DOCUMENT RESUME

ED 108 658 IR 002 183

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TITLE The Eyeful Power.
PUB DATE 15 Apr 75
NOTE 21p.; Paper presented at the Association for Educational Communications and Technology Annual Convention (Dallas, Texas, April 15, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Audiovisual Aids; *Early Childhood Educatio..; Nonverbal Learning; Speeches; Testing; *Visual Learning; *Visual Literacy
IDENTIFIERS *National Center for Visual Literacy

ABSTRACT

Intelligence Quotient (IQ) tests show that there is a rise in IQ measurement up to age 5 1/2, yet the IQ levels off and drops at age 8 1/2. The shift from unrestricted television viewing for preschoolers to the emphasis on verbal communication in school may be the cause. Visual languages within a symbolic system could be one method of communication of ideas between people. Visual literacy is centered in the right cerebral hemisphere of the average person; therefore children are accumulating language experiences in the right hemisphere until they enter school and are urged to use verbal communication, a left hemispheric activity. An experiment was conducted using boys with above average intelligence who had reading problems. It was learned that all three had an unusually high capacity for three dimensional visualization, a characteristic of artists, architects, and other visually oriented people. Visual communication should be seen as a form of sequential language and not necessarily a form of aesthetic expression. (DS)

THE EYEFUL POWER

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Opening Presentation: Visual Literacy Programs

NATIONAL CONVENTION

ASSOCIATION FOR EDUCATIONAL COMMUNICATIONS AND TECHNOLOGY

DALLAS, TEXAS . APRIL 15, 1975

THE EYEFUL POWER

Good morning. I am glad to see you all and happy to be here talking to you. It is so comforting to be among my fellow parishioners of education's visual church. In rationalizing with myself about coming here, I told myself that everybody needs to loll in friendly waters once in a while in order to be better prepared for the bracing experience of facing unbelievers.

But it is among unbelievers and colleagues of other persuasions that we must make our many conversions before the numbers of educators persuaded, informed, and trained in visual learning will be large enough to meet the needs of today's children and before the magnificent potentials for intellectual and cultural achievement implicit in what we now know about visual languaging, and visual learning can be realized. So, because all of us here are, in effect, missionaries and architects of a new visual education and a new visual world, I thought it might be well if we could share some new facts and insights useful in persuading the obstinately verbal to open their eyes.

Is this important? I myself find it of such commanding importance that I can see no force or question in education that offers so great a hope for an appropriate education to all learners regardless of learning style, and certainly no educational question more closely bound with the future of our society and with the great hopes of that society.

Let's start with some facts. It has become a common place in education to assert that motion pictures, photography, visual technology, and most especially TV, have made a change in today's child and in fact, in society itself. But, assertions are not what is needed at this time. We need to look at ourselves and our children carefully and observe closely enough and scientifically enough to know what the facts are. Thanks to the work of colleagues in education, psychology, and remediation, some of that work has begun, so our image of our young people and society is sharpening.

For instance, many teachers whose years of experience extend back to the time when there was no television, have observed that the children today in grades pre-K through 12, seem to be both better informed and more intelligent than the young learners they faced 20 or more years ago. Are there any facts to support these observations? Yes! The Stanford-Binet tests (often called IQ tests) have shown a most remarkable change in recent years. When the Stanford-Binet tests were "normed" a good many years ago, a large sample of the population was used, and the questions used for testing that sample were selected and adjusted so that if a person had "normal" intelligence, he tended to get a score of 100 on the Stanford-Binet test, whether his age was 4 or 84. In other words, a score of 100 indicated normal intelligence regardless of age.

Administering the Stanford-Binet to a large sample of today's young population, revealed something very different. Now, there is a dramatically large bump in IQ scores between the ages of about 1 1/2 and 5 1/2 years. The normal child today in the United States starting at about one year of age, displays evidence of a rapidly rising IQ that reaches about 110 by about the age of 1 1/2 years, then creeps up a little till it is about 111 near 5 1/2 years, but then begins to drop and drops sharply returning to only a little over 100 by age 8 1/2 years. Has there been a dramatic rise in the intelligence of today's children, a rise that by the ninth year, returns too close to what we have been regarding as "normal?" This is a difficult question to answer. One thing is certain, however. Today's children under the age of 5 1/2 know more than their peers of 20 or more years ago.

There are many subtle and important questions here. The rise in IQ scores is a fact. But what is the nature of that rise? And, what caused the rise? In an attempt to answer that question, Dr. Robert Thorndike of Columbia's Teachers College has been guiding an additional investigation. It has included an item by item analysis of those questions on the IQ test that

caused the rise in scores. The fact is that the questions responsible for the increase in IQ scores are all visual or at least non-verbal items.

Now, I call your attention to the fact that the ages during which our children display this unprecedented rise in IQ are the ages in which the average child has relatively unrestricted opportunities to watch TV. I also call to your attention the fact that the commencement of the drop in IQ corresponds to the time when today's child enters school where he is exposed to our insistance that he become a verbal person, at the rate in which we would like him to become verbal, and in the manner in which we would like him to become verbal.

Is it just a happenstance that this remarkable rise in IQ scores corresponds so closely with the time when our young have the greatest freedom and exposure to TV? Is it just a happenstance that the time when the IQ drops is the time when our young are subjected to the most compulsive efforts we can muster to force them to become verbal? Perhaps. There are indeed a good many conjectures as to what the significance of the IQ rise means, and what the significance of the drop means.

Fortunately, there is a growing forest of evidence and we don't have to content ourselves with examining only those particular few trees. But before we do leave this part of the forest, let's get this one gigantic fact into historical perspective: Perhaps the best way to do it is to ask a question. Has there ever, in the whole history of man and his cultures, been a time when a whole population, consisting of literally millions of people, manifested so remarkable an intellectual transformation in so short a time? Please bear that question in mind during the rest of this presentation. It appears that in a space of about 20 years, tens of millions of our population have been affected and that the change has been in the direction of greater visual

information and higher visual skills. This is, perhaps, at one and the same time the most significant change, and the most sobering challenge, that U.S. education (or indeed education anywhere else) has ever had.

There is a whole new population here and there are a whole new set of prospects for society. These two facts call for a whole new set of goals for education. These facts and others that support them cry out to us to get on with our visual research and get on with the applications.

Languaging

Why did and do these visual developments and changes occur? In my view, an impressive and mounting array of evidence points to a characteristic need and potential of man for languaging. Languaging can be regarded as an outgrowth of a fundamental human need to relate to other humans, and a coping behavior that results in the invention of signs and symbols and the systematic use of those signs and symbols in communication. The capacity for languaging has resulted in body language, pictographs, sign languages, drama, opera, thousands of spoken languages, hundreds of languages, computer languages, Morse code, and secret codes or ciphers of all kinds. The human propensity for languaging, and the need to communicate are so powerful a combination that where no language exists, one is invented. And so, we invent special signs to enable us to talk to computers, special mathematics to describe and discuss the world from the viewpoint of science, and funny little dots on paper to communicate an idea in the head of a musician-composer to the head and hands of a musician-player.

The semanticist, Benjamin Lee Whorf, regarded languaging as perhaps the most important single activity of man in the development of all his cultures. Furthermore, Whorf, and others who have followed him, have taken the position that language is not only shaped by man, but shapes man. In other words, to an

appreciable extent, we are influenced by and become the sculptures, intellectually, of the languages we learn to use.

Languaging, as an activity, a sequential activity and as a potential, has resulted in the creation of quite a large number of visible languages. By visible languages I mean symbolic systems for representing the sequential sounds of spoken languages so that through writing or printing, the spoken word can be mediated on paper and other image carriers. Such visible languages are not the same languages as the spoken languages from which they are derivations. They are separate languages related to the spoken languages. It is possible to become literate in these languages. Such literacy is one kind of visual literacy.

There are many who call writing man's greatest invention. This seems to indicate that the invention of the language upon which the writing is based is of lesser importance, a viewpoint I have trouble understanding. However, most students of history and culture agree that the visible languages that are derived from spoken languages have become the principal base through which all of man's culture has been stored, studied, and disseminated. This visible sequential languaging is of so pre-eminent an importance that it can be said with assurance that no society without a written-language form and a literate people to use that form has been of any consequence. Benjamin Lee Whorf might take the position that just because the visible languages could be stored, studied, and disseminated, the tendency of man's languaging to shape man himself was accentuated.

The point that is important here is that the product of our propensity for and need for languaging has been the development of many languages and literacies in those languages. This has been a vast blessing. But it is not a blessing without limiting consequences. We are no longer free as societies to be either literate or not literate. We cannot exist as societies without citizens who are literate in most if not all

of the many kinds of languaging around which we have built our ways of life. The self-same literacies that enable man also disable man.

The Eye

Keeping in mind man's tremendous propensity for languaging, the many forms of languaging, and the marvelous degrees of literacies achieved in all our many languages, let's take a look at the eye of man.

The human eye is often regarded as one of the bases for one of the senses. However, many in the field of neurophysiology regard the eye as more fundamental than the other senses; they view it, in fact, as a rather direct extension of the brain. According to one student of the brain, approximately one-tenth of the cerebral cortex is preempted to serve vision. There are in the neighborhood of 250 million sense receptors in the human eyes, compared to only about 50 thousand receptors in the human ears. There are, in other words, about 5,000 times more receptors in the eye. The eyes, furthermore, are interconnected with fundamental rhythms of the human brain such as alpha waves. From the standpoint of potential for communication, therefore, it is evident that the eye offers extremely numerous sensory and perceptual resources.

When, in the year 1440 A.D., an imaginative goldsmith named Guttenburg invented movable type, he didn't foresee the extrapolations from what he was doing. To think that movable type would make possible the sequential visible (that is verbal) literacy of vast millions of people as opposed to the literacy of the extremely few was something Guttenburg could not do. Neither could anyone else. The technology for making possible the general dissemination of the visible language had not yet been invented. Nothing really comparable to universal literacy in a sequential visible language had ever occurred before.

The literacies that Guttenburg and ambitious friends made possible were literacies in sequential visible languages that were the written or printed derivations

of sequential spoken languages. We have already observed that literacies in these many visible languages are exigent in our society. These languages depend on the eye. They can be learned by someone who does not know the spoken language at all. Literacy in one of the visible languages is a literacy of the eye and not necessarily a literacy of the ear at all. The independence of such literacies from the ear has been demonstrated by the profoundly deaf who have achieved literacies at very sophisticated levels, and those who learn to read foreign languages merely by studying the visible form.

But these are not the only literacies of the eye to which man's capacity for languaging has led him. Some of man's earliest languaging activities resulted in the invention of sequential pictographic languages, hieroglyphics, and even picture sequence languages. Evidently, there was a sense in man very early that these were powerful directions in which to develop, but there was no technology to facilitate the development and dissemination of a sequential visual language. For that is indeed what these early languages were, sequential visual languages. They were different from the languages that developed later because in these languages, there was little or no effort to represent the sound of spoken languages; the picture, pictograph, or symbol represented an idea, not a sound basically.

In sequential visual languages, the symbol or sign rather directly represents an idea and not either a sound or word. The visible languages about which I spoke earlier are systems for representing the sounds of words; speaking semantically, what is represented visibly is a word. But the sequential visual languages deal more directly with ideas either by pictures, by iconics, or by specially created symbols or signs. So, for instance, American sign language, that is, the sign language of the American deaf people, is a sequential visual language in which signs do not represent words in English, or indeed any other spoken language; the signs of American sign language represent ideas.

There are some very old, sequential visual languages. Spoken Chinese has historically been represented not by a sequential visible language, but by a sequential visual one. The written or printed symbols for Chinese represent ideas more than they represent words. There is no clue in the Chinese traditional symbol as to how some word might be pronounced. In fact, there might be no word, but a phrase. So, traditional Chinese script is a visual language, and not merely a visible language form of a spoken language. Spoken Japanese is represented, similarly, by a symbolic sequential language called kanji. Kanji is a sequential visual language too. In kanji, the symbol or sign represents an idea rather than the sound of a word or sound of a phrase. What you see here is not Chinese or kanji but Bliss symbolic language.

From time to time, people have asked me whether there is such a thing as visual literacy. I think you can see now that sequential visual literacies have been part of man's history, and that, indeed, it can be said that some visual literacies preceded verbal literacies. What is important to us now, however, is that visual languages such as the Japanese language kanji are different in some important ways from all languages that are basically verbal or rest upon visible representations of the sounds of words or phrases. They are different in a way that is so fundamental that the differences rest within the human brain itself. The differences are neurophysiological, and those differences offer us new and exciting opportunities in education and learning.

Visual Languaging

Instead of talking about visual language, let's talk about visual languaging. Visual languaging makes use of some thing that can be seen to offer an intended meaning to someone who can see that something--whatever it is. Verbal languaging makes use of sounds to transmit intended meanings; visual languaging makes use of visuals to say intended things. A visual can be a non-verbal visible thing that is used intentionally by a human being to transmit a meaning to someone else. Visual literacies depend on visible images being invested

by the culture with certain meanings. Verbal languages depend on audible signs that are culturally established; visual languages depend on visible signs that are culturally established and constantly being modified by the people who use them.

A difficulty in perceiving visual languages as languages is that most of the verbal languages with which we are accustomed to dealing are highly structured, highly formalized, and in some cases, rigidly defined by culture. Visual languages, especially the ones used in TV and movies, the ones with which we are most concerned today, are also defined to a considerable extent by culture, but they seem to be less so partly because we acquire the signs so early and the structure does not seem as certain.

Where does this sequential visual language come from and when is it acquired? It comes from man's irrepressible tendency to use anything and everything in his languaging activities. Perhaps reviewing again as I have on many occasions how mothers communicate with their infants will help. Infants acquire very early the capacity to read, that is, to interpret correctly, sequential body communications messages created by their mothers. Most of these body communication messages are unintentional at first. But later some are deliberately created and can be fairly complex.

For instance, if an infant is crying because he's hungry, his mother may prop him in a high chair and then proceed to go through the motions of preparing some food for him. The child will probably not pay any attention to these kinds of activities until he is actually presented with a spoon of food. Once that happens, he begins to pay attention to whatever visual sequences of activity precede the offering of the food. By and by, it is only necessary for his mother to go to the refrigerator, open the refrigerator door, and take out a jar of food, to communicate to the child that she intends to feed him. Such relatively informal body communication, because it is intentional, begins to lay the basis for a child's understanding TV and movies, in which most visuals are intentional.

This question of the intentionality of communication is important. The non-verbal communication we incorrectly call body language is usually unintentional whereas languaging is usually intentional. Spoken language is usually intentional. The visible languages are usually used intentionally. And sequential visual languages have this same characteristic, that is sequential visual languaging is an intentional activity. First, we have an idea in mind; then we seek to encode that idea in a form that is suitable and effective for the communication we wish to achieve.

But, I hear someone thinking, "Verbal literacy has a home; verbal languaging has a home. That home is in the left hemisphere of the brain of an average person. If visual languaging and visual literacies are real, where are they in the human brain?"

This is a fine question, and there is no certain answer as yet. However, there are some strong indications. One set of facts is especially significant.

About a year and a half ago I was studying a Scientific American article by a neurophysiologist named Norman Geshwind. In that article, Dr. Geshwind was talking about aphasias. He referred to the fact often that if a person who is literate in English has a left hemispheric stroke, he will probably lose the capacity to read and write in English It is clear from the article that Dr. Geshwind agrees with many of his colleagues, who preceded him in that conclusion, that the reading and writing of English rests in the left hemisphere in an average man. We can, therefore, say with relative certainty that verbal literacies including the visible language literacies in which the visible language represents sounds are based in the left hemisphere of the human brain.

In the same article, however, Dr. Geshwind talks about what happens to Japanese people who have strokes. It is a fact and an important one that spoken Japanese is represented by more than one symbol system. One of the systems is called kanji. I have spoken about kanji already, and you know that in kanji, the symbol represents an idea rather than sound. But Japanese is also represented in another way; the system is called katakana,

and in katakana, a symbol represents a sound so that the word Tokyo, for instance, begins with a symbol which "contains" the sound "t" somewhat as the letter T represents the sound T in English.

Now, what happens if a literate Japanese person has a left hemispheric stroke? He loses the capacity to read and write in katakana. You will remember that katakana is the system in which the symbols represent sounds just as English letters represent sounds. However, he does not lose the capacity to read and write in kanji, the symbol system in which the symbols represent ideas rather than sounds.

Studying these facts, I deduced that kanji and perhaps all other visual literacies are in the right hemisphere of the brain, not the left. Since making this deduction, I have encountered many other indications that this is so. I have discussed the hypothesis with Dr. Geshwind himself and he knows of no facts that contradict this possibility. I have discussed the hypothesis with Dr. Tom Mulholland, the neurophysiologist, and he immediately thought of an experiment, the results of which tend to confirm the idea that visual literacy is indeed in the right hemisphere of the average person. Experiments can be foreseen growing from this approach. It may be some time before we are certain about this but so far, it fits all the facts and presents many new questions. These are the criteria for a good hypothesis.

Thinking and Languaging

Now, we have some exciting possibilities indeed! Let's go back to the IQ tests and ask ourselves what has been happening. It seems clear that today's children, exposed to all the intentional communication on TV, are busy piling up visual languaging experiences in the right hemisphere. This continues until they are ready to go to school. When they do, the schools, not being motivated and prepared to provide them with visual languaging experiences, insist that they begin to concentrate exclusively on verbal communication, a left hemisphere activity. The schools are, in effect, ignoring a rich reservoir of languaging potential and visual facts with the consequence that visual experiences to sustain the rise in the IQ are not offered.

There are facts to back up the idea that youngsters having lots of TV do come to school with unusual visual abilities. It is a fact, for instance, that hildren in the black community, and perhaps in the Puerto Rican community, spend more time watching television than children in the white community. From this fact and our discussion so far, you might expect that black children would be more skilled in visual language than white children. At least one set of facts confirm this: Black children from the City of Buffalo in a school project called Early Push scored higher than their white peers in body language, visual memory, and visual closure. The test instrument used was the Illinois Test of Psycho-Linguistic Abilities.

There are other kinds of facts to support our view that the right hemisphere is the seat of visual languaging and visual learning. In a recent article in the Journal of Learning Disabilities, there was a discussion of Albert Einstein. The author spoke of Einstein as manifesting visually mediated cognition. The author quotes Wertheimer and evidence of other kinds to the effect that Einstein thought almost exclusively in pictures. He was a definitely non-verbal man. He did poorly in school, and only began to succeed when he was transferred by his parents to a Pestalozzi school; Pestalozzi was a Swiss educator living around 1800 who founded schools on the concept that "thinking is visual." From the article it is clear that Einstein was not a left hemisphere thinker, a verbal thinker, but a right hemisphere thinker, a visual thinker. It seems, furthermore, that we are faced with similar possibilities in the cases of Leonardo da Vinci, Thomas Edison, Steinmetz, and others.

In a recent experiment, boys having a higher than average intelligence were being tested because they were having trouble reading. After an elaborate series of tests, the researchers learned that all the boys had one thing in common: They had an unusually high capacity for three-dimensional visualization. The author conjectures that this

attribute may be characteristic of a third of our population. It appears that architects, engineers, artists and other visual people, have trouble learning to read much as these boys did.

If the authors of certain other studies are correct, 50 percent or more of the population may be blessed with a high capacity for three-dimensional visualization. That kind of fact poses some interesting questions when weighed against the background of the other kinds of information we have reviewed today. If so large a portion of the population is inclined to be visual, and if that portion of the population is exposed to television from infancy until they finish school, how can we expect such youngsters to prefer anything except sequential visual language with which to learn or to communicate? How can we expect that the plodding, word by word kinds of experience that school often offers will be anything except dull to young people who have learned to learn visually--have learned to perceive a message quickly, to think quickly about it, and to be almost instantly ready to gallop on to the next message. Against such a background, and presented with such questions, we must recognize that all children except the blind will be affected in such ways to some extent.

But, we could ask another question: If television makes children more intelligent, or better informed visually or more skillful visually, shouldn't we expect that in some ways, at least, school, including reading tasks would provide opportunities for greater successes than in the past? A logical question! The fact is, however, that if we take the verbal scores in reading, we have a rather dismal picture nationally. Reading achievement is on the down grade nationally, almost without exception at almost every grade in every school in the country. Furthermore, the verbal aspects of our Scholastic Achievement Tests have been dropping about three-quarters of a percent a year for at least 10 years. If students are more intelligent, better informed visually, and more skillful visually, how does this happen?

Some of my colleagues in visual literacy tend to get a little unkind when faced with these kinds of questions. They say the trouble is ours because we are testing for the wrong things. They say we have taught a bird to fly and are then testing his ability to crawl along the grass on his belly. But knowing what we do about languaging, now, it seems as if what we ought to be able to achieve is superior performance, nationwide, in both verbal languaging and visual languaging. We ought, nationally, to be able to provide learning opportunities so well suited to each child's needs that he achieves at a superior level cognitively and culturally. If visual languaging and visual literacy are as powerful as we say, we ought to be able to achieve superior levels in many academic fields.

Foster Literacies of All Kinds

It is time for education to chart a new course. As a nation, we have been making five interdependent and very costly errors:

- First, we have assumed that what TV has given our children has been entertainment and that the consequences for our children, therefore, have not been basic.

- Second, we have failed to see that the visual communication in movies, TV, etc, is indeed a form of languaging and is of a fundamental and very powerful sort.

- Third, we have failed to appreciate that our children have internalized a good deal of that sequential visual language.

- Fourth, we have failed to utilize as an asset in learning, the visual languaging capabilities with which children are equipped when they enter school. We have not helped them to develop their skills in that languaging and we have failed to create tests that show achievement using visual language.

. Fifth, we have reacted to the new literacies as if they were threats to us as educators--jeopardizing our status as professionals.

We can chart that new course by adopting a different viewpoint toward today's child. In a recent article, Clarence Williams and I made the following statement: "Deep in today's children is a resource for learning that teachers can tap with results that at times seem magical. It can be utilized to teach children of average ability as well as the gifted, the slow, even the seriously handicapped. It can be tapped to enhance self-expression, to build feelings of self-worth, to clarify values; and also to teach the whole range of specific subjects, from reading and social studies to science and physical education. In a child, the effects of using this resource have been found to spread to other abilities and to persist with time." The resource about which Clarence and I were talking is the competencies in visual languaging with which today's child comes to school, and the capacity for visual literacy around which all other literacies might be built.

What we must ask ourselves, really, is this kind of question: What could we accomplish in school if we could equip every child with a new and powerful language? What could we do? We could begin by accepting an educational fact, namely, that learning one language facilitates the learning of another. So, if we treat visual language as visual language, and encourage the development of visual languaging, we will thereby facilitate the development of other forms of languaging some of which we have traditionally esteemed, and some of which will be new. In other words, by accepting visual languaging as a fact of our society, and fostering visual literacy, we will be fostering literacies of all kinds.

What could we do? We could stop confusing visual communication with art and see it for what it is, a form of sequential languaging and not necessarily a form of aesthetic expression.

What could we do? We could stop teaching visual communication from the standpoint of competence in technology and start teaching it from the standpoint of a meaning transmission system. Technological competence is irrelevant to a young child's communications goals even though a growing level of technological sophistication will be expected of professional communicators. Our goal should be to help each child grow in his capacity to visualize ideas, to organize those ideas, to conceive of ways of expressing those ideas visually, and to encode those ideas in effective sequential visual metaphors that are as precise as visuals can be precise, as full of feeling as visuals can be full of feeling, as marvelously abstract as visuals can be abstract, as full of humanity as is appropriate to his message, and as eloquent as the medium of his choice makes possible. All of these are languaging skills, and all of them will become available to whatever other languaging he attempts. Once we accept the idea that sequential visual languaging is a necessary form of languaging in our society, and therefore needs to be developed in every child, it will be easier to reject what has perhaps never really been true, namely, that verbal languaging is the only valid kind in which to school a child in our society. Developed hand in hand, using well developed visual literacies as a base, all the various communication skills important to our society will become more readily available to every child.

What could we do? We could recognize that the route to failure will be to continue what we have assumed: that it is enough to put the tools for visual communication into the hands of a few AV specialists and a few teachers. That route to failure was analyzed by Richard Hooper in Audiovisual Communication Review some years ago. Despite avid pursuit of that idea, IQ scores in schools dropped, reading scores dropped, and SAT scores dropped. No, visual literacy, like verbal literacy, must be taught. We know how to encourage languaging and to develop literacy; what we need to do is provide every child with all the kinds of opportunities visually that we have attempted to provide verbally.

What could we do? Each child comes to school with learning aptitudes developed to different levels and in different ways. These differences result in different learning preferences. Teachers and specialists will need to assess each child in terms of his development in visual languaging as well as verbal. The child who is primarily verbal will need to have carefully offered opportunities for visual communication. The child who is primarily visual will need to have carefully offered opportunities for verbal communication. There is some nice solid research, perhaps the best in the whole field of visual literacy, that shows that children when offered such a balance of communication opportunities at the first grade level outstripped all peers in communication performance at the end of the first grade, and almost miraculously, four years later, continued to excel. We have done some fine things! We believe that this occurred because in this experiment the transfers were made from right to left and back; one language helped another. The children were inner city children of whom the school system expected only the poorest educational future. By offering languaging opportunities of all kinds, we may hope to find for every child the kind of opportunity that suits his need.

What could we do? We could be systematic in our cultivation of <u>all</u> the literacies. Many of us have believed, and sincerely, that verbal literacy can be achieved if a child has opportunities every day to communicate in various verbal ways, is rewarded every day for his successes, is helped every day with our perceptions of how he might improve. We then make sure it happens every day, every grade and every year throughout his whole academic career. <u>No less than this will now do for visual languaging</u>. No less than <u>all</u> of this will now do for visual languaging.

Ladies and gentlemen, by the most fantastic piece of serendipity in the whole of history, mankind has equipped itself--we have equipped ourselves with a language-for-the-eyes to which our earliest ancestors aspired when they first began to scratch drawings on the walls of caves. By sheer happenstance, all the peoples of the world will increasingly be able to carry out languaging activities not only with their

left hemispheres, but with their right. The consequences of developing such languaging powers will be interreactive between the two hemispheres. The results will be skills in communication that transcend what we have achieved in the past, and levels of cognition beyond those we can now imagine. We can expect to educate the whole person to function more happily, to communicate more effectively, to cope more successfully and to want to do all these things and believe that he can. All of this can become possible when we add to the power of the left hemisphere and verbal literacy, the power of the right hemisphere, the power of the eye: visual literacy--the eyeful power.

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