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"Educating Today's Children: Focus on Early Childhood; Appropriate Curriculum for Early Childhood"

David Elkind

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Portland State University

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HOST: We are all aware that through this kind of cooperation and mutual concern, we can help influence policies and foster programs which will be without pressures and that are appropriate to the child's growth and development. Such is a great responsibility, and we wish to help meet these needs of today's children, for they are tomorrow's America.

At this time, Ms. Pat […], the president of the Oregon Association for Education of Young Children, one of the sponsoring organizations, will introduce our speaker of the morning, Dr. Elkind.

[aside] There's water here, in case you need it.

PRESIDENT: David Elkind is currently Professor of Psychology, Psychiatry, and Education, and director of the graduate training program in developmental psychology at the University of Rochester. He is also headmaster of the Mt. Hope School for seven- to nine-year-old children, which is associated with the university. After taking his doctorate at UCLA, he spent a year with David Rappaport at the Austin Riggs Center and also a year at the Piaget Center in Geneva. His research has been in the areas of cognitive and perceptual development, where he has tried to build on the research of Piaget.

Dr. Elkind is a consultant to government agencies, state education departments, clinics, and mental health centers, as well as serving as consulting editor to many psychological journals. His bibliography includes research studies, review and theoretical articles, book chapters, books, and also articles for some of the more popular magazines. Those of you who may have had occasion to read some of his work are already aware of the contribution he has made to the field of child development and early childhood education, not only for his insight and clear thinking but especially for his ability to express his ideas so well. We now have the opportunity to hear him personally present some of those views, and I have the great pleasure of presenting Dr. David Elkind. [applause]

DAVID ELKIND: Thank you very much, Pat. I'm very pleased to be in Oregon [pronouncing it "*Ore-gone*"]—did I say it right?—No? Good… I was practicing, too. All right, give me a couple more weeks and I'll have it down. In preparation for coming here, I was writing and began coming across a lot of material that was distressing to me, distressing because it seemed to be doing just the opposite of what psychologists and educators of repute have been doing several years ago, a decade ago: mainly, saying how important early childhood was; if you didn't get children during this period, their whole lives could be ruined; you could increase their IQ; it was the most rapid… there was a tremendous over-sell, as you know, about the early childhood years, and there was tremendous pressure for all sorts of early childhood programs. I think in some ways it was good that we got recognition for the importance of early childhood, but sometimes the expectations were much too great as to what early childhood education could do. To be sure, it's important, but it certainly is not going to cure society's ills, and to expect it to do that, I think, was over-expectation.

And today, I see a very different approach. People are beginning to publish studies and beginning to say that early childhood education doesn't make any difference, and I think that in the next year or so that we're going to hear more of this; that studies by a number of people—there's a large study that has just come out evaluating various programs: Montessori, B… Engleman, traditional growth pre-schools, and the Peabody school—and they measured, they did a very careful study, and they had… they selected the teachers, trained the teachers, made sure the teachers were implementing the program they described; they selected the children, randomly assigned them to the different groups, tested the children in a variety of measures including intelligence and so on. And after four years they found no differences between the groups, and as a matter of fact, the control children who had not attended any of these pre-schools had done as well or better than the other children. We are going to see that now coming out, and people are going to say, "Well, it doesn't make any difference what we do in early childhood education," and I think that point of view and that perspective is every bit as

detrimental as the one that we had before which said that early childhood education is going to solve all of society's evils and ills.

So what I would like to do this morning, if I may, is to briefly present a Piagetian—as you would expect—orientation towards early childhood education, and to try from both a research and theoretical perspective to suggest what the values of early childhood education are and what the dangers of ineffective… of non-professional early childhood programs could be.

Let me begin with a story, if I may. Our youngest boy is now eight, but at the time was about four; my wife was away somewhere and I had taken him for the morning in my office. We had gone to the faculty club for lunch and were walking back to my office, and there was some new building construction going on and it was still the noon hour. As we were walking through the construction area, there was a workman standing there; it had been raining and it was spring, and he was standing there in big hip boots with his hands clasped over his chest like this. He was standing there and he had a very nice smile, and he was sort of standing there with his boots and sort of squishing up and down in the water like this, with a sort of pleasant smile. We went on, and Ricky is one of these kids who is always… you never know where he's going, he's always going somewhere. And he said, "Daddy, how come you never had any fun?" [laughing] I said, "What?" He said, "How come you never have any fun?" I said, "I have a lot of fun. We go sailing, and…" And he sort of looked at me and that surprised me, because I thought he enjoyed sailing, but maybe he doesn't really like that big boat after all. And I said, you know, we make wine and all that stuff, but he said, "No, that's not fun." Again, I said, "Gee. What about Mommy? Does she have any fun? She plays tennis and plays piano and stuff…" "No, she doesn't have any fun either." I said, "Gee, Rick, do any adults have fun?" He said, "That man over there was having fun." [laughter]

The point, I think, is that even a child psychologist can forget that what is fun to a child may not be fun to an adult and vice-versa, and that the child's reality is not the same as the adult's reality. I think that's the basic, really, issue that I'm going to stress in many different ways today, because it's the basic theme that Piaget has stressed too: that the reality of the child is not the reality of the adult, and that although we may say that and verbalize it, to keep in mind and to take the child's perspective and see the world from the child's point of view I think is a very difficult task, and is one which makes early childhood education such a difficult one and why it requires really so much skill.

So let me go back for a moment and say how is it possible for a child like Ricky to have a reality which is different than ours as an adult? That's really the question that Piaget [asks]: how is it possible for a child to think of the world, to see the world, conceive it in ways which are

different than the adults do? There traditionally have been several different theories to explain that. One—and because I come from Rochester which as you may or may not know is the home of Eastman Kodak, which is a great benefactor of our university, I use photographic analogies—so one theory of knowing might be a sort of "camera" theory which says that the mind operates pretty much like a camera, and that knowing about the world is simply taking pictures of it. A little child learning about the world has a whole bunch of unused film, and learning about the world, then, is taking more and more pictures of the world, storing those up in film libraries—or film albums, really—and the difference, then, between adults and children is that adults have many more film albums than children do, but it's essentially a quantitative difference. Adults have had more experience; they've taken more pictures of the world, and therefore their knowledge of reality is simply more quantitatively greater than the young child's. Of course, you can deal with individual differences. You can say some children have an Instamatic 20, some have an Instamatic 30, some have an Instamatic 40, and so on. You can talk about the speed of the film and carry that analogy as far as you like, but the point is that the view of knowing is that the child's mind operates like a camera. The child is relatively passive and what's out there simply gets put inside with no changing or filtering or transformations whatsoever. That's one notion about how reality comes be.

Another less popular idea might be called a "projector" theory, which says that the child's mind operates like a projector and that each child comes into the world with a built-in film library. Learning about the world, which is just a blank screen, is playing those films out on a projector and then seeing what's out there. So, from this point of view, the child never ever learns anything new. Everything he ever knew and ever will know is already stored in memory, and the task of the teacher, the task of the educator, then, is to draw out all of this knowledge by asking the right questions. It's a kind of Platonic or idealistic theory of knowing that says all that we ever know is already there, and all we have to do if we are good teachers or good educators or good parents is to ask the right questions to draw the information out to have the child learn what he already knows. That sort of theory has never been as popular as the copy or camera theory, and Bishop Barkley, one of the English philosophers who advocated this point of view, was often chided that if he really wanted to discover that there was a real world out there and it wasn't just a figment of his imagination, he really ought to walk down some of the less posh streets of London, and once he got hit in the head with a slop bucket he would discover that there was a real world independent of his own projections. But, be that as it may, the idealistic theory of knowing has always had a useful function in the sense that it's kept people who have said "All our minds do is copy what is out there" on their toes, and to justify that point of view.

Well, the copy theory of knowing—the one that says we just sort of copy what is out there, our minds just take photographs of what is out there—is a very common one, and one that all of us

operate on in everyday life. But Piaget says—Kodak notwithstanding—that the mind doesn't operate like a mechanical contrivance at all; that rather, the way in which the child learns about reality is really much the way the creative artist does; that the child doesn't copy reality, nor does he simply resurrect it from his memory, but rather he *creates* it out of experiences with the environment. The child creates reality out of experiences with the environment. The environment we can never know in and of itself. The environment is something which presents us with stimuli, but all we know of it is our reconstruction, which is reality. So that the creative artist, for example, who is a painter, takes something from what he knows of the external world, his impressions of the landscape for example, and then he transforms it in his own way to put it on canvas, and what appears on canvas is much more than simply what he is seeing visually. It includes not only what he is seeing but what he knows—the French Impressionists are a beautiful example of that, because you can move up close to the paintings and then you see all this paint, and it's only when you move away you get the impression that they wish to create. So they knew the functions of the eye in transforming incoming information and were able to use that, and they recognized that the viewer, the person who simply looks at a painting, doesn't just look at it and copy what's out there, but is an active constructor even in looking at a painting. So that even as a viewer—not only as an artist—do we constantly construct reality; we just don't copy what is out there. We take something from outside, something from inside, and the result is something which is new, unique, and can't really be reduced to something which is either something in ourselves or something outside. I think that's the really… the crucial point, that the child is constantly creating.

The real question that Piaget asks—and really hasn't answered, but simply asks—is that "How does anything new ever come about in the world?" How does anything new anything ever come about in the world? Our traditional theories of knowing and psychology and education tell us how children can learn what's already there, but… someone has said recently, and it's probably true, that one can live a complete day using nothing other than what has been invented in the last forty years. That constantly we're hearing about new inventions of all sorts, new discoveries, new aspects of reality. Newness and creativity is all about us. And yet our theories, traditional theories, simply tell us how things have… how we get to know what already is. A real question that Piaget asks is, "How does anything new come about?" He says that children are creating all the time, that learning is really creating; that it's only when we sort of put our blinders on and look at children as if they're copying and ignore a lot of the other information that's going on that we fail to see how creative children are. That when a child holds up a potato chip and says, "Look, Mommy, a butterfly," he's already doing something—or holds two sticks together and says, "An airplane"—he's taking something from his experience, he's taking something from himself, and he's creating a new symbol, a new creation, which can't be reduced either to himself or to the external world, but is a unique product of the two.

Traditional psychoanalysis, too, has tried to reduce everything to the individual, to something inside, whereas, too, products, true creations are always a unique product of the subject and the object. So Piaget says that the child's reality, then, is a creation; a creation of the child interacting with the world, and that the child creates not one but a series of realities which progressively approximate the realities of adults. So that the reality of the child is quite literally and figuratively different than the reality of the adult.

That's why Ricky can say… that "fun" for Ricky is very different, because his reality is different; he's created a different one. We can communicate; there are certain areas where we can communicate, but certain areas too which are different. And the other important point is that the emphasis is on *difference*. The child's reality is different; it's not right or wrong. Because the child has a different view of the world doesn't make it wrong. It may make it different than ours, but we, too often I think, we get so into the set of right and wrong that we forget that there can be differences which are equally valid, and too often with children, too, we sort of communicate to children that if they say, "If I eat spaghetti, will I become Italian?" we kind of laugh and assume that that's a kind of dumb notion, when in fact it's a different view of reality, which […] admonish, […] "You are what you eat," which is a kind of old philosophical conception… So rather than saying that there is something interesting in the child's view of the world, we often sort of dismiss it as rather quaint or funny. Piaget has said that if we ignore that information, ignore the child's view of the world and assume that somehow it's wrong just because it doesn't coincide with our own, we lose a tremendous amount of information and we lose our opportunity to communicate with young children. So the fact that the child's reality is different doesn't make it wrong; it simply makes it different, and I think that one important lesson that we can communicate to children is that there are differences which are equally valid. To be sure, there are things which are right and wrong, but it's important in education that we communicate to children too that there are things… there can be differences which are equally valued, and that because something is different, it isn't necessarily bad or wrong.

But why is it, then, that we as adults fail often to recognize that the child's reality is different than our own, and have so much trouble? I think that this is a very important problem for education, and one that often goes unrecognized. It has to do with the phenomenon of externalization. Externalization occurs whenever we learn something. I should have had a blackboard up here so I could draw my usual clay balls and glasses of water and so on, but I'm sure most of you are familiar with Piagetian experiments. One is, you show a child two glasses of Kool-Aid, for example, and ask him or her, "Do we both have the same to drink? Is there the same amount to drink in both glasses?" And usually the child says yes, or makes sure that the two levels are about equal. And then you pour one into a tall, narrow container, and of course

the liquid goes up higher, and you ask the child, “Do we still have the same to drink, or does one of us have more?” And usually four-year-olds believe that now the one who has the taller glass has more because it’s higher, and so on. And then around five or so the child begins to understand that even if you put it back they’ll be the same, but right now while the tall glass is being compared to the low one, the tall glass has more. Well, the interesting thing, and the thing that often gets unremarked-upon but is very important is that by the age of six or seven, when you present this kind of experiment to children, they say, “Well, of course they are the same. You didn’t add anything; you didn’t take anything away. If you pour it back, it’ll be the same. Of course they are the same… dummy!” [laughing] Implicit… It’s as if, for the child, now this is a kind of silly question. Well, that’s an example of externalization. The child, we know, has to arrive at that equation of the two quantities by logic. He can’t do it by perception. Because perceptually a tall, narrow glass filled equally high with water or Kool-Aid and a low one look different. You can do studies presenting these. For example, if I presented to you, and you didn’t know it, that they were the same quantities of water or Kool-Aid in a tall, narrow container and a low, wide one, there would be no way that you could judge whether they were the same or different, and by and large you would make a mistake, unless you were a bartender or something and had a little experience in that domain. Usually, you’d make a mistake because it's an illusion. The only way that the child can arrive at the equality of the two quantities is by reasoning: knowing that they were the same before, knowing that nothing had been added or taken away, and therefore deducing that the two quantities are the same. So the child arrives at the equality of the two quantities by reason, by deduction.

But he’s not aware of that. Piaget talks about the intellective unconscious; that we all have intellective unconscious, that we do a great deal… we are much more logical and much more rational than we think, that we’re doing a lot of very complex thinking that we are unaware of. And consequently… but what happens is that the equality seems to be out there, it seems to be in the world out there, independent of our own thought. And that’s externalization. It happens to all of us at all times, that as soon as we learn something we externalize it, it seems to be out there independent of us and of our own mental processes. That’s why it’s so difficult for us as adults to recognize the child’s reality, because for us, things are out there. So it’s the kind of “watch me” school of education. If you only look harder, you’ll see it, see? Because it’s out there for us, and the child isn’t looking hard enough to see what’s out there… but it really *isn’t* out there for him in the same way it is for us, and to the extent that we want to point it out to him.

That kind of notion really isn’t too bad until we get into education, because in education it means that we often start where we should be ending. I’ll talk a little bit about that later when we talk about reading, because often in reading we assume that all the child has to do is

discriminate that letter—and I have colleagues who say, “Learning to read is simply discriminating letters”—but letters are complex intellectual constructions. For us, who have constructed it, it’s out there, it’s in the world out there, and all we have to do is look at it. But for the child, it isn’t out there in the same sense it is for us. It has to be constructed. It’s a very complex construction.

An analogy would be, you know, if you learn a motor skill like skiing or swimming or something, and then you’re a skilled practitioner—or of tennis—but you’re not a good teacher. You may want to say, “Watch me,” as if the coordinations were in your hands rather than in your head. It’s certainly true that initial… that once you become very proficient, again, it becomes unconscious and the coordinations do seem to be in your hands. If you’ve been thinking as a skilled pianist about what you’re playing, you’re going to interrupt, you want to think about the interpretation or something else, because you don’t want to think about playing the notes… or typing, or anything else. That becomes part of the intellectual unconscious. But if you try to teach somebody by saying… it’s like saying, “If you want to learn how to play the violin, watch Rubenstein.” It gets to be that sort of thing, as if you could do it by looking at the motor coordinations out there, and it ignores the whole intellectual process that preceded it. I think we do that… we see how rather naïve that would be in the case of motor skills, and yet we do it in education all the time. We have mastered something intellectually that’s out there, and then we want to the child simply to do it by observing it, and we’ve simply bypassed all the cognitive activities that went on. Even learning… when you’re learning to play the piano or learning to play tennis, it involves tremendous intellectual concentration and skill and coordination. Once it becomes mastered then it becomes automatic and part of the intellectual unconscious. It seems to be out there in our hands, but it’s really not. So we see the same sort of thing in the motor skills, and we don’t realize that the same thing happens in education.

Well, I want now to turn a bit to the pre-school child’s world and to talk about the kinds of reality that children at that stage create, and the kind of education that seems to me to be most appropriate to that kind of reality. As I’ve said, from the adult’s point of view, we often impose what we think children should be learning for what might be the appropriate thing from the child’s point of view. Piaget has demonstrated long ago that the young child creates a world which is quite different from our own, and has a lot of notions like animism—that everything that moves is alive; purposivism, everything has a purpose—so that when a child asks, “Why is grass green?” he’s not really asking for a physical, chemical explanation about why grass is green, he is rather asking… well, a more appropriate answer would be, “To hide the caterpillars so the birds won’t eat them.” For what *purpose* is the grass green? People say, “Oh that’s bad, you can’t say that to kids.” And I say, “Of course you can.” It’s not entirely wrong, and it really answers the child’s question, because what the child is asking is not *why* in a physical causal

sense but *why* in a purposive sense. It's much more important that you communicate that you understand the child in what he's asking, what she's asking, than you give some sort of empty verbalism that the child can learn but doesn't mean anything or doesn't fit into his own way of thought.

So children's questions tend to be egocentric in a certain way, to not be able to take the adults' point of view, and therefore often we misinterpret again their behavior. A mother who has had a headache and is lying down with the shades drawn and has a four-year-old run in shouting, "Mommy, Mommy, Mommy, there's a turtle in the driveway, there's a turtle…" shouting into her ear, and she says, "Get away, you little wretch… I told you I had a headache, my head is splitting," and he goes on shouting into her ear until she raises her voice so that on no uncertain terms he knows he'd better get out of there. And then her friend calls on the phone and she laments about this child, she doesn't know what is going to become of him because he's so insensitive and can't understand, just like his father… [laughing] The point for the child is simply intellectual immaturity, because the child is unable to take the mother's point of view, and not because he… an adult, it's certainly possible, is capable of taking another person's point of view but may not, but a child really is not. So it's very difficult, then, for the child to understand the mother's position.

Now, because of all the different ways in which… all these different notions that children create about the world, a prime task of early childhood, then, is to help the child get a more substantial view of reality. The way that kids normally do that and the way that we do it and sort of facilitate it in early childhood education is to provide children with a rich experience of activities with things. By seeing how plants grow and by seeing how animals run about, children begin to give up their purposive notions and animist… they begin to know how things really operate. Learning what happens when you heat vegetables, learning how you make things and how things are made, doing things, squeezing things, holding things, all of the kinds of activities that children engage in that sometimes adults looking on who don't know much about early childhood education will say is "play." But Montessori was very right. Much of what seems to the adult to be play is the child's "work." The child is learning about the real world to overcome the sort of notions of animism, purposivism, and so on.

Now, there are two kinds of ways that you can learn, and I think that this is where early childhood education is so important, because one can learn or grow by integration or by substitution. In integration, the child is constantly interacting, confronting, being conflicted with his ideas, and changing his notions in order to fit them to new data. Let me give you an example that happened recently. As you know, I am headmaster of a small school, the Mt. Hope school, and I was importuned to play Santa Claus for Christmas. And my office is upstairs, so I got into

my Santa Claus costume and went outside, and came in through the side doors with my bells and "Ho-ho-ho" and all of that stuff. The kids looked at me: "You're really Dr. Elkind." And when we came back the next day: "It was really you playing Santa Claus." I said, "No way." Well, this has been going on for three months. We're still carrying on this discussion about whether or not it was my… whether it was me who was Santa Claus or not. Now I could have simply said, "Oh, yes. Of course it was me." But I think that what they were doing, what they had been doing was, "Well, you were upstairs, and then you came down, and we saw this here…" and they began taking evidence and reasoning and trying to move, and it was kind of fun for them, because they didn't really want to give up the notion that there was a Santa Claus, but also in giving up that notion they were dealing with the data. They were trying to find reasons, they were trying to find evidence, and I was sort of, "Oh, no way. You have to convince me."

Well, that's no paradigm of good integrated teaching, but I think it illustrates… [laughing] I think it illustrates a kind of effort on the child's part to integrate and to change from evidence that they themselves have accumulated, from ideas that they themselves have built up, rather than simply saying, "Yes, there's no Santa Claus," which would be simply an idea by substitution. We give a child an idea and he simply adapts it, takes it in, and then… But it doesn't take the place of it… the other idea still exists. Piaget tells a lovely example of this kind of difference between knowing by integration and knowing by substitution. He tells a story of visiting a school in Geneva and meeting this third-grader, and asking the boy if he knew how the lake of Geneva, the Lac Lemans, was formed. The child, as many children do, created this lovely myth. Overlooking the lake is this magnificent mountain, Mont Blanc, and he said, "Well, once upon a time there was a giant who was standing on top of the Mont Blanc, and the people down below were teasing him, so he picked up a huge bowl and he said, 'If you don't stop teasing me, I'm going to throw this bowl down on top of you.' And the people kept teasing him, so he took the bowl and he threw it down as hard as he could into the valley, and it made a huge hole and it bounced out again, and then it started to rain and the rain filled up the hole, and that's how the lake of Geneva was formed." Piaget said, "That's a very nice story indeed, but let me tell you how the lake of Geneva was really formed." And he said, "Once upon a time it was very, very cold, and there was ice all over the Alps, and Mont Blanc was covered with ice. It was very, very cold. But then it began to get warmer, and as it got warmer, the ice began to slip down the mountain, and it got warmer still, and the ice fell farther still; it was very heavy. Finally it dug a deep, deep hole into the ground, and it got warmer still and the ice began to melt, and pretty soon it got warmer still and then all the ice melted and filled up the hole, and that's how the lake of Geneva was formed." And the young man was listening raptly, and Piaget said, "Now you tell me how the lake of Geneva was formed." And the child said, "Well, once upon a time it was very cold and there was a lot of ice on Mont Blanc, and it got warmer and the ice began to slip down and it dug a big hole, and it got warmer still and the ice melted and it made a hole,

and it filled up the hole and that's how the lake of Geneva was formed." And Piaget said, "Very nice. Now you know how the lake of Geneva was really formed." And the child said, "Yes, thank you very much," and they parted on the best of terms.

Several months later, Piaget happened to be in the same school again, and encountered the same young man. He said, "Do you remember me?" and the child said, "Oh yes." "Do you remember what we talked about?" "Yes, how the lake of Geneva was formed." "Well, do you remember that?" And the child said, "Very well. Once upon a time, there was a giant on top of the Mont Blanc…" [laughter] So, it illustrates very nicely that if you simply substitute one idea for another without the child really integrating it to where he is, then you don't really make much of an impact. My feeling is that some of the programs where we simply impose upon young children reading skills and so on without involving them in integrating the learning, without involving them by challenging and asking questions—as I said, the Santa Claus was not… But they've got to raise their own questions and doubt, and challenge and ask and prove, without… if we simply impose it upon them… I think we learn by substitution, and children are much more likely to fall back to earlier notions, and their learning is much more likely to be less stable.

I had an example of that while visiting a school, and I won't tell you where, in which a very well-publicized teacher had a program in which she was teaching four- and five-year-olds to read. I'd heard about the program and had a lot of reservations about teaching young children to read, and visited it; and indeed it was a program in which children were sending four-year-olds and five-year-olds four and five and six hours a day in a very rote way learning to read, and I think in a primarily sight way. And indeed the children were reading, but something very strange happened with the five-year-olds. I had sat down with some of them and said, "Would you read to me?" and the children whispered. And I said, "Could you speak up a bit? You know, I'm getting old…" but they really whispered, to a man… or girl. It was very strange. And then I saw the first-graders who had graduated out of this program were still getting much of the same, and they whispered too, only even lower. They wouldn't let me see the second-grade children. [laughter]

But I have a feeling that these kids hated reading, and that the price had been much too high; that to spend five and six hours a day sitting still, that's a tremendous price for a young child to pay, and there's a great deal of the world that children need to explore, to see at this stage. That kind of exploration of the world… that for us, everything is out there. We know what trees are like, and oranges are like, and how to make soup and how to make Play-Doh and do all of those things, but young children don't. And to teach them to read before they know what words mean isn't very useful. If you want reading comprehension to mean anything, children

really have to know what the world is all about. Early childhood education, if it's really valuable and effective, will have to provide children with a rich experience to help them to tie up their language skills with their concrete experiences and to help them give up some of their earlier notions by integration rather than by substitution. If we simply impose on children what… [if we] take for granted that children have the same reality that we do and that all they lack are skills, I think that's a vast misinterpretation, a vast misconception of what the child's world is really like.

Let me just say one other thing about the pre-school kinds of pressures, because… we've been doing studies of children who read early; children who read before they enter kindergarten, because there's been a lot of talk about the fact that if you start children early they'll be much advanced over other children. We found that when we matched—by the way, early-reading children are very few; they're about one in a hundred. That's true all over the country, in California, in New York, in Canada, and so on, no matter where people have studied early readers, only one in about a hundred children learns to read before they enter kindergarten. But what we found in both of our studies about early readers was that—and we matched the children for socioeconomic status, we matched them for intelligence and as many different things as we could—what we found was that the early readers had what Piaget calls concrete operations. That is, they were, in terms of "mental age" if you want to put it that way, about 6.5 or 6.6, the age at which […] and many people for years have said is the age at which we ought to wait until… [teaching reading] and I'll talk a little bit more about that when we talk about early education in the kindergarten, first grade, and second grade.

But the point is that we also did a study of parents, and a rather extensive interview of parents, and did statistical procedures and so on, and one of the factors that came out, a very prominent one that distinguished the early readers from the non-early readers, was what my statistician called "the PPF," the "pushy parent factor." [laughter] Which, for political purposes, I have renamed the "parent achievement-orientation factor." [laughter] You know how that goes. But the interesting thing was that we also looked at another factor, which was children's spontaneous interest in reading. And that did not distinguish the early readers from the non-early readers. So what we found, what we have a pattern of, is cognitive maturity on the part of the child, achievement-orientation on the part of the parents, that those two going together are crucial for early reading. I'm not saying whether early reading is good or bad, but I think one of the reasons that you have your… Reading is a very difficult task for kids. If it were easy, it seems to me that many more children would read early, because they are surrounded, bombarded indeed with all sorts of verbal material, whether in books or on television, all over. And kids… things that are easy for them, they learn! God knows, they learn much more than we like them to learn, as you all know. [laughing] Most early childhood teachers know more about

children's families than the families would them to know. Kids learn a great deal, and they communicate.

So it's not that children are… If reading were easy for young children I think they would… many more would learn it, and they don't. I think that's often forgotten. So pushing kids early, I think, is a combination of parent motivation, and often I think what the studies suggest, again, that early reading is much more a symptom parent need than of child need. It's much more a symptom of parent need than of child need. There's no evidence that I've been able to find that early reading in any way significantly affects later reading achievement, when you control for cognitive maturity and so on. So again it's a matter of parent need rather than child need.

Let me… I'll tell you just one study that sort of reflects that. It's a study that was done in the thirties by Carleton Washburne in Winnetka, Illinois, and it's been recently republished in a book called *Winnetka*. It's interesting that this kind of study always gets pushed aside, but I thought it was very dramatic. He took a number of first-grade classes, about six and and six from different schools in that very posh and very progressive educational system. One group of first-grade classes had an instructional program in reading; another were given a year of what today we would call language experience or language enrichment: children writing, being read to, going to excursions and so on. And then they followed the children up and at the end of first grade, as you might expect, the children who had had formal reading instruction were doing better than the children who had had none. By the end of third grade, however, the children who had had no formal instruction in grade one had caught up with the children who had had formal instruction.

But the most interesting thing happened at junior high, when they had naïve observers go into the junior high and sit and watch and describe these children. The naïve observers didn't who who had been… which children had been in the early reading program and who had not. It was very clear that these observers spontaneously ranked the children who had been delayed as much more vigorous, enthusiastic, excited, happy learners. They weren't doing anything necessarily any *better*, but just in terms of their whole orientation were ranked as being much more enthusiastic, self-sustaining readers and learners. In our study of the World of Inquiry school in Rochester, New York, an innovative school which combines a traditional school with an informal program—they have a traditional classroom in the morning and informal education in the afternoon, in which they can choose which programs they want to go to, and so on—we compared them with children on the waiting list over a long period; the school's been in operation from six to eight years. Again, we found no difference between the children in the World of Inquiry school and the public school, and that's interesting too because they were spending about half as much time on academics.

The one thing that we did find, and this has been true for other evaluations of innovative schools, is that the children don't necessarily gain any more in academics; they don't lose. But what we did find was that there was a regular increase with age in the creativity scores of the kids. That is, the length of stay in the World of Inquiry school was directly related to their performance in creativity measures, so that although they weren't doing any worse or any better than children in the public schools in terms of academics, they were becoming more creative and more open. So to say or dismiss early childhood programs because children aren't doing any better academically may be measuring the wrong things. I think the kinds of things we see in Winnetka and as we have seen in our own innovative schools, that to be sure, if we are looking at simply improving or accelerating children's academic skills, I don't think that we should really ask that of early childhood programs. There is no evidence that that will happen. But what we are doing and I think are doing effectively, but that doesn't get measured in many of these studies, is enriching the child's experience, perhaps promoting creativity, expanding the child's horizons, and it's in that sense that I think early childhood education is very important. It's that aspect of early childhood education which gets neglected in many of these investigations which show that early childhood education doesn't make a difference. It may not make a difference in IQ; it may not make a difference in academic achievement, but it may make a difference in many other aspects of life which can be equally important. That is, the quality of the child's life might be quite different.

Let me just say a few words about the kindergarten and first- and second-grade years. There's a period when Piaget says that young children develop what he calls "concrete operations." Concrete operations allow children to do in their heads what before they had to do with their hands. A pre-school child will do a finger maze; he'll go immediately to it and start trying to make errors and so on, immediately go to action, whereas an elementary-school child will look at the maze, try to figure it out in his head, and then put pencil to paper only after he has figured out the right course. So concrete operations allow children to figure out in their heads possible courses of action; they allow them to reason in various ways, to follow rules; young children have great difficulty following rules. That's another reason that I think formal education for young children really doesn't make a lot of sense. If you play a game with young children, like if you try to play tic-tac-toe or checkers with young kids of four or five, what happens? What sort of rules do they go by? You know, "I win and you lose," which is… [laughing] Of course the older kids say they cheat: "I don't want to play with them. They cheat." Again, it's intellectual immaturity, because kids are not able to follow rules, and that's simply because they don't have concrete operations. But by the time they get to be six or seven, they can begin to follow rules laid down from the outside.

But even so, children don't master things all at once. People think that once he has concrete operations he should know everything, and that isn't true at all. Once a child has concrete operations, that means he has the capacity to learn, but the learning still has to go on.

Now, let me show you how concrete operations are important for reading, because it's one example of many, many that I can give you of how the task from the adult's point of view is very different than it is from the child's point of view. As I said, for the adult, when we want to teach children to read, it seems to be that the letters are out there and all we have to do is get children to discriminate the letters and associate sounds with them. But a letter, from a developmental point of view, is a fairly complex phenomenon. Indeed, it's more complex than a number. Now, a number is—and actually children learn numbers more easily than they do letters—a number, logically, to really have a true notion of a number—and here again we get into problems, because young children may have levels of understanding of numbers. Even a two-year-old may be able to tell the difference between "many" and "few." One might say that he has a kind of a number sense. But from a Piagetian point of view, a cognitive developmental point of view, you don't have a true sense of number until you understand what a unit is. Unit is basic to number. And once a child has a notion of what a unit is, then all the other operations follow.

Now, a unit is a complex cognitive construction. It's more than simply counting. It means that something can be both like something else and different from it at the same time. Now that cognitive understanding is a very crucial one; it runs through so many different aspects of the young child's thinking, and what differentiates the pre-school child from the early elementary-school child is that one capacity to understand that one and the same thing can be two things at once. Because a number is simultaneously like every other number—a 3 is *like* every other number, in that it's a number—but it's different from every other number in its order of enumeration. That is, it comes after 2 and before 4, and no other number. So that it's like every other number, but different from every other number. It's that unique thing, to see that one and the same thing can be two things at once which seem to be contradictory, which is very difficult. Once the child knows that—and some of my teachers say that's one difference between the eights and the sevens. The eights know immediately when we teach them reversability or subtraction because they have that… they have the concept of what numbers are and what units are.

That happens in many different ways. Pre-school children… literature for pre-school children, if you—and I often use it to illustrate the difference between pre-school and concrete operations—if you look at some of the stories for children, they are usually one-dimensional. "Whose mouse are you? My mother's mouse," and so on. Again, there's one story, there's

repetition, there's no development of character; even in fairy tales, which are more elaborate, the characters are one-dimensional. They're either bad or good. Remember Goldilocks and the three little bears, and she's such a bad little girl, and when they finally catch her and she's running out and they hope that she'll fall out of the window and get lost or break her neck or something, but she's a bad little girl, and the bears are all good… People are all bad and all good because young children see people as one-dimensional. That's one of the reasons we have ogres and giants and witches in fairy tales, because they become the bad mothers and the bad fathers. Children have great difficulty seeing parents as both bad and good at the same time. It's convenient to have a bad witch and an ogre out there. Sometimes the fairy godmother and the good king are also… when you want to see your parents as bad, it's nice to have a good fairy godmother out there too.

But it's difficult for them, and it's one of the reasons that again I suggest to parents that they don't try to teach children, pre-school children, in a formal way. I think children have a great difficulty seeing the parent as parent and parent as teacher. And the parent, too, when the parent switches into the teaching role, takes on all sorts of new attitudes that are immediately communicated to the child, and the child has great difficulty dealing with that. Another aspect of that, and I don't know whether you have here problems of bilingual education, but I was spending yesterday in Colorado consulting to some language programs, and I startled some of them by saying that in bilingual programs for young children, I would not have one and the same teacher talk two languages; that I would rather have the teacher talk one and the aide talk another, because it's very confusing for a child to have one person talk two languages for the same sorts of reasons that I've already enumerated. Some people are trying now to change it in different settings but I think as long as you have one person talking two languages it can be confusing. Another aspect of that is that unless the person really speaks both languages very well, they can provide a poor language model for the child.

In any case, that difference appears in many many different ways. What happens, of course, with reading is that the same holds true: that a letter is like every other letter, in that it's a letter, but different from every other letter in the position that it holds in the alphabet, but also different in terms of the sounds to which it is associated; every letter associated with… can stand for more than one sound. And more than one sound, than the same sound, can be represented by many different letters. So that you have a… letters, at least in English, letters and sound present children with complex logical problems which they need concrete operations to understand. Now it's certainly true that children can learn sight words, but there's a limit to the number of sight words that kids can learn, and until they… without some phonic understanding they're going to have difficulty. So that from a developmental point of view, the understanding of English phonics anyway presupposes the concrete operations.

Now it's certainly true that you can try and bypass that. The ITA, the International Teaching Alphabet, as you know, has 44 characters and every character has one and the same… has only one sound. So they've tried to eliminate the logical problem, and there are arguments for and against ITA, I think that probably it was not really given a fair shake because people tried to switch too soon. But there are problems with that. But you can bypass the logic, but if the child has to learn the logic anyway, eventually you might as… it's not going to solve the problem for him.

Let me give you another example, if I may, from our own children, because they're the ones that I know best. Bobby, our middle boy, who is really great in math and has always loved it—he'd go in a taxicab and he'd be counting the meter, you know… embarrassing… "Bobby, cut that out."—he came in to me one day when he was about four and a half and he said, "Daddy, I can tell time." And I said, "Come on, Bobby. You can't do that." Big-shot psychologist putting his four-year-old son down: "You can't tell time." [laughing] And he said, "Yes I can." I said, "All right, what time is it?" and he said, "Four-fifteen." Gee… "You're right. How'd you do that? Oh, I know. You can dial the numbers, and you figured out how to dial…" You know, dialing the numbers is a simple matter. He said, "No, I didn't dial," so I said, "Bobby. Come back and tell me when it's four-thirty." So he came back and told me, "It's four-thirty." "How'd you do that?" He took me by the hand, waltzed me into our bedroom where, on our bedstand, is a digital clock. [laughter] Well, a digital clock takes out all the logic, doesn't it? You don't have to deal with a clock face in which one and the same hand, and one and the same number, stands for one and for five. So that you have the same thing… But it took him another two years to tell time from a clock face. Because learning the digital clock removed the logic, the logical problems, but it didn't remove the problem of learning to tell time from a clock face. So you can teach children to read by a lot of devices, but you don't eliminate the problems of phonics, of English phonics and of the logic inherent in reading English.

To me, it makes more sense that most children—and I'm not the first one that this has been… people have said this for god knows how long—the mental age of about six and a half is about the time when kids ought to start reading. We now have a lot of data that says why that should be true, that that's the age when most children attain concrete operations, and concrete operations are necessary to understand English phonics. To be sure, if you have a language where those kinds of problems aren't there—in Japanese for example, they have some 1500 ideographs and there are three different kinds of systems—but each symbol has its own sound. Therefore, even though you have many more discriminations, they have one-tenth the reading problems that we have in America. It's not a matter of their being brighter or duller, or of their being… It's simply a matter of the orthography of the language, that Japanese… well, I tell my

perceptual friends, look, if it were simply a matter of perceptual discrimination, then god knows the Japanese kids ought to have a lot of trouble reading; in fact, they have fewer problems. In Russia and in Scandinavia, where children are not taught to read until grade… well, they don't really start school until seven; there are very few reading problems. In France, where children start to read at five, and where they have a language such as our own, there are a large number, 40%, of reading problems. There's a lot of data from around the world that all supports the same sort of thing, that English is a complex cognitive task to learn and that most children probably are best advised not to begin until age six and a half. A study that was done in Roches… not in Rochester, but outside, by a psychologist who said "I'm going to try out what you are saying," he had one group of kids who had started reading in the beginning of September in first grade and another group who delayed until after Christmas, and he tested them at the end of the year and found that the children who had started after Christmas were actually more advanced than the children who had started in September.

Now, please understand, I'm not saying that we shouldn't do anything. Teachers say, "What am I going to do if I don't teach kids reading?" There's a tremendous amount to do. First of all, I think kids find math much more easy than they do reading. We spend much too much time in the early grades on reading and much too little on math, but I certainly don't mean those pink wonder worksheets that kids… I think there are so many good manipulative materials that children can use rather than simply working on worksheets in terms of math: measuring themselves, taking counts, figuring out… our kids go through our school finding out what kind of ice cream we like and making charts and measuring… there are all sorts of practical things that kids can do with units. Language enrichment during the first grade, in terms of writing their own stories, learning to print, hearing and being read to, taking excursions, there's so much that one can do that it seems to me that delaying reading instruction… I think we could cut down 50% of our reading problems simply delaying reading instruction until the beginning of second grade. I can't convince very many people of that, but I really believe it. I think that all the evidence that I've been able to communicate will suggest that children would learn to read much more easily, there would be fewer reading problems, and would progress more satisfactorily, and actually, if more time were spent on math, they'd be doing better in math as well.

Those are my… Let me just say that again, this notion of integration holds here, too; that if we wait until they have concrete operations, they can learn to read by integration, because they can deal with it logically, they can integrate the sounds and the combinations from a logical point of view, rather than I think simply sight-reading, which is simply substitution; they're simply learning things visually which they have really no understanding of. I think then they begin to get into trouble.

One other thing about substitution. We have one child who came to us from Jamaica—we didn't know it at the time, but he had never been to school before—a bright kid, really neat kid. But he learned everything by rote. Apparently that was the method of education used, and you could say a word to him and he would know it, but he wanted to approach every learning task by memorization. It really took us a year to begin to help him to move into a more analytic and integrative mode of learning. He wanted to do everything sort of by substitution. One of my fears, and again why I want to express the importance of good early childhood education, is that it may be that the early years are important for sort of getting children imprinted on learning styles, and that if we imprint children too early on a kind of rote learning or substitution learning style, it may be very difficult to break them of that approach later on. Whereas in a very more challenging kind of early childhood program, children will learn analytic attack skills which will stand them in good stead later on.

So let me conclude, then, that effective education of young children is a very difficult and a highly skilled task. The teacher must understand child growth and development, the basics of math, science, reading, social studies, and so on. He or she needs considerable sensitivity and perspective and perceptiveness to respond to the individual differences in children as well. I should say that such teachers will not certainly produce geniuses, but they will give young children a healthy start towards a more happy and productive life. Thank you.

[applause; lecture program ends 1:00:23, followed by question-and-answer period]

[voice in background]

ELKIND: Well, I'm sorely tempted, because there are some really excellent questions that I'd like to dig into, and yet I feel that we… you can't hear? OK. I can't remove the mic, huh? OK. I'm transfixed to this position, because I'm not supposed to move… Is that better? Is that better? OK. I'm saying, I'm a little torn, because there are some really excellent questions that I would like to get into, but perhaps I'll talk a little bit about curriculum and maybe there will be a little time to get back to some of those questions.

I'm hesitating as to how to start. Maybe the thing to do would be to begin to talk about curriculum in general and to suggest that any teacher who deals not just with one curriculum but at least three different curricula… the first is what might be called the developmental curricula, and that's one that Piaget has described for us that has to deal with the kinds of knowledge and understanding and concepts that children by and large acquire on their own through the kind of integration activities provided by their own maturing abilities and the

environment, and that, as far as we know, children all over the world acquire at about the same time and at around the same pace. Obviously there are individual differences and cultural differences too, but we know now—and we have more leeway here and there depending on culture and training and so on—to attain what I've described earlier as concrete operations, and to have concepts about mass and weight and volume and number at about the same age. Children all over the world, despite wide varieties in environments—whether they're in bush Africa or Eskimos in Alaska or in Taiwan, Formosa, or in Sicily or what have you—these children, regardless of the language that they speak or the different environments in which they've been brought up respond pretty much the same way to the Piagetian tasks. That means that the phenomenon is a very hardy one, so that the developmental… there are aspects of the child's world which they acquire pretty much on their own as a result of interactions with the environment, and which can be regarded I suppose as part of our adaptive apparatus, part of our evolutionary adaptive apparatus that we have the potential to acquire.

So that's one curriculum. A second is the school curricula that we're familiar with, and that plays a major part in our educational system. That's the tool skills in the early years of reading and math and science and social studies and the arts and music and so on. The school curricula has to do with the culture, and with the accumulation of culture over many many centuries and decades. Certainly, it is an important part of the child's learning, and something that children have to acquire. There's no question. We can discuss what should be taught when and how, but there's no question in my mind that the school curriculum is a very important part of the child's learning experience. So that's the second curricula.

The third is what might be called the personal curricula. That's the series of… sequence of abilities and interests and personal needs and abilities of each individual child. I can give you an example of a kind of personal curriculum problem that happened at our school, the Mt. Hope School, soon after we opened. The school is in an old carriage house, a very nice old carriage house about half a mile from campus, with an acre of ground, and all kinds of things that kids really love. Downstairs we have a kind of horse tunnel that used to be for the horses, and out in the back is an apple orchard, so they used to take the horses through the horse tunnel into the apple orchard to the eat the apples, and so on. So it's really a neat place for kids. But it's sort of away from things, and one day a young man ran in and took our secretary's purse. One of the teachers saw it and gave chase, and of course we called the police and they soon came. It was a case of overkill; they scoured the grounds and they finally—with four police cars, and the lights swinging and the sirens going; we'd almost wished we'd forgotten the whole thing—anyway, they caught the young man and brought him back and put him in handcuffs and so on.

Fortunately, we had the kids inside, but they knew all this excitement was going on, and they got very high, as you can imagine. It was about eleven o'clock in the morning, and there was no way we were going to get them back to our school curricula, to get them back to reading, math, whatever we were doing. So the teachers said instead, "Why don't you just draw and write about what happened?" So the kids began drawing, and drawing the thief and drawing what happened and writing about it; the only thing that I objected to was that they wanted me to model the theft… [laughing] It must be my beady eyes that makes me an apt model for that. But the point is that that was a personal curriculum issue that had to be dealt with at that time, and the teacher's job, then, is to decide amongst the curriculum priorities. And that's something that has to be done daily, that constantly one has to shift curriculum priorities between the personal, developmental, and the school curricula at all levels. The teacher's real task is to coordinate these various curricula and to make priority decisions as to what to be taught when, so that sometimes the personal curricula issues really have to be dealt with. A child comes in and there's been a new baby born and he's got to talk about that—there's no way you're going to deviate or sidetrack that kid—so that's a personal curriculum issue that has to be dealt with and that sometimes has to be given priority. Those are decisions that teachers have to make and recognize.

Other times there are certainly kinds of personal curriculum issues which can't be given priority, and have to not be allowed to take precedence. We had a particular child who always played games with teachers and student aides and so on—I'm sure you know this kind of youngster who would… games in the Eric Burns sense. You know, the game has a certain… I talk about games in the classroom because kids do the same sort of thing. There's a… each game starts with a con, which is "I can't do these problems. I don't know how to do these problems." And that ties into a gimmick, which has the student teacher saying, "I really want to help kids and I really want to be thoughtful," so the student teacher comes over and starts helping the child. Then after about half an hour of the student working with the kid and showing him how to do it, he suddenly goes like this: "Oh, you mean like this," and he does all the rest of the problems on the page, which he knew how to do all the time. Which is, in Eric Burns' sense, a reverse, and then each of them have a kind of payoff. Well, those kinds of game-playing, "I can't do it," those kinds of games, or "Will you help me?" and the child really has been able to do it all the time, are games that kids play, and I think those are personal curriculum priorities that should not be allowed to take precedence. Those are the ones that have to be undermined. So those are decisions that have to be made on a regular basis.

The question I want to address is really what sorts of curricula priorities have to take place inside the pre-school and the elementary school levels, and what sort of things are given precedence? Let's talk for a moment about the pre-school, because at the pre-school level we

have to look at kids as growing very very rapidly, intellectually, emotionally and so on. In a period of rapid growth, one doesn't prune. If plants are growing rapidly, that's not the time… you prune during the dormant period, and structured learning is pruning. What you need to do during a period of rapid intellectual growth, if you're going to adapt… the real task is to adapt the school curriculum to the developmental curriculum. That's the real… Ideal education would be when you would have the personal curricula, the school curricula, and the developmental curricula all in sync. That doesn't happen very often, but that's the ideal that you'd want, so that the child is developmentally able to deal with the materials that you have and also interested in them.

That is an ideal that we might strive for, but it's not always attainable. What you try to do most often is to adapt the school curricula to the developmental curricula. At that point, developmentally, pre-school children are growing very very rapidly intellectually. And in periods when children are growing rapidly intellectually, they can take from the environment the nourishment they need for their intellectual abilities. They need to have a rich environment that they can take from, but they can sort of go to it, and Montessori's notion of the prepared environment is a good one.

I think Montessori in many ways has been distorted, and partly due to her own later rigidities and so on, partly because she was misused and sort of forced teachers to go on and use materials in a very rigid way. But if you read the early Montessori writings, she was really very open about materials. She really changed very dramatically as she grew older. She said, "Let the kid make a train out of the pink tower. And watch what he's doing, and observe what he's doing. Give him some… because he knows what he needs to do with those materials. Provide the materials and then let children explore with them, and follow their own lead." Unfortunately, that changed as she saw… as often happens, the materials and the ideas got distorted, and so today it's moved in the opposite direction towards greater rigidity. Early Montessori writings said, "Provide the materials that children can move to, and observe their use of the materials and help them to explore and to exploit the materials." So that children in the pre-school period, the developmental curriculum is one which really has to be given precedence, because it's one… what Piaget says is that abilities which are in the process of formation seek their own nourishment. They are self-motivating and intrinsically motivated; you don't have to get kids to practice, as I say, that's a period when kids are terribly interested in quantity. They're dealing with quantity all over the place. They're looking for stimuli to nourish their quantitative skills. You know, they're sitting at the dinner table and suddenly they're comparing who has more. He has more, I have more, you know, that whole game. Parents think they're being sort of greedy, and it really isn't greediness, it's using every material at their disposal to nourish their intellectual abilities.

We all know that in the process of learning something, we spontaneously practice it and look at… if you're learning to ski, you're standing on the elevator sort of moving up and down, or if you're learning to play golf you're practicing your golf strokes all over. And if kids are mastering certain abilities, they're seeking out stimuli. So the curriculum for the pre-school child has to be one which is rich in materials geared to the child's evolving quantitative operational skills that he and she can move to explore, operate with, observe, manipulate, and they need some freedom to play and work with. That is, the large blocks that kids can go to… the beauty of blocks, of course, is that they're non-structured and kids can do with them as they wish, and they can build… I was in a school yesterday which was really neat, and the teacher had brought in a bunch of wood of all different shapes and sizes, little pieces, and the kids were gluing them together with Elmer's glue into really some neat forms and then painting them. And they really were having… they had done some sculpture with soap and then painted them with black ink, and then wiped off the ink and it looked like the Eskimo soap carvings, really neat stuff that the kids were doing. They were learning a tremendous amount; they were practicing skills, learning the size and weights of things, their shapes, feelings to the touch. That's the kind of curriculum, I think, the kind of approach to pre-school education.

Obviously, there are times when you need to get together and can do a show-and-tell, there are times when children are not to be… you know, can be read to, but a lot of ongoing kinds of activities where children can explore materials can nourish the kinds of cognitive skills that they themselves are developing. Abilities to classify and seriate are emerging at that time. So anything that children can arrange in a series… Montessori knew that too, and she provided all sorts of materials. But you can do… you can do it with leaves, you can do it with bricks, you can do it with all sorts of things that we have around. We talk about recycling, and there's so much that we can just bring from their homes, there are all sorts of things from factories where parents work and so on that kids can use to nourish their abilities to classify things in different groups, to sort them. I remember once—of course, I was with inner city kids—and I was going to do a lesson with chestnuts, and we had gone out into the field and collected all these chestnuts. They were all shiny and really neat, and I got the kids all around me in a circle and I was going to do this sort of thing with numbers and so on, but these were inner city kids who really hadn't learned to deal with materials yet. So as soon as I let go, all the kids—*ssshooop*—jumped down, grabbed the nuts and put them in their pockets before I could do a thing! I learned my first lesson in how to do a lesson! [laughter]

In principle anyway, it's a good idea. And now, once the kids learned some respect for the materials, we can do that sort of thing. Again, depending upon the group of kids that you have, and that's another point that we found. We were very open in orientation, but many of our

children who had come to us were not ready for openness. Our teachers have now… I think it's different here—I'm talking about the seven to nines—I think it may be a little bit different, because we start now very tight with the kids, very structured, and move towards openness. So that by mid-year, the kids are making choices, doing things on their own, taking responsibility. But we have to start very tight, because they kids need structure in the beginning.

Now, it may be—and I was speaking to some early childhood people yesterday, and they were saying, "Well, you have to start the other way with early childhood. You want to start free and move towards tightness with younger kids"—because they are too active, and they need to have a little bit more freedom, and then you gradually… I'm not sure. But certainly there are differences in the kinds of kids that we have. I think all children at this age need a lot of freedom to explore materials, and do not… if we talk about structure and freedom, then I think at all age levels, it seems to me, that young children, pre-school children particularly, need a great deal of freedom in the intellectual domain and need more structure in the social domain. That is, they need to begin—the difference between threes and fours in terms of ability to socialize is enormous—so that by four kids can begin to play in groups. That comes from merely beginning to play with kids and beginning to share and learn, and they do need more help from adults in playing together, sharing, and so on, and in group interactions. But they do need a lot of freedom and choices in terms of materials, so I would talk about providing opportunities and enriching the environment, the kind of things that we do in good early childhood education, providing all sorts of experiences, making things, doing things in which the child is actively involved, but without a great deal of… I mean, the teacher may have some sort of guidelines for the day and materials, but without any sort of program plan or skills or "I'm going to have them knowing all of the ABC's by day one" and all of those things. Because the kinds of things the children are learning are… the school curriculum at this point is learning about the nature of the world. It's a school curriculum, but it's a curriculum which goes beyond the academic, going beyond reading and writing, to know the nature of the world.

Let me share with you an experience that I had a few years ago which was one of the most dramatic of my professional career and reinforced my notion about the value of this sort of learning about the world as the school curriculum for the pre-school child. Some of you may have read a few years ago of a young woman, a girl really, who was found in California, who had been kept in a room for ten years by her parents, and who had been found and discovered and then brought into a hospital and was under an investigation. One of my friends was a psychologist on the case, and I was brought in as a consultant to examine this young woman and to test her cognitive abilities. When I saw her—she goes under the name of "Genie," in the professional literature she's known as Genie—when I saw her she was 13, she was at the one percentile with respect to height and weight; she had permanent calluses on her rectum where

she had been tied to a potty chair for days; she had never had solid food and did not know how to chew; she had a permanent stoop, and generally had very little speech. She had a few sort of run-on phrases like, “Don-do-da,” which meant “Don’t do that,” but other than that she had very little. Dave, the other psychologist, and I took her out the first day I was there for a walk in Griffith Park, which as you know is up above Los Angeles, and we took her out. She was a 13-year-old girl, and began walking around the grass and touching it, pulling up blades of grass and holding it and smelling it. There were some couples having a picnic and they saw that she was somehow strange, and she walked over to them and they handed her an orange, and apparently it was the first orange that she had seen. And she picked it up and held it and smelled it and touched it, and it was like she was really discovering a whole new world. As we were walking back to the hospital, we stopped in a small delicatessen, and there were little bags on a stand in cellophane with nuts and things, and she would touch the cellophane just to hear it. You saw this whole perceptual world opening up to this child. She was doing this constantly. The need just to explore the world—to hear it, to touch it, to smell it—and this is a child of 13, but who had been deprived of this by being kept in this sort of room for ten years.

I’ll tell you a couple of things, because I’m using it. One thing that wasn’t amusing was that the academicians got in and immediately wanted to teach her language. And I really had in some ways the same battle that we are fighting now. Oh, what a great experiment, let’s go in and teach her language. I said, “No! Wait. Let her experience the world first, then teach her language. She’s got time. She really needs to explore the world; she needs to touch and feel and hear. She doesn’t need to be bombarded with language.” Well, we’ve got to go in; we’ll learn all about language learning… I didn’t win out in that battle, unfortunately. I won’t go into the long history, but she is back now with her mother and she’s lost a lot of the gains that she had made.

But there was one episode which I think was beautiful, and I’ll just tell you. We were all sitting around, all these big moguls in the professional world, professionals in early childhood education and language and cognition and all of this stuff. They were bringing in some of the ward personnel to talk about Genie, and it was just after the earthquakes that had happened there several years ago. And one person on the ward to whom she became most attached was a cook who was Black, and who was a no-nonsense type person. Genie would come in and she’d let her wash the dishes or she’d cut her a piece of cake, and if she got in the way she’d say, “Get out the way,” but Genie just… when the earthquakes came, she made a beeline for the kitchen and she grabbed that cook. They really had a very nice relationship. So she began… they asked her how she had established this relationship with Genie, and she began talking about it, and she said, “I let her help me in the kitchen and when she does a nice job I say, ‘Thank you, that’s very good.’” One of our behavioral mod people said, “Oh, you give her a lot

of positive reinforcement," and she shook her head at that and said, "No, I just give her a lot of love." [laughter] So I just think that's… some of the things we're talking about.

Anyway, so the kind of curriculum that kids need is that sort of thing, that Genie was having. To be able to go out and touch and explore the world. That's a very important curriculum, and in the broadest sense it's part of the school curriculum. It's a prerequisite to the more academic kind of curriculum. So that the things that… going out on excursions of all sorts, to the doughnut shop, or to McDonald's to see how they make hamburgers and all of that stuff, it's all part of that early childhood curriculum. It can be varied in many different ways, but I think that the importance of exposing the child to the world and having them learn about it, label it, to tie up their experience with labels and their labels with experience, is the most important part of the curriculum of early childhood, together with an accepting adult who is going to listen and to hear children and to speak with them at their level.

If we come to the elementary school level—and I know that's a very kind of brief discussion of curriculum, I really haven't given you a lot of concrete material—there's a kind of a switch, because now the growth processes in some ways slow down a bit. We see it in terms of size: children, instead of growing four or five inches, are maybe growing two or three inches in terms of height and weight per year; the body thins out. Now, children have pretty much concrete operations, and so they need, I think, much more structure in the school curriculum, and more freedom in the sort of developmental curriculum. I'm sorry—more freedom in the *social* domain. Kids now can relate to one another socially. They don't need adults to structure their play; they can go out… so they need structure more in the sort of school and academic domain and more freedom in the social domain. Sort of the reverse of what you had at the pre-school level. Again, the kind of curriculum material is so important—I think what happened around fifteen, ten years ago with the split… and all of that was that people became dismayed with the curricula that we had, it wasn't up to date, we weren't keeping up with the Russians, and you know that whole story. Consequently, the government went and subsidized many different programs. Zacharias at MIT, Bruner and […] at Berkeley, Beberman at Illinois and so on. They really are brilliant men who devised really great curricula, and the same thing happened in social studies.

The problem—and it's not a new problem, because it happened around the turn of the century too, the same thing—was that the academics know their discipline, but they don't know children. And correspondingly, the curricula were very good as far as being up to date and being scientific and so on and being modern, but I think that they present kids with all sorts of problems because they're not child-centered. Although they tried to read Piaget and they tried to know where kids were, the problems in these curricula are horrendous. We know some of

the problems now with the "new math." To me, the major problem derives from a basic sort of fallacy that Piaget has pointed out, that any discipline—and I think this was the basic problem, the basic error that Bruner made when he said that you could teach anybody anything at any time in an intellectually honest way, and that you had to teach the principles of the discipline—was that a discipline, whether it's math or science, any particular science, is a collective enterprise. Mathematics is a collective enterprise that individuals have been working together on for centuries. Science is a collective enterprise; history is a collective enterprise. Social science, whether you're talking about anthropology or sociology, is a collective enterprise of people working together, contributing, reinforcing, contradicting one another. The child learning a discipline is an individual, and the course in which an individual learns a discipline is not the same by which… the course by which that discipline itself was created. The essence of a discipline, the essence of a discipline for a practitioner of that discipline, is not the way that a child learns it. For a mathematician, looking at mathematics and saying "What is the essence of mathematics? What are the basic principles of mathematics? How do you derive mathematics…" This is what Bruner is saying: we teach those basic principles. Well, a mathematician who is looking at his discipline from an abstract, adult, retrospective, reflective position may say a set theory.

You see? As an adult with my formal operational thinking, knowing set theory, derive that therefore I ought to teach children set theory. But the child doesn't learn mathematics through sets. The basic notion of the way in which children learn math, the first thing they learn is the unit. And a unit is basic to the child's understanding of mathematics. So what happened with the curricula was that the adult, reflecting on the discipline which is a collective product, said "These are the principles of the discipline." And these are what we ought to teach children—ignored the fact that the way in which an individual learns a discipline is not the way in which the discipline itself is structured, nor does it correspond to the principles. The basic rule, and the thing that was forgotten by the curriculum builders, but never forgotten by teachers, is that there is no way that you can tell *a priori*—before the fact—how and what the difficulties are, that children are going to have in learning the curriculum. There's no way that you can tell ahead of time what difficulties a child is going to have in learning math or science. The only way that you can tell is sitting with kids in a classroom and seeing what the difficulties are. And the only way to build a curriculum is building it from… Because it's an empirical issue, it's not a theoretical one.

I and my students sit with children in the classroom day after day, seeing the kinds of difficulties kids have in learning math and learning reading. Because I don't think that there's any other way that you can learn. There's no way you can predict, because we don't know how the child views the world! We don't know how he views those curriculum materials. And if we assume

that we do, we make mistakes. I can give you example after example after example. I'll just give you a few. Again, this is partly early childhood…

We have a child who couldn't learn the geometrical forms. She would learn them one day and the next day she would forget them. Triangle, square, she'd know them, and the next day, boom, they're gone again. And the teachers were at a loss; they couldn't figure out what was going on. From a developmental point of view, I said, "Perhaps she has her own names for those. Maybe she's got her own reality. Why don't we ask her what her own names are?" And it turned out that indeed she did have her own names. A circle was a round, a square was a box, and so on. We allowed her, then, to use her own names for the things, and gradually—and to be sure they were a little more concrete than the… but she had her own names. And she wasn't about to substitute our names for her names until she was ready to learn those things by integration. So we allowed her to use her own names. Now, this would be called a learning block, but it really wasn't a learning *block,* but she had her own names for those materials. There's no way that you can know that except by trying it out.

Again and again in math, you see things where a child will have… you know, there's "3 + [box] = 10." You know that. And then on the same page, vertically, "3 + [box] = 10." Now, one and the same child says, "Put 7 in the box here, and put 13 in the box here." Seven in the box horizontally, thirteen in the box… what's going on? Well, we said that what's going on—and again, you have to analyze it—is that when you present a math problem horizontally, then you use an equal sign. When you present it vertically, you don't use an equal sign. You use a single line. So the child has to translate from an = to a single line, and he has to translate that + sign means… so when you translate from a horizontal to a vertical in math, you're asking children to do additional operations. So what happens is that when you ask them to do additional operations, they forget that hidden subtraction, and they go back to a simpler operation, which is addition. So 3 + 10 = 13. Because you are asking them to do more.

Those are things that any curriculum builder should know. A constant thing in math is that they show the "greater than" sign, > … Well, they have these lovely illustrators who really want to do things up, and they don't work in coordination with the curriculum builders at all. So what they do is, you have a bunch of fish on one side, maybe 15 fish over here and 5 fish over here, and then you have the jaws… you know, jaws eating the fish… so you have the jaws this way >. Well, what's wrong with that is that it's counterintuitive. Children know that big things eat little things. Little things don't eat big things. So you have this big… It's that sort of thing. Our problem again and again… Or they'll say in a math series, "Make this sentence true: 3 + 5 = ?" Instead of saying, "Find the sum," "Make this sentence true." Which is a complicated analogy which is very difficult for kids. So that instead of trying to make it easier for them we make it

more difficult. I had, again, another—my son Rick provides a lot of useful examples for me—even sort of sophisticated child psychologists do the same thing, we use analogies when a simple direction would be much more effective. We were out sailing, and he asked, which was inevitable, "How does the boat go?" What makes the boat go? And I started explaining, There's a keel here, and the wind blows it here, and because the wind is blowing here, we go this way… I started getting… It's hard to explain vectors to him. "Well, Ricky, forget that. We'll start again." He's got a little frame that he practices throwing balls at, it's a little aluminum frame with a net, and he can practice catching with it. I said, "Think about that frame, and think about throwing the ball at the frame, and it hits the frame and the frame goes a little bit this way. That's like…" And he said, "Dad. Stop a minute. Don't take this personally, but that's a terrible way to explain sailing to a kid…" [laughing] "I understood it better when you were talking about the sail and the wind…" I realized that from an adult's point of view, maybe an analogy is easier, but from a child's point of view it's much more cognitively complex. Yet, we do this constantly throughout… we're giving children analogies when analogies are very very difficult to learn by, and it would be much easier for children if we simply said, "Find the sum." In math you'll find all of these computing machines, you know, the computing machine with a + 5 and you put it in. Well, instead of finding "add five" to all these numbers, it's going into the computing machine, which again adds all sorts of difficulties for children.

Or, in some of these basic phonic books—I'm not kidding you, I was working with one of our kids and he was sort of shaking his head at this—he said, "I don't know…" This was the instruction: "Color all of the balloons with long A's purple, all of the balloons with short A's green, except those that end with a silent E, which are colored blue." [laughter] I'm not kidding you! And this kid… He knew the long A's, but by the time… he couldn't understand those instructions. You can go on to problem after problem. We were talking the other day, we were working on math again, and they were talking about doubling. The kids finally got the notion of doubling. And then the book was saying, "What numbers would you use…" I forget how they put it now. They wanted to talk about the reverse: what numbers did you have to double to get this number. Kids couldn't understand it at all until one of our kids suddenly said, "Oh, I know. You un-double it." And immediately all the kids knew exactly what he was talking about and solved… did it very quickly, because they had the concept. There's no adult word for "un-doubling," but the kids had it.

Well, the people who build the curricula don't… you know, they have these ideas about how the material should be learned, but they don't sit with kids and see the real problems that children are having. Piaget's basic message, his whole argument against philosophy was that the armchair philosophers sat back and built theories of philosophy without testing them, just creating a kind of experimental philosophy. He is saying, if you want to really build good

curricula with kids, curricula to help children to learn, and to not frustrate and confuse them and baffle them, the only way to do it is to sit with kids and see how they learn and the difficulties they have. If you're going to have a bunch of writers sit down and write curricula, you're never going to resolve all these kinds of curriculum difficulties. So that my own argument with my psychologist friends and so on is that, "Look, what we really need to do is begin to really look at curriculum and how children learn, and the difficulties that these materials present for children." I could go through any kind of curriculum book now and point out the difficulties.

Even the illustrations, for example, in readers. Now, what's crucial to a good picture in a reading book? To me, the picture has to be identifiable from the text. What often frustrates kids is if you have a picture that says, "The little boy with the brown hair and the blue pants," and then you have a picture with no boy with brown hair, he's got something else on… it's terribly frustrating, because he's looking for cues. Have you ever read *Time* or *Newsweek* and they're talking about something and there's supposed to be a picture and you can't find the picture? You know how frustrating that is! When you've got the text and there's supposed to be something… Typically there's supposed to be a pretty girl or a handsome man or something, or there's supposed to be something really juicy, and you can't find the picture! [laughing] I think that kids are the same way. They use a lot of contextual cues. The Dr. Seuss pictures in some ways provide a good example. No way can you misplace a Dr. Seuss picture. They're so geared to the text that they are unmistakable. That's the way the pictures should be, informing and elaborating the text. When they simply are tacked-on for sort of fun's sake or because they look nice, they don't really help kids.

There's other kinds of stories for children. I was reading with some of our nine-year-olds a story for the fourth-grade reader, and the heroine or hero was six years old. Well, anybody who's ever written for children knows that the children always read stories with heroes who are older than they are. So if you make a story with a hero or heroine who is six for children who are nine, you've automatically lost your audience. There's no way they're going to really like that. These are sort of basic principles of the school curriculum that I think need to be taken into account, whether we're talking about instruction—I could go on—in science; I think the social sciences, I've said, is the worst. I don't know who in world designs social science curricula, but they are so poor in terms of being—at least what I've seen, and I've looked at as many as I could—first- and second-grade curricula which are so abstract and so far away from where kids are that they don't make any sense at all. What are the religions of the world? What occupations did people have? And so on. In science, they're teaching kids near and far, and then in these social studies curricula they have distance photographs, near photographs, as if kids knew all of these relationships between size and distance already. There are so many

contradictions. I think, again, people who are writing social science curricula, they'll fail to distinguish what's crucial to the discipline and what children can really understand.

I guess the battle we get into, as I talk about this—and I'll stop in a moment—is, and I can just give you an illustration from when I was working with the Presbyterian church, in the new—I'm polymorphously perverse, I get into all sorts of things—I was working on a new Presbyterian curriculum and I'm a sort of middleman between the teachers on one hand and the theologians on the other. We were saying, "What do we teach when?" and one of the examples is the Bible, the Jonah story. And the teachers were saying, "Kids really like the Jonah story, but they don't understand the parable of the gourd," where Jonah's going back to Nineveh and so on, and the gourd illustrates all evils and so on. Because it is fairly abstract, and the teachers were saying, "Let's leave out the parable of the gourd, because kids don't understand it, and it's really a problem." And the theologians were saying, "You can't do that. You'll destroy the integrity of the story." It reminds me of mathematicians who say, "You've got to teach sets, because if you don't teach sets you destroy the integrity of the discipline." The discipline has an integrity of its own which is unassailable and which you must teach, because that's the nature of the discipline. I think that's the problem that we has educators have. We have those protectors of the faith on the one hand who say this is the only way in which science or math or reading has to be taught, because that's the nature of science, that's the nature… I said, "But kids can't learn that!" That's, again, this issue of who teaches when […] Bruner raised, I think, the problem with his thesis is that what is intellectually honest? And what do you mean by a particular thing? If you say you can teach any subject matter, what do you mean by subject matter? If you're teaching kids ABC and A = B or something, is a mathematician going to say that's algebra? So there are all these problems of definition as to who is to define what it is you are teaching.

I would rather not get into those definition issues. I would rather say, "Let's look at what materials kids can learn, and they can learn at their own level, so that they don't get frustrated." And I really believe that there are many more curriculum-disabled children than there are learning-disabled children. I think there are many many children who are learning-disabled are much more curriculum-disabled and we've simply mislabeled. Because there are many children who are frustrated, who are angry, who have low self-esteem simply because they meet materials that they cannot cope with. I see it in our own kids that if you meet day after day materials which you cannot understand, which you can't solve—and I think kids have the sense that even we as adults do—you see something on a written page and it's got to be out there, it's got to be true, it's God's word, and therefore if I don't understand it, it's got to be me. I must be dumb.

We as parents do the same thing. We double-bind our kids. They come home and they say, "This arithmetic problem…" I say, "Gee, I can't really understand, but somebody must understand it. Those people knew what they were doing. So you better learn that." Well, I don't think they did know what they were doing! [laughter] I'm losing my faith in the printed word, and I say that to my kids, "That's dumb. I think that's a dumb thing they said, and I don't think that…" I'm beginning to challenge, because I think that otherwise kids… I think we do this as parents, I think we sort of believe that curriculum stuff has got to be right, and those people know what they're doing, and we're not aware of it and it's something new, and therefore we can't understand it, but by God our kids have got to learn it. What I would do… there are a lot of questions about parents. I think I would sic parents on the curriculum, really sort of begin to say, OK… Because parents will say, "You ought to teach this or teach that." But I think what we ought to do is say, "Let's look at this curriculum, because look how dumb it is," and so on, and really begin to show them the problems that curricula present for kids, and begin to show that maybe we want to teach reading, but it's so hard because of these materials, because they're confusing and they're conflicting and they're contradictory. Parents have sort of pushed in the direction of teachers teaching this or teaching that, but they really haven't looked at the curricula.

And I think that the curricula—and I don't want to make them the bad… there are bad teachers and bad parents and bad kids, or ineffective and so on—but certainly the curricula has been every bit as much at fault as any of the others, and we need really to begin to do curriculum analysis. I think there's no other way other than to sit down with kids and see the problems that children are having, and to rewrite and revise. I'm not really looking for new curricula. I think we have to improve the ones that we have. I'm opposed to… what happens when you get a curricula for a couple of years, you use it, you know the bad parts and the good parts, and then they publish a new set and you have to start all over again. Nobody ever asks the teachers. How many of you have ever been asked your experience with the curricula, and to give your feedback to the publishers as to what you found was good or bad or indifferent? One! Great. Out of how many?

And I had an experience recently, which I'll share with you. This was a book, but it was for high school, and they asked me to review it and to say whether I found truth or facts. And I thought it was the worst manuscript I'd ever read. I said so, I said that I thought that this person didn't know the literature; that there were so many errors and it really had to be totally rewritten. They said that they were distressed to hear it, because it was already in press; did I want to have my name listed as one of the… ? [laughing] That's happened to me with math curricula too, where I've gone through and worked through the curricula for the publisher and said, "These are all the things…" "Well, we're already in galley, we just wanted you to say that you

had read it." So I have this feeling that people are really not taking educators seriously with respect to curricula, and that certainly it's not the end-all in the main criminal in education, but certainly it's what we teachers have to work with day in and day out. The better the curricula… often we say children have learning disabilities or they're having problems with teachers and so on, but often the curricula which can be the stimulus for a lot of that—both the child's problems and the teacher's problems—is ignored. And it's blamed on the teachers and it's blamed on the kids rather than us looking at the materials that are used which are unteachable and unlearnable, often.

I don't know any other way to do it other than simply sitting down and working with kids and finding out the kinds of examples—we have hundreds now—of the sorts of things that I've been telling you about, that make materials difficult for kids, and that you can remove and remediate by simply changing very simple things. It's a lot of work, and education is hard work. I don't think… as you all know, there's no easy ways to help kids to learn. But I'll stop there and let you ask some questions. [applause]

HOST: Again, while I encourage you to leave your evaluations for us as you go, we thank you, each and every one of you, for participating in our conference today. We hope that your objectives will always be concerned for today's child. Thank you. [applause; program ends]