

The Two-Sided Brain

Viewed from above, the human brain is visibly divided into two parts called the left and right hemispheres. (*Hemisphere* means “half of a sphere.”) At first, scientists thought that the hemispheres were identical in purpose and function. Later, it was noticed that people who suffered injury to the brain would show different physical symptoms depending on the side of the brain that was injured. If the left hemisphere was involved, the patient suffered speech impairment. Injury to the right hemisphere often resulted in the distortion of how objects in space were seen, but no damage to language ability.

Continued research has found that the hemispheres are responsible for entirely different processes. Although the following data about brain functions are generally true, it is important to remember that some individual variations are possible.

THE LEFT HEMISPHERE

The left hemisphere processes information in a *linear*, or step-by-step, manner. It understands the relationships between time and place, and it specializes in seeing the individual parts of a whole. It is most effective in dealing with speech, language, mathematics, and written music. Think of the left brain as a computer that operates on a sequence of switches and by programmed commands.

You rely on your left brain when you assemble a bicycle, try a new recipe, memorize vocabulary words, or follow a map. Young children use their

left brain when they sort shapes, count, and learn to use verbs.

THE RIGHT HEMISPHERE

The right hemisphere is more effective in comprehending the relationships between physical objects, such as how the parts of an object relate to a whole object, or how one thought expands into a complete idea. It is busy seeing patterns and the way processes relate to one another. The right brain likes to take different elements and organize them into one. Think of the right brain as a kaleidoscope that mixes up colors and shapes into designs.

You use the right side of your brain when you create a poem, redesign your room, or visualize yourself succeeding on an upcoming test. Children use their right hemisphere when they draw a picture, dance, or imagine themselves as a character in a story.

THE WHOLE BRAIN

Importantly, the hemispheres are not so entirely separate that they can function completely on their own. Rather, each side complements the other. The complete brain functions as a whole, using the talents of both sides simultaneously, depending on the need. To be effective thinkers, children need to develop both sides of their brain to their maximum potential. Because traditional teaching methods favor linear, analytical thinking, children’s left brains are probably more developed than their right brains.

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Taking Action

Choose three of the topics below to create three brief lessons using right-brain activities for a preschool class. Describe the specific activity you will use for your three items.

- 1. Think of ideas in visual patterns, such as charts, maps, diagrams, and pictures.

Activity: _____

- 2. Use creative fantasy to teach a concept such as *before* and *after* or *up* and *down*.

Activity: _____

- 3. Use imaginative expressions and creative imagery to develop language skills.

Activity: _____

- 4. Use metaphors to recognize the connections between two unlike things.

Activity: _____

- 5. Reinforce facts with hands-on experiments, field trips, and role-playing.

Activity: _____

- 6. Use sensory experiences to help remember information.

Activity: _____

- 7. Use music to excite the creative energy and help you memorize information.

Activity: _____

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Piaget’s Theory of Intellectual Development

This chart can help you better understand Piaget’s periods and stages of development.

Age	Period and Stage	Abilities
1 month	Sensorimotor period Stage 1	<ul style="list-style-type: none"> • Uses inborn reflexes. • Moves only in random motions.
2–4 months	Sensorimotor period Stage 2	<ul style="list-style-type: none"> • Combines reflexes. • Develops hand-mouth coordination. • Notices surroundings.
4–8 months	Sensorimotor period Stage 3	<ul style="list-style-type: none"> • Discovers cause and effect. • Works to produce results. • Improves hand-eye coordination.
8–12 months	Sensorimotor period Stage 4	<ul style="list-style-type: none"> • Solves simple problems. • Finds partially hidden objects. • Imitates others.
12–18 months	Sensorimotor period Stage 5	<ul style="list-style-type: none"> • Finds hidden objects. • Explores and experiments. • Understands object permanence.
18–24 months	Sensorimotor period Stage 6	<ul style="list-style-type: none"> • Thinks symbolically. • Thinks imaginatively. • Solves problems by thinking through sequences.
2–7 years	Preoperational period	<ul style="list-style-type: none"> • Learns from concrete evidence. • Thinks of objects in terms of own activities and what is perceived at the moment. • Solves problems by pretending or imitating.
7–11 years	Concrete Operations period	<ul style="list-style-type: none"> • Learns best through direct experiences. • Understands that operations can be reversed. • Classifies objects into categories. • Places objects in a series. • Understands <i>transitivity</i>—that a relationship between two objects can extend to a third object. • Understands <i>conservation</i>—that a certain amount of material can take different forms and shapes. • Sees different sides of an issue.
11 years– Adulthood	Formal Operations period	<ul style="list-style-type: none"> • Thinks abstractly. • Solves problems by logical thinking. • Forms ideals. • Understands double meanings.

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Taking Action

Choose one of Piaget’s periods or stages of development and list two appropriate activities. You may suggest traditional games or tasks or devise new ones. Be sure to indicate whether a parent or caregiver interacts with the child or whether the child does the activity alone or in a group of children. Explain how each activity helps the child develop his or her abilities.

Piaget’s Period or Stage of Development: _____

Activity 1

Description: _____

Developmental Benefits: _____

Activity 2

Description: _____

Developmental Benefits: _____

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Choosing Versatile Toys

As children grow, they leave behind a trail of toys that are no longer of interest. Much of that is natural. A rattle does not stimulate learning in a four-year-old. When choosing toys, it is important to know the child's age, stage of development, and interests. Safety is another major consideration. Smart shoppers also look for toys that have staying power. This means they can be used in a variety of ways, and often at more than one stage of development.

INFANTS

Infants need toys that stimulate their senses. Newborns may be able only to look at a toy or mobile, but if it is brightly colored or makes noises, they will still enjoy it. As they get older, they will learn to grasp, kick, or shake toys.

Once they can sit up, babies enjoy things they can pound and throw. Basic household items, such as plastic bowls, often make good toys at this age.

TODDLERS

Toddlers want to explore and handle the things they find. They need toys that are durable enough to withstand their curiosity. They like toys they can push, pull, or stack. As their motor skills increase, they enjoy toys that allow them to use their new skills. They begin to enjoy toys that require some problem solving, such as easy puzzles.

PRESCHOOLERS

Because their motor skills are more advanced, preschoolers have many options for toys. Their fine motor skills and hand-eye coordination allow them to demonstrate their creativity through coloring, painting, and molding. However, having more skills does not mean that preschoolers need complicated toys. A preschooler's imagination helps

him or her pretend, using even the simplest toys, dolls, and household items.

SAFETY CONSIDERATIONS

Regardless of age, children's toys need to be safe. Toys for younger children should not have small parts that could be swallowed. If there are younger children in a family, keep that in mind when buying toys for older children.

Before buying a toy, try to anticipate any problems that might occur while a child is playing with the toy. Toys with long strings or elastic bands are not appropriate for infants and toddlers because they might wrap them around their fingers, hands, or necks.

The Consumer Product Safety Commission issues alerts and recalls of toys that are found to be hazardous. Checking their Web site can help give a better understanding of toy safety issues.

VERSATILE TOYS

While many toys may only be appropriate for certain ages, some toys can remain interesting and appropriate for several years. Such toys are usually simple and open-ended. An open-ended toy can be used in more than one way. A good example is a brightly colored ball. It can be enjoyed in different ways at different ages:

- *Infants* can follow the ball with their eyes as someone rolls it. When they get a little older, they can reach for the ball and touch it. Eventually, they will learn to push the ball with their hands and feet.
- *Toddlers* can roll the ball and retrieve it, and they will soon begin to throw it.
- *Preschoolers* can continue to enjoy the ball by bouncing, throwing, and catching it.

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Toys that encourage children to use their imagination are good choices. Even then, some commercial toys are very specific. On the other hand, a doll, a table covered with a sheet, and a set of blocks can be put to many different uses. Think about the toys you used most and longest in your own childhood.

Good toys are interesting and challenging, but they should not be frustrating. Because all children are unique and develop at different rates, a versatile toy that can adapt to different skill levels is a good investment. Choosing toys that can be used in different ways as a child develops helps save time and money while still providing hours of enjoyment.

Taking Action

Choose three toys that you think would be appropriate for infants, toddlers, and preschoolers. Make a table like the one shown to explain how a child might use the toy at each age level.

Toy	Infants (Birth to age 1)	Toddlers (Ages 1-3)	Preschoolers (Ages 3-5)
Ball	<i>Follow ball with their eyes; reach for the ball; touch ball with their hands; touch ball with their feet</i>	<i>Roll ball; retrieve ball; throw ball</i>	<i>Throw, kick, bounce, and catch ball</i>

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