Developing Brains-
Ideas for Parenting and Education
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What are Neurologically Appropriate Practices?

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Introduction:

The ideas for the following Neurologically Appropriate Practices were developed by participants from two workshops held in February and March 2009. The February group at Portland Community College addressed nine concepts. The March group at the SW Washington Conference addressed seven concepts. The ideas have been combined under each of the concepts.

The two workshops were as follows:

Early Education and Family Studies Winter Symposium
Portland Community College and Oregon Association for the Education of Young Children
February 14, 2009

SW Washington Early Childhood Tapestry Conference
Saturday, March 21, 2009

I want to thank all the workshop participants for allowing me to post their ideas on my website in order to share them with others!

Background on the Concepts:

For more information on the concepts, see the following article in the "Understanding Developing Brains" section of this web site: Brain Science Meets Early Childhood Development-A Timely Convergence. This is the text of the keynote address that I gave at the PCC/OAEYC Winter Symposium on Friday, February 13, edited for reading. Each of the following concepts will have a short introduction to remind the reader of its meaning.

Nine Concepts:

1. The brain develops itself. The brain is a product of both nature and nurture – or genetics and environment. DNA sets up the most basic structure of the brain during fetal life and into the first two years, and DNA continues to direct the development of the brain through adolescence. However, from the moment of birth, the child's brain is also fine tuning itself and its architecture in response to the specific environment into which the child was born and the experiences he or she has. This fine tuning happens at the synapse, whereby experience strengthens the connections that are stimulated often. Experience also increases the number of connections between neurons, allowing for the development of complex networks.

- ✓ **The importance of touch, being responsive**
- ✓ **Sensory experiences – neither over-stimulating nor under-stimulating**
- ✓ **Be gentle with children**
- ✓ **Consistently incorporate second languages in the classroom**
- ✓ **Label everything in dual languages**
- ✓ **Be intentional about the message you send and what you are modeling**
- ✓ **The importance of consistency and continuity**
- ✓ **Have parents fill out a form about what the children's interests are so teacher-caregivers can apply it in the classroom – trying to reduce culture shock or "brain" shock**
- ✓ **Allowing elements in the child's home to be experienced in the classroom**
- ✓ **Be aware of the child's family culture**
- ✓ **Teacher-caregivers do home visits to get a feel of the child's home**
- ✓ **Give each individual child a chance to share their experiences**
- ✓ **Be a role model and take an interest in the children's feelings and what they are doing**
- ✓ **The brain needs "people" interaction to develop attachment**
- ✓ **Let children know when and if regular staff are out and when they will return**
- ✓ **Allow time for free play**
- ✓ **Encourage "both/and" thinking**
- ✓ **Provide a stimulating environment that supports focused attention**
- ✓ **Swaddle a baby, bounce to soothe**
- ✓ **See caregiving as an interactive opportunity rather than a task**
- ✓ **We are here to provide experiences for children**

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- ✓ **Creating an environment that allows children to be active learners- being active learners during early childhood makes them active learners later on**
- ✓ **Orderly transitions**
- ✓ **Have predictable schedules and post them in pictures at the children's level**
- ✓ **Provide an environment that is meaningful to the children and their experiences**
- ✓ **Introduce new things slowly and intentionally, when children are accustomed to the environment and routines**

2. Use it or lose it. What we "do" gets transformed into neural circuits in our brains. It means that experience shapes the brain by determining which connections to keep and which connections to "prune" out. The brain keeps those that are used—for better or for worse depending upon what the child spends his or her time doing!

- ✓ **Provide a rich environment that is accessible to children**
- ✓ **Be clear about what our goals are for children**
- ✓ **Very purposefully identify what we want children to learn and provide many opportunities for experience**
- ✓ **Use positive language**
- ✓ **Expose children to writing by labeling items with both words and pictures**
- ✓ **Provide opportunities to explore open-ended materials Have books available and encourage looking at books by having a reading time**
- ✓ **Make content personally relevant as when this happens children are more likely to remember it**
- ✓ **Introduce new and challenging material**
- ✓ **Bring culture into the classroom**
- ✓ **You need to keep doing something.**
- ✓ **Being fully engaged over and over again will help us or children learn it.**
- ✓ **Have consistency in the classroom**
- ✓ **Have a wide range of activities every day- be creative**
- ✓ **Use every available technique to instill what it is we are trying to teach- expose children to various ways of learning**
- ✓ **Employ hands-on learning, especially with musical instruments**

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- ✓ **Use songs and prompts to develop memory and structure**
- ✓ **Use the same basic tools in your classroom so that the child becomes comfortable – then expand by introducing new ways to do something**
- ✓ **Eliminate or minimize opportunities for children to "practice" what we do NOT want them to learn**

3. Repetition forms stronger and more elaborate memories. This principle is common sense, but neuroscience has added new meaning to our understanding. Repetition is necessary for the construction of knowledge. We cannot learn new things overnight. We need practice, and we need to apply what we learn in new and novel situations.

- ✓ **Utilize counting, calendars**
- ✓ **Revisit things**
- ✓ **Have a schedule and routines that are predictable**
- ✓ **Allow child repetition before changing, allow enough time to use it- to figure things out- to have the skills become automatic**
- ✓ **Build into curriculum opportunities for repeated experiences – even when we are "bored"!! Children enjoy hearing stories over and over again.**
- ✓ **Do not continually introduce new materials – let them get to know the material well enough to work with it in different ways**
- ✓ **Children will play for years with imaginative open-ended objects such as doll house, hot wheels, blocks, Legos©, etc.**
- ✓ **Children need to feel safe to be able to repeat activities to gain mastery**
- ✓ **Use letter and number repetition in everyday activities – label centers with the number of children allowed in at one time with both pictures and the number**
- ✓ **Don't change the environment too often – allow children to use the same art media on many occasions**
- ✓ **Allow children to play in the same areas every day**
- ✓ **Associate songs to activities**
- ✓ **The earlier we start working with children the children, the more proficient they become through repetition and experiences**
- ✓ **"Practice makes permanent"**

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4. Cells that fire together, wire together. Emotions are contagious and are attached to every thing we do or think. If a teacher is enthusiastic about going outside, for example, the children will "catch" that emotion and associate it with being in the outdoors. If adults appreciate a child's attempts to write, she will persist in trying, **because** her efforts are appreciated.

There is a saying that used to be popular in preschool classrooms, "Catch them in the act of being good!" Well, there is another one I'd like to teach you: **"Catch them in the act of trying!"** Encouragement of children's efforts to learn something scaffold and support a love of learning and teach the values of persistence and practice.

- ✓ **Be engaged and authentically involved with children**
- ✓ **Have the consequence fit the behavior being discouraged**
- ✓ **Fully engage one-on-one with children**
- ✓ **Be positive with children- keep a positive atmosphere**
- ✓ **Experience things with children- ask them about their experiences so you can empathize**
- ✓ **Encourage or plan for group work or activities**
- ✓ **Praise children for their attempts – use encouragement for trying**
- ✓ **Be genuine**
- ✓ **Associate activities with excitement and positive attitudes**
- ✓ **Let children try new ways of doing old stuff**
- ✓ **Share their excitement in their achievements**
- ✓ **Create an environment where they feel that they are safe and know it is o.k. to make a mistake**
- ✓ **Read stories with enthusiasm and drama**
- ✓ **Use stimulating voices while reading to create a "fun" environment**
- ✓ **Be sure to spend lots more time on what is positive than on what is negative**
- ✓ **Repetitive use of common skills – scissors to cut different materials, like paper, sand paper, baseball cards, coupons, magazines**

5. Plasticity of the brain's connections and functions is where adaptation occurs. The brain changes its structure minute by minute, in a multitude of ways, adapting itself to a changing environment. Right now, your own brain has changed from what it was when you walked in here.

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The changes in the brain that occur during the first 20 years of life are creating basic architecture as well as encoding memories and constructing knowledge based on our experiences. During all of adulthood, the brain continues to construct itself and solves problems- big and small. As we solve problems and attempt to achieve goals, we learn from the results and use this information the next time. Each time we re-visit a problem to solve or a goal to achieve, we re-construct our knowledge of it, we adapt. Describing the brain as "dynamic" is an understatement. It modifies itself every minute of every day in multiple ways at once.

- ✓ **Exposure to cultures and languages**
- ✓ **Developing positive, trusting relationships**
- ✓ **"We are what we do" so model positive behavior**
- ✓ **"Floss the part of the brain you want to keep" – encourage open-ended activities**
- ✓ **Avoid television, computer games, video games in the classroom**
- ✓ **Connect on a personal level with the children**
- ✓ **Celebrate moments in children's lives**

6. The frontal lobes of the brain take longest to develop, and require a lot of practice to mature. The frontal lobes are the "thinking" part of the brain that allows us to move, think, and talk, among many other things. The frontal lobes of the cortex are of particular interest to those of us in child development and early childhood education.

> "Frontal lobes perform the most advanced and complex functions in all of the brain, the so-called executive functions. They are linked to intentionality, purposefulness, and complex decision making. They reach significant development only in humans; arguably, they make us human." (Goldberg 2001, 2)

Since the frontal lobes take so long to mature (to beyond puberty), "…it is not surprising that adults must provide these functions [these executive functions] if they are to be present in the behavior of… children…" throughout development. For the 20 or so years that a child's frontal lobes are developing, the brains of the child's parents and teachers provide frontal lobe functions for the child. (Wexler

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2006, 109) We model, we instruct, we guide, we ask questions, we share tips! We help them learn how to think.

Self-regulation is a frontal lobe function. During the preschool and kindergarten years, children "are increasingly capable of **voluntary** internal self-regulation." (Bronson 2000, 198) By the end of kindergarten, children should typically be able to regulate themselves. In comparison, younger preschool children's actions are "spontaneous reactions to the environment... without thinking about the consequences of their actions…. The self-regulated child acts deliberately and thus becomes the *master of his own behavior*," say Bodrova and Leong. (2007, 127)

- ✓ **Practice self-regulation**
- ✓ **Some teachers use the Second Steps program which is designed to teach children to control impulses and use good decision making through the use of puppets**
- ✓ **Teach about personal space**
- ✓ **Do movement activities that require you to stop and go, as control of physical movement transfers to emotional self-control and the ability to self-regulate**

7. Mirror neurons exist. Among other things, they allow us to "feel" other's emotions and "know" their intentions. We can actually feel what the other person is feeling. Mirror neurons allow us to imitate (copy) others' behavior.

- ✓ **Keep your biases in check- practice getting rid of unconscious bias**
- ✓ **Always provide/offer sensory activities to explore throughout the day**
- ✓ **Emotions are contagious – leave negative emotions at the door as you enter the classroom**
- ✓ **Expose children to different cultures in the classroom even if those cultures don't currently exist in the classroom. Teach about other cultures through music, stories, cooking, etc.**
- ✓ **Help children express their emotions**
- ✓ **Children learn best through hands-on experiences**
- ✓ **We need to model appropriate behavior**
- ✓ **Help children learn empathy**

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- ✓ **Discuss emotions – use emotion cards (pictures of children showing different emotions) – ask children what emotion is being pictured and how they know what shows you the emotion**
- ✓ **Emotions are contagious. We need to build a relationship with the child who has difficulty with emotions and behavior – Be the champion for that child**
- ✓ **Initiate good-positive interaction with a child before the child can exhibit negative behavior**
- ✓ **Use emotional labels**
- ✓ **Be honest with children about emotions**
- ✓ **Include problem solving as a job on the "Helper Chart" – as each child in a short amount of time will be able to learn a variety of negotiating skills**

8. The brain is a "social" brain. Relationships are everything. We co-construct our knowledge of the world with other people. We learn how to control ourselves by interacting with other people. Supporting children's social relationships is one of the most important things we do as teacher. We help children join in to the group we call humanity. We provide a miniature society in our classrooms. Children hone their most basic social and emotional skills with us. As teachers we are willing to repeat our assistance and guidance as long as it takes. Relationships are everything to us.

- ✓ **Do home visits to get a real feel for children's home experience**
- ✓ **Be aware of the child's needs for attachment, empathy and social contact**
- ✓ **No Fakeness!**
- ✓ **Do lots of activities in groups**
- ✓ **Be sure each child has one-on-one time with teacher-caregivers**
- ✓ **Remember that children fine comfort in group time and feel grounded by being on their carpet square or spot**

9. We are designed to make culture. Culture is the way humans adapt to the changing environment. The baby's brain adapts itself to match the brains of the people who care for and interact with the baby. The baby attunes herself to her caregivers so she begins to see the world as they do. She pays attention to what they pay attention to, moves her body in rhythm to their speech patterns, and

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makes maps of these. Babies learn the gestures of their parents and caregivers as well as their meanings, and babies come to expect to see them.

- ✓ **Adapt the program to each child**
- ✓ **Create and develop quality relationships**
- ✓ **Bring pieces of a child's home culture into the classroom**
- ✓ **Discuss family culture on home visits**

Conclusion:

The ideas listed above are specific reminders of what appropriate practices are for children. Current neuroscience findings give strong support to the ways we have worked with young children for over a century as well as ideas for what skills and types of experiences are most advantageous to children's growth and development.

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