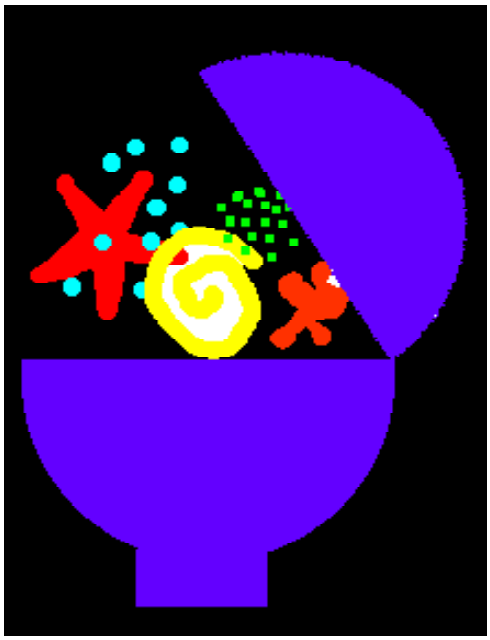

The New Literacies: What Is Basic Education Now?

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What Is Basic Education Now?

The power and prevalence of digital technologies in our culture and on a global scale is driving what is known variously as a "digital revolution," a "media revolution," or what Kristina Woolsey has called, a "language revolution." Digital media's fervent adoption by youth around the world both as basic communicative and expressive tools is fueling an urgent rethinking of what comprises literacy in the 21st century. Because images are such a strong component of digital media, "visual literacy" is called for from some fronts. And because this flood of imagery has been largely driven by technology (TV, computers and videogames...think screens), and because the computer is an available and straightforward medium to mix and manipulate images, video, words, sounds, etc...it is often seen as both the medium, i.e., the "carrier," and the tool of choice for learning.

The definition of what the new literacies are all about, what "they" should contain, or how or where to teach "them", or measure "them" is still under construction. The general agreement from the 21st Century Literacy Summit Report is that while the underlying concepts are "informed by work in media literacy, semiotics, iconography, visual cognition, the arts, and other well-established fields, they emerged so recently that there is not a body of literature or theory in place yet that can provide adequate definitions, taxonomies, or ontologies."

The following pages represent a "position paper," responding to Kristina's invitation to discuss and expand the territory of "new media literacies." It outlines areas of research, some from other fields, that I believe have significant bearing on these issues...and personal applied research with children, culled from decades of work with the Learning About Learning Educational Foundation and its Lab School that I feel would be appropriate and useful to this discussion. It further outlines areas of personal work and collaboration that is unfolding on several fronts and will later, hopefully, add to these efforts.

And so, while it is still early, I believe that it is worthwhile to turn these considerations upside-down and examine what it means to be a literate person in the 21st century, to take a child-based viewpoint, instead of a media-based viewpoint. It is an opportunity to rethink what it will mean to be a prepared and successful citizen in our culture in the future...and to envision the invisible context of values, attitudes, and priorities we might design to support our children's learnings as they grow up.

In the following pages I will present an argument that the new "language" of imagery (and sound) is another very basic symbol system to learn, utilize, and invent with. And that it is the oldest symbol system of our species, coming long before the other symbol systems of words and numbers that have taken the cherished literacy spotlight today. I will also try to "connect the dots" a bit differently and show how creativity (a higher-order thinking skill) and individuality are central to new literacy thinking and also deserve to be moved up the ladder of priorities of what occupies our children's time in preparation for their (and our) future.

Literacies and the Educational Establishment

In many cultures, to be literate...to have the abilities to interpret, manipulate, express ideas and create with symbols...is not necessarily attached to the symbols of words and numbers as it is in our culture. Today, maybe only one-third of the world can actually read, write or count, but have developed unique abilities over time to eloquently translate symbols into ideas without the written word. Deep in the past, other symbol systems held sway. The animal drawings in the caves at Lascaux from 30,000 years ago speak volumes of the people's reverence and awe for the animals they saw and hunted. Visual literacy was then embedded in how people tracked animals, read the clouds, studied the patterns in the stars, and learned from the mathematical elegance of the plants and seasons. It was expressed in the baskets, the weavings, the pottery, and the way they lived in accord with nature. Likewise, the oral traditions of the pre-print world were grounded in the stories told round the fire that held the mythological and metaphorical symbols that imparted the meanings and values the children needed to grow up successfully. The listening, remembering, telling and retelling of these important stories embodied a kind of aural literacy we can only imagine. It is lost to most of us now because it is no longer valued, not because the capacity isn't there.

The invention of the various alphabets and writing gave means of symbolizing and recording information, events, stories and ideas. These records and messages could then be transported long distances. Numbers symbolized and streamlined calculations and transactions. Over time, the symbol systems of words and numbers came to be chosen as the ones to teach and pass on. These literacies were valued as the ones children needed to acquire at school to assure their success as adults in their commerce with the world. Visual and aural literacies were neglected in the context of education.

Those choices are still with us today. Literacy (verbal skills) and numerancy (number skills) continue to be the basis of our schooling, apparent in our standardized testing. As the emphasis on these tests have grown over time, they have become informally associated with who's "smart" and who's not and have, unfortunately, become a powerful arbiter of identity in our children.

:: Implications

"Visual/aural literacy" can be thought of as another symbol system that we want our children to acquire (or actually recover), just as basic as words and numbers, expanding their early repertoire and building the foundation for a more informed interaction new media (and with the world). Later, I will present the "alphabet" for visual literacy, a place to begin with young children to build visual/aural, or more accurately, *sensory*, skills...as basic as learning your numbers and letters.

A New Cultural Landscape

Over the past several decades, diverse forces have appeared that have dramatically changed the landscape of our culture and how we interact with it...film (now a mature storytelling medium) is

known to powerfully influence the culture; likewise television. More sophisticated color printing technologies combined with the economic success of the advertising industries have spawned a growing deluge of images on almost every surface and screen. Enter digital media. Videogames make stories interactive (and hypnotic) and available at all times. Computers, fast and powerful tools for working with words, numbers, and images (often simultaneously) have been universally adopted by the population for an ever-growing cascade of possibilities. Cellular phones (including cameras and the means to send and receive images as well as text messaging) have also had global adoption. In the last decade, the now pervasive internet has provided global interconnectivity, launching a universal rethinking of our relationship to how we get and give information and ideas across all platforms...business, mass media, education, politics, the arts, etc., etc. And now the spread of wireless environments will soon make it all portable and even more immediate. Kristina has called it "digital soup."

In surveying these decades of changes in relationship to the discussion of "new literacies," several important factors stand out:

1. Images and sound are just as important (if not more so) than words and numbers in both their power to capture attention, communicate ideas, and change behavior.

2. The possibilities of using, creating and sharing images, words, sounds (talk/music) via digital media are now easily imaginable by young people. They've adopted the media and the mindset and they are collectively aware that it is "the future." The genie is out of the bottle.

3. It's a global phenomenon.

:: Implications

The world has changed a great deal since the institution of "school" was designed and verbal and numerical literacies were selected as most important to be taught and the "basic curriculum" of the 3 R's was set. In addition, subjects like history or biology are most often taught by gathering and repeating facts. Since then, digital media has created instant access to almost any data...and this has called into question the old idea of a good education being a large accumulation of information. Many are calling for a greater emphasis in teaching the processes of learning...learning how to learn so that children will be better able to navigate the floods of data.

Now, much of the information that surrounds us is "non-verbal." And the youth are far ahead of us in adopting the use of sound and images. They are "out there," living passionately in the popular culture, saturated with pictures, music, and chat...delivered by digital media. But are they literate with them? Do they have the *thinking skills* to be both analytical and creative with these symbol systems? So far, we haven't given them much support.

The need to be versatile thinkers with visual information is far reaching. Much needed understanding of other people, other cultures, even our planet derives from visual information. Our effectiveness in collaborating, problem-solving and inventing in "the global

village" will be affected by our children's level of expertise with information *beyond words*. It now seems obvious that our "basic curriculum" should include the symbol systems of sound and imagery... along with words and numbers as very basic cognitive, expressive and communicative skills that are needed for growing up.

Visual/Aural Literacy Is Built on Thinking Skills

Literacy is usually thought of as a functional level of working with a certain set of symbols. With words, the goals are learning the fundamentals to be able to take in information through reading and use it be able to communicate, in this case through writing. Children come to school having learned their native language, in their own style and according to their particular inner clock. School then teaches the symbol system associated with language and the cognitive processes involved in reading (taking in information) and writing (expressing ideas). This adds up to literacy.

The same is true for numbers. Children learn their first numbers at home and get the idea of what counting means at a very early age. But "numerancy" hasn't been achieved until numbers can be read, written and arithmetic (or other calculations) performed at what our culture considers a functional level.

The "functional" part, the constellation of cognitive skills that is required is generally called "critical thinking skills." It happens after you can "take in information" using a certain symbol system and can compare and contrast it, weigh it, use it with a certain degree of facility. Most all of school is related to these first two varieties of thinking skills.

"Higher order thinking skills" represent abilities to imagine and create with the symbols, to synthesize information, to solve problems by designing and inventing with the symbols. These kinds of thinking skills are a stated goal of the current "new literacy" discussions in regard to images (and sound).

The following chart gives very rudimentary examples what these thinking skills look like in everyday life:

	Taking in information • *observing/hearing* • *identifying* • *collecting/learning* • *remembering*	**Critical Thinking** • *comparing/contrasting* • *weighing* • *manipulating* • *interpreting*	**Higher Order Thinking** • *problem solving* • *inventing* • *creating*
WORDS	• learning alphabet symbols • words as alphabet combos • learning how to read • building vocabulary • spoken word to written	• reading meanings • diagramming/grammer/rules • book reports/lists • spoken reporting, describing	• composing essays • writing poetry • debating
NUMBERS	• learning number symbols • learning to count	• arithmetic/other math • practical applications/ measuring, banking, scorekeeping	• physics/cosmology • engineering
IMAGES	• observing the outside world • manmade/visual symbols, illustration, photo	• practical/street lights, sizes, potential danger • TV/ film/ photos/ mags/ art	• taking photos/ video • arts/painting/drawing • architecture/design
SOUND	• hearing/learning speech • nature/outside world • listening to music	• identifying voices/animals • "reading" weather sounds/ manmade/instruments/ • speaking/communication	• singing/composing • speaking/ideas

:: Implications

It is worthwhile to consider all the kinds of thinking skills we want for our children and how to best learn them. Clearly, the visual/aural symbol system has its own set of fundamentals...just like the alphabet and numbers...and though we come to school familiar with this symbol system, like we do speaking a language, it doesn't mean we're literate. And although the magnificently versatile digital technologies and their vast and growing numbers of software tools are terrific media for experimentation and expression, there are *fundamental learnings* that need to be gained outside digital media and starting at a pre-school level. Thinking skills associated with this symbol system need to be practiced in a variety of media, not just digital, so that the creativity and fluency sought can be built as a potent thinking skill.

How does fluency happen?

And where do ideas come from? The imagination, of course. And the better the feeding and priming of the imagination, the more it will give back. (Not at the top of the priority list in education today.) What we know about the imagination too, is that it is deeply involved with *individual differences in cognition*, and individual *"wiring*." When we are able to operate in the symbols that most naturally fit our profile, the easier it is to have and express ideas, i.e. be fluent thinkers. And when we are also using media that "works" with that symbol system, it is our "sweet spot," where the deep well of the imagination is at its best...full, overflowing and satisfying.

If we are looking for real creativity and fluent thinking in new media as an outcome, it is useful to examine these concepts briefly from a learning perspective, and to consider several important factors that work together...*creativity, play, media, individuality,* and *the creative process.* There is a good deal of research available coming from diverse sources: clinical and developmental psychology, the cognitive sciences, pediatrics, neuroscience. The following is a synthesis based on years of applied research with children at Learning About Learning:

• **Creativity** • The creativity that is our human heritage is in constant use. We actively relate to the world around us...discovering, constructing and reconstructing information, creating and testing hypotheses. We don't respond passively to our experiences, we tend to integrate past, present, and future into meaningful wholes. Our perception is constructed. Our memory is constructed. Our understanding is constructed.

Invention is an integral part of human development. Piaget has said that to know is to invent. His theory is the primary expression of the position that human development involves active, constructive interplay between the child and his environment. This interplay occurs, according to Piaget, throughout the stages of development, from the sensorimotor period onward.

• **Play** • The inventive and constructive capacities of children are probably given fullest and most visible expression in their play. In play the child can combine all his resources and understandings into an integrated whole. What the experts know now is that play is *thinking in action*. It gives you a chance to rehearse, direct, invent, imitate, fantasize, try on, try out, experiment, rethink, rearrange, start over, express and explore... all without the consequences of "the real world".

Vygotsky sees play as the "leading activity" of childhood with important cognitive consequences. It allows the child to distance from reality and deal with ideas rather than things. In play, objects become pivots into the world of meanings and involves the child in the constant recoding and rehearsal of information.

• **Media** • Play, invention, indeed all action, do not occur in a vacuum but are manifested and take place in various media. And each medium comes with its own set of constraints and illuminations in relationship to information. For example, a map gives more and different information about a route to a particular place than verbal instructions. Likewise, the kind

and amount of information on the map is constrained by the medium used to create it...ink, crayola, sand, etc. Therefore, what can be learned may be either limited or facilitated by the medium in which the learning takes place

Also, as David Olson has pointed out, media have powerful effects on development in and of themselves. It follows that children should learn about media and their properties, and with a variety of media discovering the multiplicity of their possibilities. Media should not be thought of, and taught, as sets of technical skills but as "material" to manipulate and explore. This emphasis shows children largest potential of the "medium" to represent and express information and ideas.

• **Individuality** • The lab school at LAL was centered around the clear observation of individual differences in learning styles over time. Groundbreaking research in the past fifteen years has shed more light on this subject. A few notes on this follow:

• Individual differences in cognition have been persuasively demonstrated and shown to be influencing how we individually perceive and process information. This research was pioneered by Howard Gardner and termed, "multiple intelligences." It supported the notion that there are many paths to the same end (e.g. learning language) as well as individual constellations of cognitive strengths to call on. It also supported every parent's experience (who has two or more children). Not surprisingly, Gardner's work has been widely read and applauded by parents and teachers, with many attempts to design school environments that are sensitive to individual "cognitive styles."

• Another strong voice advocating individual strengths in learning is pediatrician Mel Levine. His notion that we are both uniquely "wired" and "gifted" resonates with a wide popular audience. He further questions education's emphasis that each student should be a generalist, noting that it's not something we expect of adults. In fact, we prize depth and specialization. His practical methodologies for detecting neurological profiles and problem-solving ideas for the teachers are gaining a great deal of support outside the classroom as well as inside.

• **The Creative Process** • The creative process is a way of thinking that can be taught as easily as "the scientific method." It's only hampered by our slight distrust...we can't really measure it, after all...and by the widely held suspicion that it belongs in the mysterious territory of artists. And though we prize the work of creative individuals, their creative thought process is thought to be a matter of "talent," another mysterious and ungraspable area. It's time to de-mythologize the creative process. When it's practice is accompanied by metacognitive knowledge of personal style and deep play experiences with diverse mediaÉit becomes jet fuel for the imagination.

Additional Neurological Research

Now that we can look inside the brain there is important physiological data from a variety of sources reporting that a rich sensory environment makes young children's brains bigger

and better, creating a thicker cortex, with larger neurons (brain cells) with more dendrites branching out, making more "connections." Likewise, an impoverished sensory environment has the opposite effect. The early years are even more important than we thought before, as the brain starts out "fully loaded" and quickly begins shedding cells and unused connections to "customize" itself for it's environment. The results have strong implications for how we think about very young children's learning and learning environments...as well as how we think about the pervasiveness of "screens" in the lives of our "digital kids."

:: Implications

The school experience often can be characterized by deep dichotomies...although the official mandate of educational institutions is still centered on the traditional "3 R's," delivered and tested in traditional ways, *many* parents and teachers are aware of the research that supports individual differences in thinking and learning styles that aren't part of the learning picture. It resonates with what they know and experience in "real life." And although computing in school is most often confined to text-based research, children and parents alike are aware of technology's multi-sensory possibilities.

Parents are also aware of the depth of their children's involvement in the digital world. Kids naturally gravitate into the daily world of sounds, layered images, and simultaneous events. It is the sensory world and it is up-close, technological, connected, visually rich, emotional, and immediate. It's about friends, fun, computers, games, stories, animals, communicating, TV, wonders, worries, playing, family, music, sports. It's where pop culture lives. It's also where the senses and the imagination live...and frequently, it's in direct contrast to the world of school that is, by design, linear, expository, abstract and detached.

The adoption of "visual/aural literacy" or "the new literacies" by the educational establishment can go a long way to relieving this large-scale and endemic problem. Because these literacies involve a much more inclusive, sensory-based symbol system compared to the linear and abstract symbol systems of words and numbers, they offer a much larger set of alternatives in which children can *find themselves*. And because digital media is multi-modal, there is much more latitude for children to find expression for their *individual strengths*. Just as importantly, if these new literacies can become a part of the educational establishment and *valued* as highly as words and numbers, many more children will be afforded the feeling/knowing of being "OK." This positive sense of self translates into more confident, curious and creative children. (Probably 60% of kids do not have natively linear thinking/wiring that works well with words and numbers and also tests poorly, often eroding self-esteem and leading to stress...on parents and kids too.)

And, parenthetically, although parents and teachers are less aware of it, the new physical evidence of how the brain develops eloquently supports incorporation of the new literacies, beginning at an early age.

This is a propitious moment when the energy of the movements toward digital literacy could combine with a child-based sensory literacy as well as the popular thought surrounding individual cognitive styles to create a single, vital, popular movement that could have very strong impact... with the immediate support of many, many parents and teachers who feel they and their children have, at the present time, been left behind.

Addenda: The Alphabet for Visual/Aural "Language"

(This section is from "New World Kids," a book for a parent audience, in progress.)

The Sensory Alphabet

Color

Human vision is distinguished by the color-detecting ability of our eyes, and so for us color is often the element of discernment — and the visual language of emotion. Green with envy, seeing red, walking around under a black cloud, emotion transforms itself into colorful characters, colorful language, poetic passion. Paint on canvas creates sunny weather or an emotional storm; and music paints a picture solomn or spritely. Where is your color sense alive? In cooking or chemistry, stargazing or paint mixing, finding rainbows, delighting in a feather's iridescence or in an outlandishly fashionable fashion sense?

Sound

Sound has the inherent quality of acting directly on the emotions without going through the intellect. Listen. The world is speaking to you in a thousand different voices. When we listen, we put ourselves in the moment. Present to an argument, a plea, a whine, a bird call, wind in the trees or a symphony. Besides the obvious (musicians and music), actors, politicians, priests and teachers invoke action with tone, timber, tempo and sound. Writers (and readers) listen as words unfurl on the page. Painters may paint a sound and runners may use one to make the miles fly. Ecologists, anthropologists, birdwatchers, linguists and physicians – all use sound to diagnose, distinguish and define.

Space

Space is omni dimensional, geographic and temporal, both geometrically present outside of us, and meta-phorically present inside the fences of our imaginations. With space, what isn't is as important as what is: the inside of a basket, the silences between the notes, the pause between the speakers, the room inside the walls. The way a canvas size or a room's dimensions determine how we move within it. As humans we can't help but pay attention to space as space and space as time. How long? How wide? How fast? How slow? Where and when? Think about how these people use and analyze space: mechanical engineers, publishers, architects, dancers, cartographers, chess players, editors, sit com writers.

Light

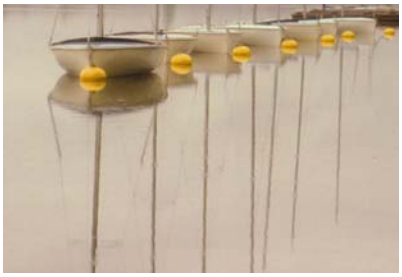
Light delights as the most elusive and changeable element of form: giving contour, creating mood, illuminating all manners of truth. The sea sparkles, pearls have luster, silk shimmers, we "see the light." Stage designers, cinema-tographers, photographers and architects are obvious masters of light and shadow– but think too about light as perceived by physicists, by glass artists, by poets and urban planners. Without light, we're literally and figuratively "in the dark." Fireflies, fireworks, shadow play and starlight are some of our first light-filled fascinations – what are others?

Rhythm

Rhythm is the heartbeat element, holding things together in big and little patterns. We each have a personal rhythm that is as distinct as our fingerprints, recognizable beneath the changing tides of emotional rhythms that rock and roll us through the day. Rhythm at first thought is audible and invisible – drum beats, finger taps, cadences and cacophony, but imagine the world without stripes, dots and dashes, without the visual patterns of steps, of lines of shoes, of the this and that way of the lines in a leaf. Without rhythm who could be a pianist, a mathematician, a poet, an actor, a director, a salesman, a video editor, a debator, a basketball player, a waiter, a politician, an animal behaviorist or a juggler?

Movement

Movement is about change and getting from here to there, from up to down, from then to now. We talk about how ideas move us, how ambition gets us there, that responsibility keeps us tied down, how our imaginations run away and our philosophies collide. A storyline must move right along or it loses our attention; cycles of days and years and viewpoints become the stuff of history; cycles in our bodies, in weather, in nature present whole worlds of study. Kinesthetic learners must move into knowledge, often quite literally, finding the meaning of a concept by physically moving into it. Movers include (but are not limited to) explorers, botanists, meteorologists, dancers, acrobats, athletes, construction workers, industrial designers.



Line

Line, the elemental foundation for print and number, has determined much about 20th Century life and success in our culture. Isobars, arteries, fault lines, line drives, battle lines, lines of credit, timelines, lines of type, notes, numbers and people..,stretchy, slinky, fixed or floating, dotted or dashed, lines connect two or more points. And the points are, as mathematicians remind us, infinite. Writers pen story lines; programmers, lines of code. Biologists decipher lines of DNA; entrepreneurs develop product lines. Singers follow melodic lines; jazz musicians improvise upon them. Where do you enter the element of line? As story teller or scribbler? With delight for a maze or an appreciation for ballet?

Shape

"Shapes shape other shapes." As shapefinders we look for symmetries, for foreground and background, the donut and the hole, for the whole of the thing that is greater than its parts. Putting puzzles together is playing around with shape, and so is the literary love of beginning, middle and end. Pleasing shapes play their part in our neighborhoods, our furniture, our plates, platters, shoes and cars. Shapemakers include sculptors and typographers, mathematicians with their worlds of symmetries, microbiologists, industrial designers and couture clothiers. We shape play with shells and rocks, clay and cookie dough, big bouncing balls and smooth, sleek kitty cats.

Texture

At its most direct, tactile information is as close as it gets, up close and personal, right at our fingertips. Smooth, woven, wrapped, slippery, shiny, course, rigid and reedy. We see texture, too, and hear it in a voice or a song. Our days are rough or smooth, our mood s even or edgy, our needs piercing or pointed. Surgeons, weavers, gardeners, art collectors, textile designers and chefs must all pay close attention to texture. Does your child explore texture in the sand box, through a microscope's lens, coiling clay snakes, eating ice cream or squishing toes in the mud?