The Tot Spot Child Care Center

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In the first decade of life, a child’s brain forms trillions of connections or synapses. Axons connect to dendrites, and chemicals called neurotransmitters help send messages (called “impulses”) across the resulting synapses.

Each individual neuron may be connected to as many as 15,000 other neurons, forming a network of neural pathways that is immensely complex. This elaborate network is sometimes referred to as the brain’s “wiring” or “circuitry.” As the neurons mature, more and more synapses are made. At birth, the number of synapses per neuron is 2,500, but by age two or three, it’s about 15,000 synapses per neuron. This is like going from 100 to 600 friends on Facebook, and each of those friends in turn, is connected to 600 more people!

The neural network expands exponentially. If they are not used repeatedly, or often enough, they are eliminated. In this way, experience plays a crucial role in “wiring” a young child’s brain. Brain development does not stop after early childhood, but it is the foundation upon which the brain continues developing.

Early childhood is the time to build either a strong and supportive, or fragile and unreliable foundation. These early years are very important in the development that continues in childhood, adolescence, and adulthood.
A Science-Based Framework for Early Childhood Policy
Using Evidence to Improve Outcomes in Learning, Behavior,
and Health for Vulnerable Children
A New Publication from the Center on the Developing Child at Harvard University

Early experiences determine whether a child’s brain architecture will provide a strong or weak foundation for all future learning, behavior, and health.

Young children need positive relationships, rich learning opportunities, and safe environments, not quick fixes or magic bullets.
One of the strongest themes in the *National Science Education Standards (NSES)* (National Research Council 1996) and *Benchmarks for Science Literacy (Benchmarks)* (American Association for the Advancement of Science 1993) is that all children can learn science and that all children should have the opportunity to become scientifically literate. In order for this learning to happen, the effort to introduce children to the essential experiences of science inquiry and explorations must begin at an early age.

A national consensus has evolved around what constitutes effective science teaching and learning for young children. More than ever before, educators agree that preschool-level and primary-level science is an active enterprise. Science is understood to be a process of finding out and a system for organizing and reporting discoveries. Rather than being viewed as the memorization of facts, science is seen as a way of thinking and trying to understand the world.
As any scientist knows, the best way to learn science is to do science. This is the only way to get to the real business of asking questions, conducting investigations, collecting data, and looking for answers.
“Every kid starts out as a natural-born scientist, and then we beat it out of them. A few trickle through the system with their wonder and enthusiasm for science intact.” —Carl Sagan

"We should not teach children the sciences but give them a taste for them. " -Jean Jacques Rosseau
My goals...

To make science an integral part of the classroom through the creation of a carefully designed environment that...

- Draws on and stimulates children’s natural curiosity
- Engages children in specific topic over time (in-depth exploration)
- Encourages children to ask why...how and what if? Creates wonder!
- Provides hands on experiences that are flexible enough to be approached by learners at different developmental levels
- Provides authentic content that is pertinent to the child’s world
- Provides independent and controlled experimental opportunities
- Changes and evolves based on the children