After studying this chapter, you will be able to:

- describe the areas and principles of development.
- define windows of opportunity as related to brain development.
- summarize how theories about development can be used as practical guides to early care and education.
- contrast the developmental theories of Erikson, Piaget, Vygotsky, and Gardner.

Studying and understanding child growth and development are important parts of teaching young children. No two children are alike. Children differ in physical, cognitive, social, and emotional growth patterns. Even identical twins, who have the same genetic makeup, are not exactly alike. They may differ in the way they respond to play, affection, objects, and people in their environment.

Think of the children you know. Each is different from the others, 4-1. Some always appear to be happy. Other children’s personalities may not seem as pleasant. Some children are active. Still others are typically quiet. You may even find that some children are easier to like.

To help all these children, you need to understand the sequence of their development. Knowledge of the areas of child development is basic to guiding young children. Linked to this is the understanding of healthy brain development. Healthy brain development results from healthy human contact. Positive stimuli are a major factor in brain development. These stimuli begin at birth. Therefore, it is vital for children to have loving caregivers. Young children need dependable, trusting relationships. They thrive in environments that are predictable and nurturing.

Understanding theories about how people develop helps form your knowledge base in caring for young children. This combined knowledge will help you plan appropriate curriculum.

Terms to Know

development
infant

toddler

preschooler

gross-motor development

eye-motor development

cognitive development

social-emotional development

cephalocaudal principle

proximodistal principle

maturation

neurons

synapses

windows of opportunity

theory

schemata

sensorimotor stage

preoperational stage

concrete operations stage

multiple intelligences

Knowledge of child development can help you understand how to work with children who have very different personalities.
Child Development

Development refers to change or growth that occurs in children. It starts with infancy and continues to adulthood. By studying child development, you will form a profile of what children can do at various ages. For instance, you will learn that two-year-old children like to run. This means you should provide space for them to move freely. Likewise, you will learn that infants explore their senses, often mouthing objects. Knowing this, you will need to make sure that all toys for infants are clean and safe.

Different names are used to describe young children at different ages. From birth through the first year, children are called infants. Toddlers are children from age one up to the third birthday. (Because of an awkward style of walking, the name toddler describes this age group.) The term preschooler is often used to describe children ages three to six years of age.

The basic patterns of child development are a rather recent area of study. Researchers are constantly discovering new information on how children grow, develop, and learn about their world. Studying the basics of child development is just the beginning for you. Throughout your career, you will need to update your knowledge of the latest research and trends in this career field.

Seminars, courses, professional articles, and conferences will help you in this goal. Keep in mind that growing as a professional is a lifelong process.

Areas of Development

The study of child development is often divided into three main areas. These include physical, cognitive, and social-emotional development. Dividing development into these areas makes it easier to study. Physical development refers to physical body changes. It occurs in a relatively stable, predictable sequence. It is orderly, not random. Changes in bone thickness, vision, hearing, and muscle are all included. Changes in size and weight are also part of physical development. See 4-2.

Physical skills, such as crawling, walking, and writing, are the result of physical development. These skills fall into two main categories:

- Gross-motor development involves improvement of skills using the large muscles in the legs and arms. Such activities as running, skipping, and bike riding fall into this category.
- Fine-motor development involves the small muscles of the hands and fingers. Grasping, holding, cutting, and drawing are some activities that require fine-motor development.

Environmental factors also affect what children can do physically. These factors include proper nutrition and appropriate toys and activities.

Cognitive development, sometimes called intellectual development, refers to processes people use to gain knowledge. Language, thought, reasoning, and imagination are all included. Identifying colors and knowing the difference between one and many are examples of cognitive tasks.

Language and thought are a result of cognitive development. These two skills are closely related. Both are needed for planning, remembering, and problem solving. As children mature and gain experience with their world, these skills develop.

The third area of development is called social-emotional development. These two areas are grouped together because they are so interrelated. Learning to relate to others is social development. Emotional development, on the other hand, involves feelings and expression of feelings. Trust, fear, confidence, pride, friendship, and humor are all part of social-emotional development. Other emotional traits include timidity, interest, and pleasure. See 4-3. Learning to express emotions in appropriate ways begins early. Caregivers promote this learning when they positively model these skills. A person's self-concept and self-esteem are also part of this area. As children have success with all skills, confidence flourishes. This leads to a healthy self-concept and sense of worth.

The physical, cognitive, and social-emotional areas of development are linked to one another. Development in one area can strongly influence another area. For instance, writing words requires fine-motor skills. It also requires cognitive development. Language, a part of cognitive development, is needed to communicate with others. It is also necessary for growing socially and emotionally.

Just as research has made known the areas of development, it also shows that development follows key patterns, or principles. Think about how these principles might influence how you care for children.
Principles of Development

Although each child is unique, the basic patterns, or principles, of growth and development are universal, predictable, and orderly. Through careful observation and interaction with children, researchers and those who work with children understand the characteristics of the principles that follow.

- Development tends to proceed from the head downward. This is called the cephalocaudal principle. According to this principle, the child first gains control of the head, then the arms, then the legs. Infants gain control of head and face movements within the first two months after birth. In the next few months, they are able to lift themselves up using their arms. By 6 to 12 months of age, infants start to gain leg control and may be able to crawl, stand, or walk.
- Development also proceeds from the center of the body outward according to the proximodistal principle. Accordingly, the spinal cord develops before other parts of the body. The child’s arms develop before the hands, and the hands and feet develop before the fingers and toes. Fingers and toes are the last to develop.
- Development also depends on maturation. Maturation refers to the sequence of biological changes in children. These orderly changes give children new abilities. Much of the maturation depends on changes in the brain and the nervous system. These changes assist children to improve their thinking abilities and motor skills. A rich learning environment helps children develop to their potential.
- Children must mature to a certain point before they can gain some skills. For instance, the brain of a four-month-old has not matured enough to allow the child to use words. A four-month-old will babble and coo. However, by two years of age, with the help of others, the child will be able to say and understand many words. This is an example of how cognitive development occurs from simple tasks to more complex tasks. Likewise, physical skills develop from general to specific movements. For example, think about the way an infant waves its arms and legs. In a young infant, these movements are random. In several months, the infant will likely be able to grab a block with his or her whole hand. In a little more time, the same infant will grasp a block with the thumb and forefinger.
- The principles of development help you understand that the order or sequence of development in children is generally the same. However, each child develops at his or her own rate. In any classroom, you may find children the same age who have progressed to different levels in each developmental area. Knowing the principles of development will help you observe what abilities each child has gained. It will also help you plan appropriate activities that aid children in successfully developing new skills.

Brain Development

Which is more important for the developing brain—nature or nurture? This is one of the oldest debates in the study of human development. Human development depends on the interaction between nature and nurture, often called heredity and environment. Years ago, it was thought that only genes contributed to brain development. Today scientists say both factors are critical to healthy brain development. However, there are still some questions about which has the greater influence.

Modern technology allows scientists to take pictures of the brain. By comparing pictures, scientists are able to study rates of development. The studies show that young children’s brains are highly active. The most rapid development occurs during the first three years of life.

Understanding the areas and principles of development is important. Recognizing how the brain functions in development is equally so. What should caregivers and teachers know about the brain and how it influences development?

Therefore, hours in infancy may have more impact on development than months in middle age. Figure 4-5 illustrates how different parts of the brain control body functions.

At birth, a child’s brain weighs about one pound and is underdeveloped. It contains billions of specialized nerve cells called neurons. Although these cells are present at birth, they are not linked. After birth, the links between the neurons develop rapidly. These links, or connections, are called synapses. “Brain wiring” occurs as new links form. The larger the number of synapses, the greater the number of messages that can pass through the brain.

These links are a result of the child’s interaction with the world. They influence the ability of a child to learn, solve problems, get along with others, and control emotions. For example, the child’s growing brain responds each time a caregiver provides sensory stimulation. This stimulation could be in the form of holding, talking, reading, or singing. When stimulation occurs, the child’s growing brain responds by forming new connections. The ability of an infant’s brain to change according to stimulation is known as plasticity.

**Figure 4-5**

This diagram illustrates how different functions are controlled by different parts of the brain. Connections between them are critical to development.
Early care has a long-lasting impact on how children develop. The number of brain connections children form and keep depends on the care they receive. Warm, nurturing, consistent, and responsive care causes positive changes in the brain. Likewise, children need environmental stimulation. A wide variety of visual, auditory, and sensory experiences will help promote brain connections.

On the other hand, a lack of nurturing and interaction can limit a child's potential. Some children are deprived of stimulation either intentionally or unintentionally. These children receive fewer touches. They are spoken to less often. They may also not receive much visual stimulation. This neglect can impair brain development and the child's potential.

The amount of stress created by negative experiences also affects brain development. Overstimulation, a flood of sounds and sights, is one factor that can cause harmful stress to infants. When under stress, the body produces a steroid called cortisol. High levels of this hormone wash over the brain like an acid. Over a long length of time, cortisol can lead to problems with memory and regulating emotion. A child constantly exposed to stress can develop connections that trigger anxiety, fear, and mistrust. These children may grow up to be unhappy, sad, or even angry. They may also have problems with self-control. Chart 4-6 contains a list of factors that can interfere with healthy brain development.

Windows of Opportunity

The brain has a remarkable capacity to change. However, timing is important. The parts of the brain develop at different times and different rates. Studies show that there are windows of opportunity, or a specific span of time, for the normal development of certain types of skills. During these key times, appropriate stimulation is needed for the brain synapses to link easily and efficiently.

After these key periods, chances for creating stable, long-lasting pathways in the brain tend to diminish. Learning will continue to occur for the remainder of the person's life. However, the skill mastery level may not be as high. Chart 4-7 contains a list of brain functions and the approximate windows of opportunity for each. Read the following to further your understanding about windows of opportunity.

**Vision: Birth to Six Months**

At birth, an infant's brain is not wired for sight. The first six months of life is a key period for developing vision. Covering newborns' eyes or keeping infants in a dark room during this time will affect their vision. Their sight may not develop normally. Once passed, this window of opportunity is impossible to recover. For this reason, newborns' eyes are examined after birth. If a cataract covering the lens of the eye is present, it needs to be removed.

Vision is one area that develops with little stimulation. Infants need interesting objects to look at, including toys and people. As you carry infants, point out interesting objects, pictures, people, and places.

**Vocabulary/Speech: Birth to Three Years**

Infants must hear language to learn it. The speech a child hears during the first three years of life will determine his or her adult vocabulary. Children at this age have an incredible capacity for learning language. On the other hand, infants and toddlers who hear fewer words develop smaller vocabularies. It is important for caregivers to speak in full sentences. Talk to children often. Tell them what you are doing, what they are doing, and what you will do next. Read them stories and play music. Engage them in social interactions that require language.

**Emotional Control: Birth to Three Years**

The critical period for emotional control occurs between birth and three years of age. Emotional development includes the abilities to identify feelings, manage strong emotions, and develop empathy. Severe stress or early abuse can damage a child's emotional development. Infants and toddlers thrive in stable relationships. In early childhood programs, they should be assigned a primary caregiver. Children need caregivers who can read their cues, respond promptly, and meet their needs in a nurturing manner. By using caring words, caregivers reassure children that they are valued. Caregivers can also support emotional understanding by labeling children's feelings. Storybooks are effective in helping to promote this type of development.

**Math/Logic Development: One to Four Years**

The critical timing for promoting brain connections related to math is from one to four years of age. Young children need chances for working with materials that offer an appropriate level of challenge. Blocks and rhythm instruments are examples of toys that encourage sensory exploration related to math. Caregivers can introduce experiences requiring matching and sorting by size, shape, and color, 4-8. Learning how objects are alike and different is an important skill. When appropriate, caregivers need to introduce words to describe color, size, shape, and texture. They also need to introduce math words, such as bigger, smaller, more, less, and one more.
Motor Development: Prenatal to Eight years

Motor development requires complex brain networking. The window of opportunity begins before children are even born. The window lasts for the first eight years. During this time, stable, long-lasting structures can be created. Young children need a variety of gross- and fine-motor activities to support motor development.

Theories of Development

Psychologists continue to study human development. They are learning more about what people are like and how they develop. Over the past century, many psychologists have provided theories that are considered practical guides. A theory is a principle or idea that is proposed, researched, and generally accepted as an explanation. Developmental theories provide insights into how children grow and learn. Theories are helpful for understanding and guiding developmental processes.

Theories can be useful decision-making tools. Since a variety of theories exists, teachers need to understand these different approaches for working with children. Theories will help you form your personal values and beliefs about learning. They will also help you understand strategies for promoting children's development.

Four major theories about how children learn are discussed in this chapter. These include theories of mid-twentieth-century psychologists Erik Erikson, Jean Piaget, and Lev Vygotsky. The final theorist, Howard Gardner, is a twenty-first-century developmental psychologist. These theories are based on observation and experiences with children. Think about the children you know as you read about theories that helped form today's ideas about working with young children.

Erikson's Psychosocial Theory

Erik Erikson proposed a theory of psychosocial development. He believed development occurs throughout the life span. His theory provided new insights into the formation of a healthy personality. It emphasizes the social and emotional aspects of growth. Children's personalities develop in response to their social environment. The same is true of their skills for social interaction.

Erikson's theory includes eight stages. At each stage, a social conflict or crisis occurs. Erikson's theory includes eight stages. At each stage, a social conflict or crisis occurs. These are not generally tragic situations; however, they require solutions that are satisfying both personally and socially. Erikson believed that each stage must be resolved before children can ascend to the next stage.

The first four stages of Erikson's theory concern children from birth to twelve years.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Approximate Age</th>
<th>Psychosocial Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Birth–18 months</td>
<td>Trust versus mistrust</td>
</tr>
<tr>
<td>II</td>
<td>18 months–3 years</td>
<td>Autonomy versus shame and doubt</td>
</tr>
<tr>
<td>III</td>
<td>3–5 years</td>
<td>Initiative versus guilt</td>
</tr>
<tr>
<td>IV</td>
<td>6–12 years</td>
<td>Industry versus inferiority</td>
</tr>
</tbody>
</table>

Stage 1: Trust Versus Mistrust

During the first eighteen months of life, children learn to trust or mistrust their environment. To develop trust, they need to have warm, consistent, predictable, and attentive care. See 4-30. They need caregivers who will accurately read and respond to their signals. When infants are distressed, they need to be comforted. They also need loving physical contact, nourishment, cleanliness, and warmth. Then they will develop a sense of confidence and trust that the world is safe and dependable. Mistrust will occur if an infant experiences an unpredictable world and is handled harshly.

Stage 2: Autonomy Versus Shame and Doubt

This second stage occurs between eighteen months and three years of age. During this stage, toddlers use their new motor and mental skills. They want to be independent and do things for themselves. They are in the process of discovering their own bodies and practicing their developing locomotor (physical movement) and language skills.

The objective of this stage is to gain self-control without a loss of self-esteem. Fostering independence in children is important. At this age, toddlers start to become self-sufficient. They need to learn to choose and decide for themselves. To do this, toddlers need a loving, supportive environment. Positive opportunities for self-feeding, toileting, dressing, and exploration will result in autonomy, or independence. On the other hand, overprotection or lack of adequate activities results in self-doubt, poor achievement, and shame.

Stage 3: Initiative Versus Guilt

Between three and five years of age, the third stage occurs. According to Erikson, it emerges as a result of the many skills children have developed. Now children have the capacity and are ready to learn constructive ways of dealing with people and things. They are learning how to take initiative without being hurtful to others. They are also busy discovering how they
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world works. Children begin to realize that what they do can have an effect on the world, too. Challenged by the environment, children are constantly attempting and mastering new tasks. Aided by strong initiative, they are able to move ahead energetically and quickly forget failures. This gives them a sense of accomplishment. Children at this stage need to develop a sense of purpose. This happens when adults direct children's urges toward acceptable social practices. If children are discouraged by criticism, feelings of incompetence are likely to emerge. This can also occur if parents demand too much control.

Piaget's Cognitive Development Theory

Jean Piaget's thinking has challenged teachers to focus on the ways children come to know as opposed to what they know. His theory of cognitive development focuses on predictable cognitive (thinking) stages. Piaget believed that thinking was different during each stage of development. His theory explained mental operations. This includes how children perceive, think, understand, and learn about their world.

Piaget believed that children naturally attempt to understand what they do not know. Knowledge is gathered gradually during active involvement in real-life experiences. By physically handling objects, young children discover that relationships exist between them. Terms Piaget used to describe these processes were schemata, adaptation, assimilation, and accommodation. These processes occur during each stage of development.

Schemata are mental representations or concepts. As children receive new information, they are constantly creating, modifying, organizing, and reorganizing schemata.

Adaptation is a term Piaget used for children mentally organizing what they perceive in their environment. When new information or experiences occur, children must adapt to include this information in their thinking. If this new information does not fit with what children already know, a state of imbalance occurs. To return to balance, adaptation occurs through either assimilation or accommodation.

- Assimilation is the process of taking in new information and adding it to what the child already knows.
- Accommodation is adjusting what is already known to fit the new information. This process is how people organize their thoughts and develop intellectual structures.

Piaget’s stages of cognitive development are the same for all children. Most children proceed through the stages in order. Each stage builds on a previous stage. However, the age at which a child progresses through these stages is variable due to differences in maturation.

Although Piaget did not apply his theory directly to education, he did strongly influence children's early education. Many teaching strategies have evolved from his work. Caregivers and teachers now know that learning is an active process. Providing children with stimulating, hands-on activities helps them build knowledge.
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development promote cognitive development. Babies’ physical actions, such as sucking, grasping, and hitting, help them learn about their surroundings. Movements are random at first. Gradually they become intentional as behaviors are repeated. Children begin to learn that objects still exist even when they are out of sight. This is known as object permanence. Through exploration and exposure to new experiences, new concepts are learned.

The preoperational stage takes place between ages two and seven. Children during this stage are very egocentric. This means that they assume others see the world the same way they do. Children do not yet have the ability to see others’ points of view. During this time, representation skills are learned. These skills include language, symbolic play, and drawing. See 4-13. Children learn to use symbols and internal images, but their thinking is illogical. It is very different from that of adults. Children begin to understand that changing the physical appearance of something does not change the amount of it. They are able to recognize the difference between size and volume. For example, a ball of clay can be stretched into a long rope. Even if the physical appearance changes, the amount of the object does not change. This skill is called conservation. At this stage, children can also classify groups of objects and put objects in a series in order.

During the ages of seven to eleven years, concrete operations begin. Children develop the capacity to think systematically, but only when they can refer to actual objects and use hands-on activities. Then they begin to internalize some tasks. This means they no longer need to depend on what is seen. They become capable of reversing operations. For example, they understand that $3 + 1$ is the same as $1 + 3$. When real situations are presented, they are beginning to understand others’ points of view.

The fourth stage, formal operations, takes place from eleven years of age to adulthood (the age range you are in right now). According to Piaget, young people develop the capacity to think in purely abstract ways. They no longer need concrete examples. Problem solving and reasoning are key skills developed during this stage.

Vygotsky’s Sociocultural Theory

Both Jean Piaget and Lev Vygotsky believed that children build knowledge through experiences. Piaget believed this happened through exploration with hands-on activities. Vygotsky, on the other hand, believed that children learn through social and cultural experiences. Interactions with peers and adults help children in this process. While interacting with others, children learn the customs, values, beliefs, and language of their culture. For this reason, families and teachers should provide plenty of social interaction for young children. See 4-14.

Vygotsky believed language is an important tool for thought and plays a key role in cognitive development. He introduced the term private speech, or self-talk. This refers to when children “think out loud.” After learning language, children engage in this self-talk to help guide their activity and develop their thinking. Generally, self-talk continues until children reach school age.

One of Vygotsky’s most important contributions was the zone of proximal development (ZPD). This concept presents learning as a scale. One end of the scale or “zone” includes the tasks that are within the child’s current developmental level. The other end of the scale includes tasks too difficult for children to accomplish, even with help.

In the middle are the tasks children cannot accomplish alone. These are achieved with help from another knowledgeable peer or adult. The term used for this assistance is scaffolding. Just as a painter needs a structure on which to stand and paint a building, scaffolding provides the structure for learning to occur. For example, a teacher could scaffold a child’s learning while constructing a puzzle. The teacher might demonstrate how a piece fits or provide clues regarding color, shape, or size. The “zone” is constantly changing. In contrast to Piaget, Vygotsky believed that learning was not limited by stage or maturation. Children move forward in their cognitive development with the right social interaction and guided learning, 4-15.

Gardner’s Multiple Intelligences Theory

Howard Gardner has helped teachers rethink how they work with young children. Traditional intelligence tests mainly focus on language and math/logic skills. In contrast,
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Gardner's theory of multiple intelligences emphasizes that there are different kinds of intelligences used by the human brain. Gardner believes intelligence is the result of complex interactions between children's heredity and experiences. This theory focuses on how cultures shape human potential.

Gardner claims that children learn and express themselves in many different ways. In the process, they are using several types of intelligence. Each intelligence functions separately, but all are closely linked. According to Gardner, a potential intelligence will not develop unless it is nurtured. Learning can best be achieved by using a child's strongest intelligence. Gardner claims, however, that all children need opportunities to develop all areas of intelligence.

The multiple intelligence theory allows teachers to see the positive attributes of all children. Teachers also view Gardner's theory as a meaningful guide for making curriculum decisions. It gives them a chance to assess children's learning strengths. From this data, teachers can plan a wide variety of learning experiences. Chart 4-16 lists Gardner's eight intelligences. The paragraphs that follow explain these intelligences in detail.

**Bodily-Kinesthetic Intelligence**

Bodily-kinesthetic intelligence involves the ability to control one's own body movements. This includes using parts of the body to solve problems, handle objects, and express emotions. People with this type of intelligence typically enjoy sports, dance, or creative drama. They are able to express themselves with their entire bodies. Children will benefit from creative-movement experiences and role-playing.

Children with this type of intelligence process knowledge through sensation. They enjoy touch and creating with their hands. Therefore, daily opportunities should be provided for hands-on activities. Clay, sand, dough, feely boxes, and other sensory activities help them develop fine-motor skills. Movement is also needed for gross-motor skills and coordination. It is important for caregivers and teachers to provide activities involving physical challenges. These may include playing kickball, jumping rope, and moving to music.

**Musical-Rhythmic Intelligence**

Musical-rhythmic intelligence involves the ability to recognize musical patterns. It also includes the ability to produce and appreciate music. Since music evokes emotion, this is one of the earliest intelligences to emerge. Composers and musicians are examples of people with this type of intelligence.

Children with this type of intelligence love listening to music. They are drawn to the art of sound and appreciate all forms of musical expression. They have a well-developed auditory sense and can discriminate tone, pitch, and rhythmic patterns. As a result, they often cannot get songs out of their minds. You will hear them repeatedly singing or humming. This helps them understand concepts and remember information.

Activities to support musical intelligence can be included throughout the day. Offer opportunities for sound exploration through listening and singing. Use songs for directions and moving children from one activity to another. Play background music during self-selected play. Include songs during large and small group activities. Record the children creating their own music while singing or chanting. Explore rhythm by moving to recorded music. Use different instruments and instruments from other cultures to add variety.

**Logical-Mathematical Intelligence**

Logical-mathematical intelligence is more than just the ability to use math. It is the ability to use logic and reason to solve problems. Math experts have this form of intelligence. Scientists and composers may also have it. This intelligence involves the ability to explore categories, patterns, and other relationships. It includes applying the principle of cause and effect. It also involves the skill to make predictions about patterns.

Children with this type of intelligence take pleasure in finding patterns and relationships. They enjoy discovering similarities and differences. Manipulatives for matching, measuring, and counting should be provided. Blocks can encourage the children's problem-solving and reasoning skills. Storybooks that show a sequence of events hold appeal for this type of intelligence. Water and sand activities with different-size containers help teach the concept of volume.
Verbal-Linguistic Intelligence

Verbal-linguistic intelligence involves the ability to use language for expression. People with this type of intelligence have well-developed language skills. They demonstrate sensitivity to the meaning, sound, and rhythm of words. Lawyers, poets, public speakers, and language translators have this type of intelligence.

Young children with this intelligence learn best by talking, listening, reading, and writing. These children quickly learn the words to new stories, songs, and rhymes can serve as means for learning new vocabulary words. Listening to and telling stories can also promote language development.

Intrapersonal Intelligence

Intrapersonal intelligence is the ability to understand the inner self. This is also known as self-awareness. It involves knowing your skills, limits, and feelings. It includes understanding your desires and motives. The ability to organize groups of people is part of this strength. Communicating needs clearly is another aspect. Psychologists, social workers, religious leaders, and counselors are examples of people with this type of intelligence.

How can you foster this type of intelligence? In the classroom, share emotions that all children experience. These include joy, sadness, regret, and disappointment. Classroom examples should be shared as well as storybooks that contain emotional concepts.

Visual-Spatial Intelligence

Visual-spatial intelligence allows people to use their vision to develop mental images. People who have this type of intelligence show a preference for pictures and images. Photographers and artists are some examples. Architects, engineers, and surgeons also need this ability. They use it to see the relationship of objects in space.

Teachers can foster this intelligence by providing children with unstructured materials. Building blocks and puzzles strengthen this type of intelligence, 4-18. Make and use visual aids wherever possible. For example, classroom schedules, recipes, and stories can all be displayed on charts. Shelving units can be labeled with pictures cut from equipment catalogs.

Naturalistic Intelligence

Naturalistic intelligence is developed from the need to survive. This is the ability to classify objects in nature such as animals and plants. It depends on a type of pattern recognition. This strength also includes the ability to distinguish among types and brands of objects. Sailors, gardeners, chefs, and farmers are people who have this intelligence.

To build on this intelligence, provide cooking activities and nature walks. These help develop use of the senses to gather information. Planting and growing a garden helps the children observe cycles. Rocks, seashells, flowers, leaves, seeds, and coins can also be collected. In the classroom, they can be sorted and classified. Post picture collections and share books about natural events.

Making the Pieces Fit

You might be thinking, “How will knowing about the areas and principles of development, the brain, and theories help me in my career in working with children?” The answer is both simple and complex. It’s much like fitting together the pieces of a puzzle. In order to become a nurturing, responsive teacher, you must have insight into how children grow and develop.

The brain affects all aspects of growth and development. The areas and principles of development are similar for all children. Development generally progresses in a similar way for all children. Although each theory looks at development from a different angle, each offers a wealth of insight into how children develop. On what do the theorists agree? Children learn best in a caring environment rich with opportunity for learning. In addition, caregivers help build the self-confidence and self-worth children need to safely explore the world.
Understanding child development will help you make you a successful caregiver or early childhood teacher. The study of child development is divided into three main areas—physical, cognitive, and social-emotional development.

Brain development occurs rapidly during the first three years of life. The connections between nerve cells are created as a child interacts with the environment. The links allow a greater number of messages to pass through the brain. Therefore, infant care and interaction with caregivers is crucial to brain development.

Theories of development can help caregivers understand how to best work with children. Some of the most prominent theories include the eight stages of Erikson’s psychosocial theory and the four stages of Piaget’s cognitive development theory. Vygotsky claimed that children learn through social and cultural expression. Gardner developed a theory of multiple intelligences used by the human brain. All these theories provide insight into children’s development.

Review and Reflect
1. Changes in bone thickness, vision, and hearing are part of _____.
2. True or false. Trust, fear, and pride are part of cognitive development.
3. List and explain three principles of development.
4. True or false. Nurture is more important for the developing brain than nature.
5. Describe how stress created by negative experiences can affect the brain.
6. What are windows of opportunity? Why are they important?
7. List the stages of Erikson’s psychosocial theory that take place during the early childhood years.
8. What do infants need to develop trust?
9. List and explain Piaget’s stages of development.
10. The term Vygotsky used to describe assistance provided to a child by a knowledgeable peer or adult is _____.
11. _____ believes intelligence is the result of complex interactions between children’s heredity and experiences.
12. Which type of intelligence allows people to use their vision to develop mental images?
   A. Bodily-kinesthetic.
   B. Logical-mathematical.
   C. Visual-spatial.
   D. Naturalistic.

Cross-Curricular Link
Social Studies
1. Visit the Web site www.psychology.about.com to review theories of development discussed in this chapter.

Technology
2. Read the information at the Web site Zero to Three (www.zerotothree.org) about stimulating the infant’s developing brain through touch, voice, movement, and vision.