at pint-size tables. The teacher announces, "Today we're going to write Halloween stories. Each table gets to write its own story. When we're finished with our stories, we'll read them to each other, and then we'll put them up on the wall. If you want to make up your own story, that's great, but here is one that everyone can write if they want to."

She holds up a handmade book consisting of four pieces of paper stapled together. "This is the title page," she says. "It is a book about pumpkins. See, this is a drawing I made of a

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engage in the academic training of young children. The movement's beginnings lay in the fears sparked by the Soviet Union's launching of Sputnik in 1957. The civil rights movement and the growing public awareness of our educational system's inequality led to the creation of Head Start, a program aimed at preparing young disadvantaged children for school. Although Head Start is an important and valuable program, it gave rise to the pernicious belief that education is a race—and that the earlier you start, the earlier you finish. This encouraged educators like Carl Bereiter, Siegfried Engelmann, and, more recently, E. D. Hirsch to introduce early academic programs based on the learning theories of E. L. Thorndike and B. F. Skinner. These writers assume that learning follows the same principles at all age levels—ignoring both children's developing mental abilities and the fact that academic skills vary in their logical complexity and difficulty.

Concerns over our educational system, fueled by our students' poor performance in international comparisons of achievement, have reinvigorated the call for early academic instruction as a remedy for inadequate teaching later on. All too many kindergarten teachers are under pressure to teach their children numbers and letters and to administer standardized tests. In some kindergartens, children are even given homework in addition to the work sheets they must fill out during class time. In a developmentally appropriate classroom, children are busy taking care of plants and animals, experimenting with sand and water, drawing and painting, listening to songs and stories, and engaging in dramatic play. It is hard to believe that these young children learn more from work sheets than they do from engaging in these age-appropriate activities.

In the end, there is no solid research demonstrating that early academic training is superior to (or worse than) the more traditional, hands-on model of early education. Why take the

Head Start

The War on Poverty goes to school by TYCE PALMAFFY

President Lyndon Johnson's early career was spent working as a teacher in the hardscrabble of west Texas. That is where Johnson saw poverty up close and developed his faith in the power of education to eradicate it. As Johnson quipped to Yale University psychologist Edward Zigler (whose essay appears on page 12) in May 1965, "If it weren't for education, I'd still be looking at the southern end of a northbound mule." Johnson's faith became policy with the creation of Head Start, birthed during the heady, idealistic days of the Great Society's "War on Poverty."

Head Start's roots lay in the troubles of the Community Action Programs, or CAPs, an early War on Poverty venture whose motivating idea was to mobilize the poor on their own behalf. The frequent controversies surrounding the programs made local officials somewhat skittish about applying for CAP grants. Left with a budget surplus and the bureaucratic tradition of "use it or lose it," Office of Economic Opportunity (OEO) director Sargent Shriver went fishing for a more politically salable anti-poverty investment. Hence Project Head Start.

Head Start reflected the belief that quality early-childhood education could inoculate disadvantaged children against the turbulence of their home and neighborhood life. It was to be a cost-effective endeavor; an early investment in nurturing at-risk children would avert later strains on social services and the justice system.

The same rationale, educational historian Maris Vinovskis has written, underlay the "infant schools" movement of the 1820s. The infant schools, a movement that quickly spread and then just as quickly disappeared before the Civil War, withered under the now-familiar criticism that academic training before the age of six or seven could inflict "serious and lasting injury" on "both the body and the mind," as physician Amariah Brigham wrote in 1833.

Serious interest in early-childhood education wasn't seen for another century. At Head Start's inception, Zigler reports, only 32 states had kindergarten programs. Preschool programs for four-year-olds were almost "unheard of." In the early 1960s, however, faith in the fortifying powers of preschool blossomed again on the strength of scholars Joseph McVicker Hunt and Benjamin Bloom's finding that children's IQs were not fixed at birth. Moreover, Bloom argued, the first five years of children's lives were crucial to the development of their intellectual abilities. This was, Zigler writes, the "golden age" of cognitive psychology.

From the beginning, President Johnson and other advocates strongly promoted the IQ-raising potential of Head Start. Nonetheless, Head Start's founders viewed it as much more than an academic intervention. Head Start was to provide a range of educational, medical, social, and psychological services to poor children and their families. Children can't focus on learning, the thinking went, when they don't have nutritious meals, healthy bodies, emotional stability, involved and knowledgeable parents, and social services designed to soften the impact of poverty.

Head Start's links to the Community Action Programs made parental involvement a crucial aspect of the program. Not only would low-income parents learn child-rearing skills, such as how to prepare a

risky step of engaging in formal academic training of the young when we already know what works?

Giants of the Preschool

The educators who established early childhood as a legitimate time for guided learning all emphasized the importance of manipulative experiences—of seeing, touching, and handling new things and of experiencing new sensations—for infants and young children and the dangers of introducing them to the world of symbols too early in life. Froebel, Montessori, and Steiner all created rich, hands-on materials for children to explore and conceptualize. Each of them acknowledged, in his or her own way, that the capacity to discriminate precedes the capacity to label, that the understanding of quality precedes that of quantity. Children, for example, learn to discriminate among different colors before they can distinguish different shades of the same color.

"Head Start gave rise to the pernicious belief that education is a race—and that the earlier you start, the earlier you finish."

This is not to suggest that the founders of age-appropriate practice were of one mind. They disagreed on such matters as the teacher's role in guiding young children's learning and the comparative benefits of individual versus collaborative learning.

Froebel, for example, believed that introducing children to different manipulative materials (which he called gifts), such as a wooden ball, a square, and a diamond, would teach young children not only geometric shapes but also abstract concepts

nutritious meal. They would also serve as employees and volunteers in Head Start centers and have a strong voice in how the local programs were run. The War on Poverty's links to the civil rights movement only enhanced their role. OEO staffers saw Head Start as a way of granting the power to minority parents that they lacked in segregated public schools.

This is crucial to understanding the resistance to the Bush Administration's proposal to shift Head Start from the Department of Health and Human Services (DHHS) to the Department of Education. Similar resistance confronted President Jimmy Carter's attempt to move Head Start to his proposed Department of Education. At the national level, Head Start parents, children's advocates, and civil rights leaders feared that a move would undermine Head Start's comprehensive approach that emphasized health care as much as education. At the local level, minority parents feared losing their voice in a white-dominated public school system. Congress ultimately nixed the idea of moving Head Start to the new Department of Education in 1978.

The overselling of Head Start's ability to raise IQ, a highly stable measure of cognitive functioning, eventually caught up with the program. When early evaluations of the program found that children's gains in IQ were small and faded out as they aged, the resulting uproar quelled President Richard Nixon's attempt to expand the program. Funding for Head Start stalled throughout the 1970s and '80s. The mixed results, however, should have come as no surprise. In the beginning, grants were handed out in a frenzy to just about anyone who set up shop in a church basement. Moreover, the intensely local nature of Head Start led to wide disparities in quality from program to program. In fact, it was hardly accurate even to call Head Start a program, or to say that Head Start had succeeded or failed. Some local grant recipients ran exceptional programs, others ran mediocre ones. Nearly all programs suffered from a shortage of trained early-childhood educators, and few had the funds to pay decent salaries anyway. Besides, the 14 members of the original planning committee hardly mentioned IQ. To them, whether children received their vaccinations, proper dental care, and a warm, encouraging oasis amid the chaos of urban life seemed just as important.

When Carter proposed folding Head Start into the Department of Education, he met with fierce resistance from children's advocates, Head Start parents, and civil rights leaders.

Still, Head Start survived the slash-and-burn Reagan years and became newly relevant with President George H. W. Bush's national educational goal of having all children starting school "ready to learn" by the year 2000. In addition, the promising findings from model, much-more-expensive preschool programs such as the Perry Preschool Project in Ypsilanti, Michigan, have renewed hopes for what Head Start could be. Funding quickened in the 1990s, with federal spending rising from roughly $1.6 billion in 1990 to $5.3 billion last year. Like its young charges, Head Start has proved remarkably resilient.

–Tyce Palmaffy is the articles editor of Education Matters.

of unity and harmony. Montessori, by contrast, doubted whether children would learn abstract concepts by using manipulative materials. She did argue that there were critical periods in development during which children had to exercise their sensory-motor abilities if they were to fully realize them. Montessori regarded children's exercise of their sensory abilities, and indeed of all their activities, as preparation for adult life. Froebel saw play as a valuable mode of learning for young children; to Montessori it was frivolous and should be the child's work. For example, she wrote that children would be better served if they used their imaginations to fantasize about real foreign countries rather than fairytale kingdoms.

Steiner, founder of the Waldorf schools, believed that education should be holistic. In Waldorf schools, handicrafts, the arts, and music are integral parts of the curriculum. Children are asked to write and illustrate their own textbooks in science, history, and social studies, for example. Whereas Froebel and Montessori focused on having children learn from their own individual activity, Steiner's activities were more social and collaborative.

Piaget, while not supporting any particular early-education

More than the Three Rs

The Head Start approach to school readiness

by EDWARD ZIGLER & SALLY J. STYFCO

Head Start is, and has always been, a school-readiness program. In 1964, the project's planning committee convened and was charged with designing an intervention to help young, low-income children begin school on an equal footing with their peers from wealthier families. There was little scientific evidence at the time to identify the needs of poor preschoolers or to suggest how to meet them. The planners therefore had to build a construct of school readiness relevant to the population Head Start would serve.

The members represented a variety of professional disciplines, and each contributed the latest knowledge in his or her field. Together they crafted the comprehensive services, whole-child approach that has come to define Head Start. Because children cannot devote their full energies to learning when they are not in good health, Head Start would ensure access to medical care. Hunger can also take a child's attention away from schoolwork, so Head Start would provide nutritious meals and snacks and teach parents to do the same at home. Cognitive skills would be emphasized, of course, but children would also be taught social skills so they could learn to get along with others and follow social rules in the classroom. Special attention would be paid to their emotional health so they could gain the confidence and motivation to succeed in school. Because parents are the child's first and most influential teachers, they would be invited to participate in all facets of the preschool and in adult education and training as well. Finally, because poverty carries many stresses that can interfere with healthy functioning, social-support services would be available to children and their families.

Strengthening the preschool-education component is the appropriate [way] to bolster the school readiness of children who attend Head Start. Focusing on this component to the exclusion of the others is not.

Nearly four decades later, these components of Head Start have come to define quality early care and education. The effectiveness of the model has been proved in a plethora of studies over the years showing that Head Start graduates are ready for school and in fact show good progress in literacy, math, and social skills in kindergarten. However, their academic gains during preschool are not as great as they should be, leading some experts and some policymakers to propose making Head Start more academic and less comprehensive. Admittedly, Head Start teachers are not all well qualified, due in part to low salaries and community staffing patterns. But recent revisions in the Program Performance Standards, which govern the quality of Head Start services, have begun to address weaknesses in teacher training as well as curricula.

Strengthening the preschool-education component in such ways is the appropriate response to calls to bolster the school readiness of children who attend Head Start. Focusing on this component to the exclusion of the others is not. Children who have uncorrected vision or hearing problems, who are ill or malnourished, who don't sleep at night because of fear or hurt, or who have parents too preoccupied with their own problems to pay attention to them, will struggle with learning to read no matter how good the teacher.

–Edward Zigler is a professor of psychology at Yale University and was one of Head Start's founders. Sally J. Styfco is the associate director of the Head Start section at the Yale Center in Child Development and Social Policy.

program, argued that children learn primarily from their own spontaneous exploration of things and a subsequent reflective abstraction from those activities. This is an indirect argument for the importance of manipulative materials in early-childhood education. Vygotsky, while also believing that much of intellectual growth was spontaneous, nonetheless proposed that children could not fully realize their abilities without the help of adults. He argued that there was a zone of proximate development that could be attained only with guidance and modeling by adults. Vygotsky emphasized the teacher's role much more than other writers, who entrusted much of young children's learning to the children themselves.

Contemporary early-childhood educators also disagree on the teacher's role in the learning process and continue to debate what is the most effective curriculum for young children. What unites them, and sets them apart from those who would make early-childhood education a one-size-smaller 1st or 2nd grade, is their commitment to building early-childhood practice on their observations of young children. Put a bit differently, the giants of early childhood and their followers agree that early education must start with the child, not with the subject matter to be taught.

The guiding principle of early-childhood education is, then, the matching of curriculum and instruction to the child's developing abilities, needs, and interests. This principle is broadly accepted and advocated by most early-childhood educators. The National Association for the Education of Young Children (NAEYC) has issued a policy statement entitled "Developmentally Appropriate Practice in Early-Childhood Programs." The NAEYC now evaluates and certifies early-childhood programs that meet its criteria for developmental appropriateness.

Complex Understandings

Those who believe in academic training for very young children make a fundamental error: They fail to recognize that there are different levels of understanding in math and reading. Learning to identify numbers and letters is far different from learning to perform mathematical operations and to read with understanding. This is easy to support. "Sesame Street" has run for more than 30 years. Children today know their numbers and letters earlier than ever before. Many know them by age two. Yet children today are not learning math or reading any earlier or better than did children before there was "Sesame Street." Learning the names of numbers and letters is only the first step in the attainment of true numerical understanding and reading comprehension.

Take the concept of numbers. The three levels of numerical understanding—nominal, ordinal, and interval—correspond to different forms of scaling. Nominal numbering is the use of a number as a name, such as the numbers basketball players wear on their uniforms. By the age of two or three, children can use numbers in the nominal sense. By the age of four or five, children can begin to use ordinal numbers; they can order things according to quantitative differences. For instance, they can arrange a series of size-graded blocks or sticks from the smallest to the largest. Once the arrangement is complete, however, they are not able to insert a new, intermediate-sized element into the perceptual array.

It is only at age six or seven, when they have attained what Piaget calls "concrete operations," that children can construct

The educators who established early childhood as a time for guided learning all emphasized the dangers of introducing the world of symbols too early in life.

the concept of a "unit," the basis for understanding the idea of interval numbers. To attain the unit concept, children must come to understand that every number is both like every other number, in the sense that it is a number, and at the same time different in its order of enumeration. Once children attain the unit concept, their notion of number is abstract and divorced from particular things, unlike nominal and ordinal numbers. Mathematical operations like addition, subtraction, and multiplication can be performed only on numbers that represent units that can be manipulated without reference to particular things.

The interval concept of numbers is an intellectual construction. It builds on children's practice in classifying things (attending to their sameness) and in seriating them (attending to their difference). At a certain point, and with the aid of concrete operations, children are able to bring these two concepts, of sameness and difference, together into the higher-order concept of a unit, which brings together the ideas of sameness and difference. It is only when children understand that something can be the same and different that they have a true understanding of quantity. Learning the names of numbers and rote counting are less important in this attainment than is practice in classifying and seriating many different materials.

A similar hierarchy of understanding is involved in learning to read. In fact, in some respects reading is a more complex process than arithmetic, in that it involves auditory and visual discrimination as well as cognitive construction. Nonetheless, the principle is the same.

The earliest level of reading is the recognition of words by sight. At ages two or three, a child may learn "stop" and "go" in part by the perceptual configuration and in part by the colors associated with these words. Sight words are like nominal

"Learning about the world of things, and their various properties, is a time-consuming and intense process that cannot be hurried."

numbers; they reflect a very early level of reading achievement. A second level of reading is phonetic; this concept corresponds roughly to ordinal numbers. Children at four or five can learn the sounds for single letters and are able to read words like "hat," "cat," "sat," and so on.

The same child who can read phonetically, however, may not be able to read phonemically. To read phonemically, a child must be able to recognize that a letter can be pronounced differently depending on the context. A child who can read "hat," "cat," and "sat" may have trouble with "ate," "gate," and "late." Likewise, a child who knows "pin" may have trouble with "spin" because it involves a blend of consonants that may throw kids off. In Piaget's terminology, "concrete" operations are required for this highest level of reading.

Those calling for academic instruction of the young don't seem to appreciate that math and reading are complex skills acquired in stages related to age. Children will acquire these skills more easily and more soundly if their lessons accord with the developmental sequence that parallels their cognitive development.

A Developing Knowledge Base

From the outset, let's acknowledge that hard data on the comparative benefits of one or another type of early-childhood educational program are hard to come by. The difficulty stems from the fact that education is a chaotic process. Each time children and their teacher come together they are different, thanks to the intervening experiences each has had. In other words, every classroom meeting is a nonreplicable experiment. Our research tools, however, are borrowed from the physical sciences, where regularity, rather than chaos, reigns. In physics and chemistry it is possible to control most, if not all, of the variables in play. This is almost impossible in education.

For example, classrooms that follow different educational philosophies will vary in many other ways as well. The teachers may vary in skill and experience as well as in personality. In addition, it is almost impossible to match two groups of children. A reliable match would require comparable families, a condition that is difficult, if not impossible, to satisfy. Moreover, the instruments used for assessment, whether observations or tests, are less reliable and less valid at the early level than they are at later ages. This does not mean that meaningful research cannot or has not been done. It just means that we may have to be more innovative in designing studies of educational methods than we have been in the past. The physical-science paradigm, which presupposes regularity and replicability, is simply not appropriate to the study of classrooms.

Longitudinal studies can overcome some of these difficulties, thereby providing meaningful evidence comparing one method with another. Long-term observation and measurement reduce the chance that random factors, such as a teacher's bad week, are corrupting the data. In an analysis of ten independently conducted, and variously sponsored, longitudinal studies of the effects of early-childhood education for poor and at-risk children, High Scope Educational Research Foundation scholar Lawrence J. Schweinhart and his colleagues found that children who attended preschool performed significantly better intellectually, at least during the program and shortly thereafter. In some but not all of the studies, significantly fewer of the children who attended preschool were classified as disabled and placed in special-education classes. Likewise, in some but not all of the studies, children who attended preschool had higher rates of high-school completion.

These investigations of early-intervention programs provide clear evidence that early-childhood education, in most cases of

the developmentally appropriate kind, had lasting effects on the lives of participating children. It is not clear, however, whether the results would be the same if advantaged children were the subjects. Consider an analogy. If you take children who are significantly below the norm and feed them a full-calorie, nutritious diet, they will make remarkable progress until they reach the norm. But if you put well-nourished children on a similar regimen, there will be few if any effects. If you start at a low level, you have more room for improvement than if you start at the norm.

Studies of children in different types of preschools are merely suggestive. One study by Leslie Recorla, Marion C. Hyson, and Kathy Hirsh-Pasek compared children who had attended an academic preschool with those who had attended a developmentally appropriate program. Although there were no academic differences between the two groups, the children attending the academic program were more anxious and had lower self-esteem. These results diminished after the children began to attend public school.

An older study was carried out by Carleton Washburn, the famed Evanston, Illinois, educator. He introduced children to formal instruction in reading at different grade levels from kindergarten to 2nd grade. The children who were introduced to reading at these three levels were then retested in junior high school. The assessors didn't know the grade at which each child had learned to read. Washburn found little difference in reading achievement among the groups. The children who had been introduced to formal instruction in reading later than the others, however, were more motivated and spontaneous readers than those who had begun early. Similar findings were reported in the Plowden Report in England, which compared children from the informal schools of rural areas with children who attended the more formal schools of urban centers.

Studies of early readers, those who are able to read phonemically on entering kindergarten, have found similar results. In both the United States and Canada, only about 3 to 5 percent of children read early. In such studies, most children had IQs of 120 or higher and were at Piaget's stage of concrete operations. In addition, almost all of them had a parent or relative who took special interest in them. These adults did not engage in formal instruction; they read to their children, took them to the library, and talked about books with them. In order to learn to read early in life, children need the requisite mental abilities, but they also benefit from the motivation that develops from rich exposure to language and books and the special attention of a warm and caring adult.

Evidence attesting to the importance of developmentally appropriate education in the early years comes from cross-cultural studies. Jerome Bruner reports that in French-speaking parts of Switzerland, where reading instruction is begun at the preschool level, a large percentage of children have reading problems. In German-speaking parts of Switzerland, where reading is not taught until age six or seven, there are few reading problems. In Denmark, where reading is taught late, there is almost no illiteracy. Likewise in Russia, where the literacy rate is quite high, reading is not taught until the age of six or seven.

The movement toward academic training of the young is about parents anxious to give their children an edge in an increasingly competitive economy.

Current Practice

Why, when we know what is good for young children, do we persist in miseducating them, in putting them at risk for no purpose? The short answer is that the movement toward academic training of the young is not about education. It is about parents anxious to give their children an edge in what they regard as an increasingly competitive and global economy. It is about the simplistic notion that giving disadvantaged young children academic training will provide them with the skills and motivation to continue their education and break the cycle of poverty. It is about politicians who push accountability, standards, and testing in order to win votes as much as or more than to improve the schools.

The deployment of unsupported, potentially harmful pedagogies is particularly pernicious at the early-childhood level. It is during the early years, ages four to seven, when children's basic attitudes toward themselves as students and toward learning and school are established. Children who come through this period feeling good about themselves, who enjoy learning and who like school, will have a lasting appetite for the acquisition of skills and knowledge. Children whose academic self-esteem is all but destroyed during these formative years, who develop an antipathy toward learning, and a dislike of school, will never fully realize their latent abilities and talents.

If we want all of our children to be the best that they can be, we must recognize that education is about them, not us. If we do what is best for children, we will give them and their parents the developmentally appropriate, high-quality, affordable, and accessible early-childhood education they both need and deserve.

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pumpkin. This is my name on the title page. That means I wrote this book. I'm the author." The teacher then goes through the remaining pages of the book. She says, "One pumpkin," while showing the first page, which has a crayon drawing of a single pumpkin. She says "two pumpkins" while showing the drawing of two pumpkins on page two. The teacher builds up anticipation by saying slowly, "What do you think will be on the last page? Are you ready?" She turns the page to reveal a drawing of a Jack-o-lantern. She reads the word printed in large letters at the bottom of the page, "BOO!" The kids giggle.

She writes the letters "B" and "OO" on the board, with a slight gap between the B and OO, saying, "This is the letter B, it makes the 'buh' sound, and these are two O letters. Together they make the 'ooo' sound. When we put them together they say 'buh-ooo, boo.'" She encourages the children to respond chorally to the prompt, "This is the letter B; it says _____. These are the letters OO; they say _____. Now let's put those sounds together fast while I point to the letters." The children practice blending "buh" and "ooo" into "BOO" as their teacher points to the letters.

The teacher then asks each table to work on a Halloween book using paper and crayons. She circulates among the tables, helping the children divide up the tasks. She suggests that one table make their story about ghosts instead of pumpkins. To another table she suggests making witches the theme. She makes sure that each child at each table writes his or her name on the title page. She helps children with drawing or printing as necessary. She makes sure that each book has the word "BOO" printed on the final page. The children work diligently, and continue on the task through much of the morning, with breaks for snack and playtime. After lunch, the teacher asks each table to read its Halloween story to the class. The children stand in front of the class, and all the children take a turn reading a page of the book their table has written.

Brianna and Jamel are from similar family backgrounds and entered preschool with the same levels of competence and motivation. Their classrooms, however, couldn't be more different. They operate under significantly different assumptions about the pace at which children learn and with significantly different goals for their early educational experiences.

A Matter for Research

Brianna attends a child-centered classroom organized around the principle that children learn best by following their own interests and goals. The teacher's role is to provide engaging materials and to cultivate children's natural development by sharing control with them, focusing on their strengths, forming close relationships, supporting their play ideas, and adopting a problem-solving approach to social conflict.

Jamel attends a content-centered classroom organized around the principle that there are skills and dispositions that children need to be taught if they are to be prepared for later schooling and life. The teacher's role is to provide a sequence of experiences that will achieve those instructional goals.

Content-centered approaches are more likely than child-centered approaches to involve children sitting at tables engaged in whole-class activities. Content-centered approaches are likely to devote less time to free play. Because there are specific instructional goals, content-centered approaches are more likely to involve the assessment of outcomes. Systems that adopt content-centered approaches are more likely to appeal to research to support their efforts, while child-centered approaches are more likely to appeal to the opinions of practitioners as expressed by the professional organizations to which they belong (as with the standards for developmentally appropriate practice of the National Association for the Education of Young Children).

A pivotal issue for early-education policy is whether there is enough evidence to make a choice among the various child-centered and content-centered approaches, based on the long-term effects on children. Clearly much work remains to be done in this area. In its report *Eager to Learn*, the Early Pedagogy Committee of the National Research Council recommended that "the next generation of research . . . examine more rigorously the characteristics of programs that produce beneficial outcomes for all children." In other words, the research base for choosing either specific curricula or general approaches for early-childhood programs needs strengthening.

Preschool classrooms in which teachers believe it is developmentally inappropriate to teach early literacy are classrooms in which only children who get this help at home will be ready for school.

Most research on the impact of early-childhood programs has focused on structural measures of quality, such as the teacher's educational level or staff ratios, or on the effects of classroom quality, broadly construed. It is well known, for instance, that preschool classrooms in which teachers have bachelor's or higher degrees produce better outcomes for children than classrooms in which teachers have less education. Classroom quality, as rated by observers on dimensions such as space and furnishings, personal-care routines, and interactions between teachers and children, has also been shown to affect outcomes for children. Such criteria would not discriminate between the child-centered and the content-centered examples above.

Research studies that have directly compared preschool curricula are rare. Recent studies have used correlational methods that compare outcomes for children in child-centered and content-centered classrooms in which teachers have self-selected their instructional approaches and children's parents have self-selected their preschools. Stanford's dean of education Deborah Stipek has conducted the best studies in this genre. Stipek found that children in didactic, content-centered programs generally do better on measures of academic skill than do children in child-centered classrooms, while children in child-centered classrooms worry less about school and have higher expectations for success than children in content-centered classrooms.

Every undergraduate learns that correlation is not causation, and that rule certainly applies here. For instance, are higher levels of performance anxiety in content-centered classrooms due to the focus on academic content or to the personalities of the teachers who defy convention in emphasizing such content? Perhaps children's concerns in content-centered classrooms reflect the influences of their homes more than their classrooms. And it is not altogether clear that children having some concern about their performance in school and having some sense that there are limits to their competence should necessarily be considered negative outcomes. These are questions for further research.

Should Content Rule?

The only comparisons of preschool curricula using random-assignment experiments (the gold standard for causal conclusions) are drawn from studies begun decades ago, mainly during Lyndon Johnson's War on Poverty. One of the best studies, conducted by Louise Miller and Jean Dyer at the University of Louisville, involved random assignment of low-income children in their pre-K year to one of four curriculum conditions (two content-centered models, a Montessori model, and a traditional child-centered model). There was also a comparison condition in which children received no preschool or daycare experience. There were multiple classrooms/teachers in each condition, making it possible to separate the effects of curriculum from the effect of particular teachers and classrooms. Children were followed through the end of 2nd grade. In general, the content-centered preschool classrooms produced strong and immediate effects on cognitive and pre-academic outcomes compared with the child-centered approach, but no meaningful differences lasted through the end of 2nd grade.

This finding of immediate gains and then a fade-out is characteristic of research on early educational interventions (studies of the federal Head Start program, for instance). The fade-out effect for cognitive gains raises the important question of continuity in educational experience. The advantage of hindsight makes it clear that the "inoculation" analogy implicit in the early-intervention programs of 30 years ago is inappropriate. Why, for example, should learning the letters and sounds of the word "BOO" in a pre-K classroom produce long-term effects on reading scores if a child transitions into a kindergarten classroom that has no academic content and moves from there into an elementary school that does not use systematic instruction in phonics?

There is a clear need for more and better science in this arena—in particular, studies that examine the effects of preschool curricula when joined with kindergarten and elementary-school curricula that build on preschool experiences. Until such research is conducted, statements about the value of content-centered preschools will be merely inferential.

The area of literacy offers the strongest inferential case for content-centered classrooms. Reading skills provide a critical foundation for children's academic success. Children who read well read more and, as a result, acquire more knowledge in other academic areas. By one estimate, a middle-school child who is an avid reader might read nearly 10 million words in a year, compared with 100,000 for the least motivated middle-school reader. Children who lag behind in their reading skills receive less practice in reading than other children. They thereby miss opportunities to develop reading comprehension strategies and often encounter reading material that is too advanced for their skills. The upshot is that they develop negative attitudes toward reading itself. Poor readers fall further and further behind their more literate peers in reading as well as in other academic areas.

Children who attended more academically oriented preschools had significantly higher scores in reading, math, and general knowledge when tested in kindergarten.

According to the National Center for Educational Statistics, 38 percent of 4th-graders nationally could not read at the basic level in 1998. In other words, these children could not read a short expository paragraph and extract facts from it. This problem is strongly correlated with family income: 64 percent of African American 4th-graders and 60 percent of Hispanic 4th-graders (two groups that experience disproportionate rates of poverty) scored below the basic level in reading in 1998. In some urban school districts, the percentage of 4th-graders who cannot read at the basic level exceeds 70 percent. Of those children who experience serious problems with reading, 10–15 percent eventually drop out of high school. Only 2 percent complete a four-year college program. Surveys of adolescents and young adults with criminal records show that about half have reading difficulties. Similarly, about half of youths with a history of substance abuse have reading problems. It is no exaggeration to say that early reading failure places a child's life at risk.

What does this have to do with preschool? In short, getting children ready to read is important. The National Center for Educational Statistics recently reported on its Early Childhood Longitudinal Study. Data from 22,000 children involved in this study of the kindergarten class of 1998–99 show that, after controlling for family income, children who attended more academically oriented preschools had significantly higher scores in reading, math, and general knowledge when tested in the fall of their kindergarten year than children in preschool settings without academic content. There is also a strong link between the pre-reading skills with which children enter school and their later academic performance. Connie Juel, a professor of education at Harvard University, found that 88 percent of children who were poor readers at the end of 1st grade remained so by the end of 4th grade. The relationship between the skills with which children enter school and their later academic performance is strikingly stable. For instance, University of Michigan psychologist Harold Stevenson found a correlation of 0.52 between the ability to name the letters of the alphabet on entering kindergarten and performance on a standardized test of reading comprehension in grade 10.

Two recent longitudinal studies, one by me and my colleagues at the State University of New York at Stony Brook, the other by Florida State University psychologist Christopher Lonigan, have identified important preschool predictors of elementary-school reading success. The two studies assessed an array of cognitive, linguistic, and pre-reading skills in children during the preschool period and followed those children

into elementary school. Both studies used sophisticated mathematical modeling techniques to identify the independent influence of various preschool abilities on reading outcomes. In both investigations, specific pre-reading skills such as knowledge of print (knowing letter names), phonological awareness (being able to rhyme), and writing (being able to print one's name) were strong predictors of reading success well into elementary school. For instance, my colleagues and I found that 58 percent of the differences in reading ability at the end of 1st grade in the sample of roughly 600 low-income children could be predicted from their knowledge of print and their phonological awareness at the end of kindergarten. Likewise, 50 percent of the differences among these children in their print and phonological skills at the end of kindergarten could be predicted from these same abilities measured at the end of their pre-K year in Head Start. In other words, children who began to learn about print, sounds, and writing in preschool were more likely to be ready to read at the end of kindergarten and more likely to be reading successfully in elementary school. These effects were much stronger than the influence of children's vocabulary and general cognitive abilities in the preschool period.

Carlton University psychologist Monique Senechal and others have contributed another piece of the puzzle: Experiences that develop vocabulary and conceptual skills in preschoolers are different from the experiences that develop print skills. Vocabulary and oral comprehension abilities derive from rich oral interactions with adults that might occur spontaneously in conversations and during shared picture-book reading. By contrast, knowledge of letters, letter sounds, and writing is derived from explicit teaching. Preschoolers who know the letters of the alphabet live in homes in which materials such as magnetized alphabet letters and alphabet name books are present and used by parents to teach their children. A study by educational psychologist Jana Mason at the University of Illinois found that nearly 50 percent of preschoolers from families receiving public assistance in Illinois had no alphabet materials in the home. Nearly 100 percent of preschoolers from professional families played with alphabet materials at home.

If preschoolers are not exposed to print and given some tutelage in its principles at home, why should we expect them to have a personal interest in print or to have a goal of understanding it? If children enter preschool without an interest in print, how is a child-centered program in which the teacher follows their personal interest and supports their play ideas supposed to develop that interest? If children do not develop pre-reading skills at home or in their preschool, how are they supposed to succeed in school, given that pre-reading skills are such strong predictors of reading success?

Children need help getting ready to read. A child does not learn the name of the letter "A" or what sound it makes or how to print it simply by being around adults who know these things, by being in an environment in which picture books are read to children, or by being in an environment in which adults read for pleasure. Children learn these things because adults take the time and effort to teach them. Preschool classrooms in which teachers believe it is developmentally inappropriate to display alphabet letters or to use systematic activities to teach emergent literacy are classrooms in which only children who get this help at home will be ready for school.

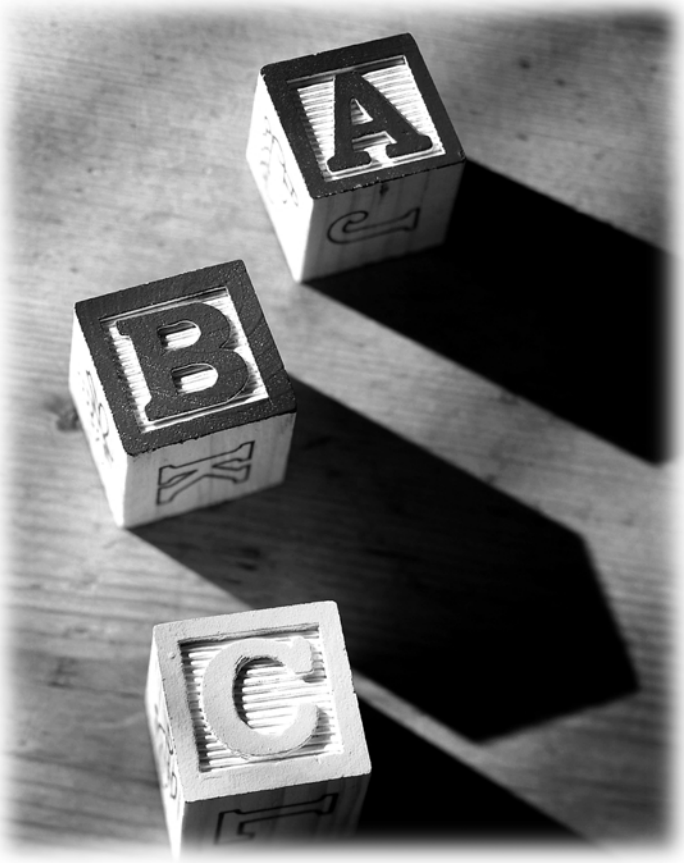
A child can acquire the ability to share while learning about letter sounds just as well as while working with Play-Doh.

Acknowledging the value of pre-academic content in preschools is not to limit the goals of preschool education. Learning how to interact well with peers and learning general approaches toward learning such as task persistence are important to later school success, over and above the effects of specific pre-academic skills. There's no reason why these goals can't be joined. A child, arguably, can acquire the ability to share and persist while learning about letter sounds just as well as while working with Play-Doh.

Nor does this mean that four-year-olds should be taught using the same methods and materials that are used with seven-year-olds. Bringing elementary-school pedagogy and materials to pre-K will likely fail and could actually harm young children. The challenge for content-centered preschool education is to develop fun and educational classroom activities, including computer-based activities where appropriate, that teach while engaging and developing children's interests. Preschoolers are demonstrably eager to learn about many topics, including reading, math, and science, so a little ingenuity, time, and money should be all it takes.

Any effort to provide more academic content in preschools must be accompanied by an effort to establish solid links between appropriate content-centered preschool curricula and pedagogy and content in kindergarten and elementary school. Preschools need to get children ready for school, not just in a generic sense, but ready for something specific that will be provided at the next educational step and then built on thereafter. We would expect any run-of-the-mill piano teacher to start students with the basics and move them through a sequence of lessons that are hierarchically organized and cumulative in their effects (learning to read music is remarkably like learning to read text). Shouldn't we expect as much of the connections between the lessons of preschool and those of school?

–Grover J. Whitehurst is chairman of the department of psychology and a professor of pediatrics at the State University of New York at Stony Brook.



David Elkind Responds:

Grover Whitehurst's distinction between "child-centered" and "content-centered" classrooms is overdrawn. Any effective early-childhood educator is both directive and nondirective and offers content that is both pre-academic and not pre-academic.

The real concern is whether a classroom is offering developmentally appropriate activities. Consider Whitehurst's example of a teacher in a content-oriented classroom directing the children to write a Halloween story that incorporates a phonics lesson about the "B" sound. In what sense can four-year-olds be expected to "write" their stories? It is a skill far beyond the ability of most preschoolers, who are just beginning to print their names. It is a developmentally inappropriate activity. A more reasonable activity, often used in developmentally appropriate classrooms, would be to ask the children to dictate their story to the teacher, who then writes it down and reads it back to them. This gives children a clear example of how words can be translated into print and how printed words can be translated into sound—a very basic pre-academic skill.

Likewise, consider the content introduced to teach the children the letter "B." This lesson, though apparently simple, was just too abstract for young children. At this stage, children can indeed learn that "B" is for boat or box—that is, they are able to learn the sound in connection with a familiar name for a familiar object. That is how it would be taught in the so-called child-centered classroom. By contrast, the "B" in "boo," the example Whitehurst uses, is too abstract because it is not associated with a concrete representation. You cannot see or touch "boo." It is the failure of the so-called content approach to take seriously children's developing abilities and modes of learning that is the issue, not directedness or content.

Whitehurst leaves the impression that the child-centered classroom is focused solely on what he describes as children "following their own personal interests and goals." But consider his example of a child-centered classroom. He writes, "Their teacher circulates, engaging the children in conversations about their work and sometimes taking on the role of the play partner. When center time comes to a close, the children gather around the teacher for a review of what they've done." Certainly Whitehurst would agree that children's use of language to converse and to describe their activities is an important pre-linguistic, pre-academic activity. Likewise, by engaging in their self-initiated activities, children are reinforcing what Erik Erikson called their sense of industry. It is the sense of industry that is a basic motivation for academic achievement.

This is not to say that we shouldn't challenge children, but intelligent challenge recognizes where children are and encourages them to go further.

The issues of directedness and content in teaching are very complex at all levels of education, and certainly at the early-childhood level. As I have tried to demonstrate, early-childhood classrooms are not easily divided along the lines of direction versus non-direction, nor along the lines of content that is pre-academic versus content that is not. What really distinguishes them is whether or not the direction and the pre-academic content are developmentally appropriate.

This is not to say that we shouldn't challenge children, but there is intelligent challenge and there is unintelligent challenge. Intelligent challenge recognizes where children are and encourages them to go further. Unintelligent challenge often focuses on the skills to be attained without sufficient attention to the children being taught.

As Whitehurst acknowledges, research in this area is far from definitive. Nonetheless, the wisdom of the giants of early-childhood education, the data from other cultures, and the experience of thousands of early-childhood educators expressed in the guidelines of the NAEYC are strong if not conclusive evidence for the value of a developmentally appropriate approach to early-childhood education.

Grover J. Whitehurst Responds:

Near the beginning of his essay, David Elkind states a position on which he and I agree. He writes, "There is no solid research demonstrating that early academic training is superior to (or worse than) the more traditional, hands-on model of early education." However, near the end he poses a rhetorical question: "Why, when we know what is good for young children, do we persist in miseducating them, in putting them at risk for no purpose?" But if there is no solid research on which approach to early education is best for children, how can Elkind conclude that we know what is best and that we are "miseducating" children if we stray from the traditional model? The answer to this seemingly obvious contradiction, I think, is Elkind's belief that we know what good education is because the "giants of early-childhood development" have told us. That none of these "giants" did any research on the effects of different preschool curricula seems to be irrelevant to Elkind, as is his own admission that there is no solid research on the topic. His appeal is clearly to philosophical, historical, and theoretical authority, so ignoring empirical evidence, or the lack thereof, does not register with him as a contradiction.

Yet another example of Elkind's not letting empirical evidence get in the way of his argument: "'Sesame Street' has run for more than 30 years. Children today know their numbers and letters earlier than ever before. Many know them by age two. Yet children today are not learning math or reading any earlier or better than did children before there was 'Sesame Street.'" The evidence shows that the average child attending Head Start exits that program in the summer before kindergarten being able to name only one—yes, one—letter of the alphabet. Head Start kids must not be watching enough television.

Another example: "To read phonemically, a child must be able to recognize that a letter can be pronounced differently depending on the context. . . . In Piaget's terminology, 'concrete' operations are required for this highest level of reading." In this case, Elkind takes the theoretical assertions of Jean Piaget as his basis for concluding that preschoolers can't "read phonemically." However, precocious reading early in the preschool period by otherwise normally developing children is well documented, as is a developmental disorder called hyperlexia, in which children with low levels of cognitive and linguistic skills can decode written text with high accuracy. Neither precocious readers nor hyperlexics would have any trouble pronouncing the letter "p" in "pin" (which is aspirated and released) differently from the letter "p" in "spin" (which is neither aspirated or released); likewise, the letter "k" in "keep" versus the "k" in "stack," and so on. Nor do such children have any difficulty appreciating the obverse, that two different letters can make the same sound—for example, the "c" in "cat" and the "K" in "Kathleen." Furthermore, the one large-scale study on the relationship between concrete operational thought and reading, reported by University of Northern Iowa professor of education Rheta DeVries more than a quarter of a century ago, found that measures of reading in children in the early school years were almost entirely unrelated to measures of concrete operational reasoning on Piagetian tasks. Again, Elkind takes the philosophy of "the giants of early-childhood development" as definitive, while ignoring a substantial body of observation and research that runs counter to his assertions.

When Elkind does appeal to research, he does so anecdotally and without attention to obvious contradictions. For instance, he notes, "In German-speaking parts of Switzerland, where reading is not taught until age six or seven, there are few reading problems." This is significant to Elkind because it is around the age of six or seven that children are supposed to be capable of Piagetian concrete operations. But in the United States, where reading also isn't taught until age six or seven, 38 percent of 4th-graders nationally and up to 70 percent of 4th-graders in urban schools can't read at the basic level. What, then, are we to learn from the Swiss example?

Most fields of scholarship that bear on the human condition showed substantial progress during the 20th century. Take medicine. Citations to the work of Louis Pasteur in a 21st-century publication on bacteriology would be unlikely and would occur only to establish the historical context of a modern program of research. The reason that Pasteur's work isn't of current scholarly import is that medicine is an evidence-based field. One generation of research lays the basis for the next, and the process proceeds in a cumulative, though not linear, fashion until the product of work of 100 or 50 or perhaps only 2 years ago has only historical significance. Early education, by contrast, remains mired in philosophy, in broad theories of the nature of child development, and in practices that spring from appeals to authority and official pronouncements of professional guilds, rather than to research. Until the field of early education becomes evidence based, it will be doomed to cycles of fad and fancy. We need a science of early-childhood education, and we need it now.

The average child attending Head Start exits that program being able to name only one—yes, one—letter of the alphabet. . . . Until early education becomes evidence based, it will be doomed to cycles of fad and fancy.