

## Quotes from the Lecture: Beyond Beautiful Stuff

### **(3) The Infant Brain in Action**

(4) By four months, the formation of synapses (connections between brain cells) in the visual system is at a peak.

- Charles Nelson, National Scientific Council on the Developing Child, 2008

(6) Anything we do “builds and involves separate brain networks.” - Michael Posner, 2008, p. 4

### **(8) What Attracts Infants?**

(9) “If the hand is active, the brain is engaged.” – Ann Lewin-Benham, Adapted from *Infants and Toddlers at Work*, 2010.

(10) From birth, materials build a repertoire of increasingly complex skills that wire the brain, enable evermore complicated movements, and connect grain and hand. – Ann Lewin-Benham, Adapted from *Twelve Best Practices for Early Education*, 2012.

(14) “Actions like focusing on, moving toward, reaching for, grasping, and manipulating enable infants to learn about *things and kinds of things and actions* and thereby form the basis for thinking.”

- Steven Pinker, 1994, *The Language Instinct*, 1994, p. 149

(15) “By four months, the formation of synapses in the visual system is at a peak and the eyes work together. The wind and the branches played, powerful stimuli for Shep’s eyes to move from side to side, focus on, and follow moving objects at the optimal time in the eyes’ development.

- Ann Lewin-Benham, *Eco-Education for Young Children: Revolutionary Ways to Teach and Learn Environmental Sciences*, 2018

(16) “Babies lock onto face-like patterns – but not onto other complex and symmetrical arrangements – when they are only 30 minutes old. They quickly learn to recognize their parents, especially their mother, perhaps as early as the second day of life.”

- Steven Pinker: *How the Mind Works*, 1997.

### **(17) Materials and Infants**

(17) “How materials stimulate infants is readily seen in their use of their hands and their movements.”

- Ann Lewin-Benham, 2018, DC Reggio Emilia Alliance

### **(18) Infants’ Hands**

(19) “Infants are cognitive, that is, *capable of using complex thinking* long before they are verbal.”

Ann Lewin-Benham, Adapted from *Eight Essential Techniques for Teaching with Intention*, 2015

(26) A Snapshot at Six Months: A Snapshot at 6-Months – Intentional and complex actions putting many brain systems together:

- ✓ Eye/head stability
- ✓ Eye/hand coordination
- ✓ Head/body balance
- ✓ Erect posture
- ✓ Arm/body synchrony
- ✓ Eye/target precision
- ✓ Arm/target stretch - Ann Lewin-Benham, (2010), Adapted from *Infants and Toddlers at Work*

### **(27) What Stimulates Infants’ Movements?**

(54) “It is in the baby’s earliest experiences in practical physics – watching, locating with both hand and eye, then intercepting moving objects – that the nervous system builds its own unique library of solutions to the computational problems presented by coordinated movement.” Frank R. Wilson (1998) *The Hand*, p. 103

### **(55) Toddlers and Materials**

(56) Using materials enables toddlers to practice movements that are the basis for lifelong competencies.

- Ann Lewin-Benham, 2018, DC Reggio Emilia Alliance

(57) “Anything that truly engages the interest of the child and motivates the child can serve to help train attention

and build focus, one of the essential functions of the brain's attention system." - Michael Posner, et.al., (2008). How Arts Training Influences Cognition, *Learning, Arts, and the Brain*, NY: Dana Consortium Report.  
(75) "Brain circuits are created and strengthened by whatever environment and experiences we encounter. The cellular architecture of the brain is changed through environmental exposure and experience."

Harry Chugani, "Fine Tuning the Baby Brain," 2004

### **(90) Learning Hand Skills**

(91) The Hand is: "a single tool that manipulates an astonishing range of sizes, shapes, and weights, from a log to a millet seed."

Hook grip: Lift a pail

Scissors grip: Hold a cigarette

Squeeze grip: Turn a key

Disk grip: Open a jar

Spherical grip: Hold a ball

Five-jaw chuck grip: Lift a coaster

Three-jaw chuck grip: Hold a pencil

Two-jaw pad-to-side chuck grip: Thread a needle

Steven Pinker (1997). *How the Mind Works*, p. 12

### **(107) Engaging Toddler Movement**

(111) Links to 2 different excerpts from "The Way Things Go":

<https://www.youtube.com/watch?v=9i1zd2JRgAQ>

<http://www.tate.org.uk/context-comment/video/fischli-and-weiss-way-things-go-excerpt>

(112) "Mounting evidence shows that movement is crucial to every other brain function including: memory, emotion, and language . . . The whole front half of the brain is devoted to organizing action, both physical and mental. At their base, "higher cognitive processes," as we like to call so many of our brain activities, are about organizing actions. "

John Ratey, *Users Guide to the Brain* (2002) pp. 148-150

### **(113) Toddler Environments**

(119) "In human evolution, the organism-environment interaction is a novel explanatory story . . . It shows how society itself, culture, became part of the dynamic process of selection." Frank R. Wilson, 1998, *The Hand*" p. 50

### **(120) Materials and 3 to 6-Year-Olds**

(121) "Rich, varied materials are the stimuli for the mind to picture and the hands to make innovative, ingenious constructions."  
- Ann Lewin-Benham, Adapted from *Powerful Children*, 2008

(122) "Materials matter because they influence what children can think about and how they are likely to engage the work."  
Elliot Eisner *Arts and the Creation of Mind*, 2002, p. 117

(123) "The adult's function in the child's learning is to provide a kind of external loop, to provide a selective feedback from the child's own choice and action."  
David Hawkins *The Informed Vision*, 1974, p. 53

(126) "The child learns, with real objects through trial and error, to make constructions that are concrete events unified through a *sequence* of actions. Use of the hand trains the brain to plan. To do anything, we need precision in finger grips and a logically sequenced story."  
Frank Wilson, *The Hand*, 1998, pp. 10, 195

### **(127) Materials**

(133) Changing Shapes Stage 1: Handle and discuss.

Stage 2: Choose a shape.

Stage 3: Cut it into pieces.

Stage 4: Rearrange the pieces.

State 5: Glue to create a new image.

(133, cont.) Paper Bridges and Collage: Paper strips, glue, found objects, cardstock base

Hand: Cut, stretch, bend, curl, fold, weave, glue, hold, press, curve, crease, wind

Language: Long, thin, multi-colored, curved, under, over, through, beside, near, above, beneath, alongside, behind, entwined, lower, higher  
- Ann Lewin-Benham, DC Reggio Emilia Alliance, 2018

(164) "A wide variety of phenomena lie on the edge of everyday experience. . . Children have a vast background of acquaintance, but it often takes a great diversity of examples and some real time for them to become compelling.

- David Hawkins, *The Informed Vision*, 1983, p. 76

### **(176) Materials in Situ**

#### **(181) Learning Specific Techniques**

(186) Materials arouse, alert, focus, and sustain the brain's attention system.

#### **(187) Conclusion**

(195) **Materials are a teacher's tools to** "expose the hidden physical roots of the unique human capacity for passionate and creative work, roots that are more than deep and more than merely ancient but reach *past* the dawn of human history to the beginning of primate life on this planet." Frank Wilson, *The Hand*, 1998, p. 6

(196) What to teach

Diverse materials

Their properties and possibilities

The tools that shape them

How to teach

Unhurriedly, open-endedly, repeatedly, reflectively, as part of projects

Why it works

Materials are a hallmark of what makes humans human.

Humans are predisposed to use materials.

Archaic tools drove human evolutions.

The human drive to devise is propelled by our species' long history.

(197) A. A. Milne (1927). *The Engineer*, Illustrator: Ernest H. Shepard *Now We Are Six*. NY: E. P. Dutton., pp. 42-47.

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