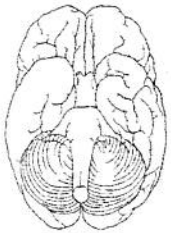
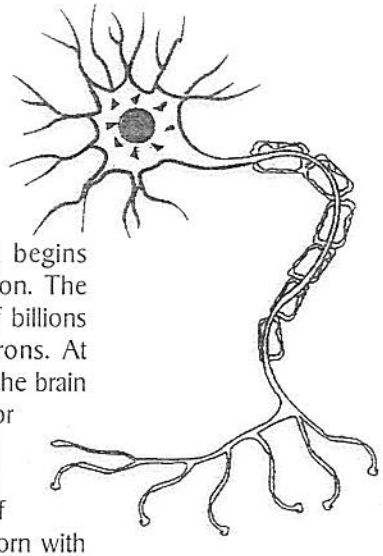
FACTS ABOUT:

Brain Development and How Children Learn



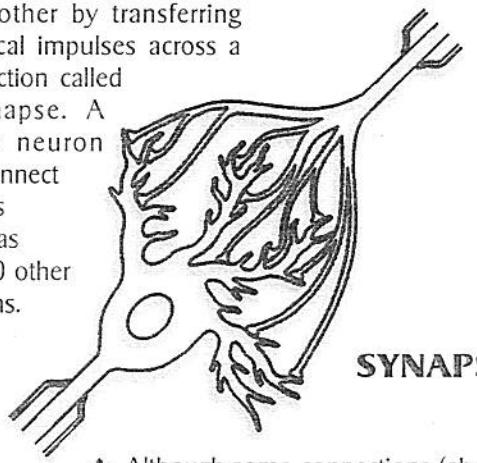
Recent brain research affirms that development of healthy brains in young children depends on a complex interplay between nature (what children inherit from their parents) and nurture (what children receive from their parents and caregivers during the early childhood years).

NEURON



- Brain development begins soon after conception. The brain is made up of billions of cells called neurons. At birth, a child has all the brain cells (neurons) she or he will ever have (about 100 billion). The abundance of neurons a child is born with helps her to adapt to many different conditions.

- Neurons communicate with each other by transferring electrical impulses across a connection called a synapse. A single neuron can connect with as many as 15,000 other neurons.



SYNAPSE

- Although some connections (about 50 trillion) between brain cells are in place, researchers now know the brain is not finished at birth. Up to 1,000 trillion additional connections will be made after birth as the result of sensory experiences. These experiences, such as the sound of a parent's voice, or a gentle touch, actually create the complicated brain circuitry which "wires" the brain.

- Just as early sensory experiences create new synapses, repetition of experiences strengthens them.

- "The number of synapse connections can go up by as much as 25 percent or more if a child grows up in an enriched environment." (Ron Kotulak, cited in "Unlocking the Mind," *Chicago Tribune,* 1993)

- A two-year-old child has a more active brain than a college student. A three year old child has twice as many connections as an adult.

- Researchers believe the more positive experiences a child has, the more synapses his brain has, and the greater chance the child has for successful lifelong learning experiences and emotional well being.

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- If synapses aren't strengthened, they wither away through a process called "pruning." At about age 10, the brain begins to dramatically prune weaker connections and makes order of the tangled circuitry of the brain to create a more powerful and efficient brain.

- Brain synapses grow throughout life and adults continue to learn, but they do not master new skills so quickly or rebound from setbacks so easily.

To learn more information about brain development and helping your child learn, please visit your local public library and the Idaho State Library's web page:

www.lili.org/read/readtome