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Theories of Childhood

SECOND EDITION

An Introduction to

Dewey

Montessori

Erikson

Piaget &

Vygotsky

Carol Garhart Mooney

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An Introduction to Dewey, Montessori, Erikson, Piaget, and Vygotsky

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Chapter 4: Jean Piaget

The teacher-organizer should know not only his own science but also be well versed in the details of the development of the child's or adolescent's mind.

—Jean Piaget

Biography

JEAN PIAGET WAS BORN in Neuchâtel, Switzerland, in 1896. He was a budding scientist at an early age, publishing a scholarly paper at the age of eleven. Throughout his long career he added over sixty books and hundreds of articles to his accomplishments. Although Piaget is frequently referred to as a psychologist, he was really an *epistemologist* (someone who studies the nature and beginning of knowledge). It is this piece of his work that has made Piaget a major contributor to the knowledge base of educational psychology. While others asked *what* children know or *when* they know it, Piaget asked *how* children arrive at what they know.

Like many of us, Piaget hadn't planned on a career of working with children. He received a doctorate in biology but never worked in that field. Instead, he turned to psychology. In 1919 Piaget traveled to Paris to study and took a job at the Alfred Binet Laboratory School. His job was to standardize the French version of a British intelligence test. While doing this work, Piaget began to notice similarities in the wrong answers children gave to questions at certain ages, and he began to wonder what thought processes they were using. This became the research question that would drive his life's work. He continued to pursue his interest in children and their thought processes until his death in 1980.

Piaget's work has been a primary influence in preschool programs in the United States since the 1970s. The volumes of Piaget's work provide an in-depth view of how children create knowledge. Unfortunately, much of his work is difficult to read and can be intimidating to busy teachers. In addition, Piaget's work has been criticized in recent years for limitations that have been challenged by current research. Specifically, many teachers think he focused too much on thought processes and not enough on children's feelings and social relationships with teachers and peers. Many also believe his use of unfamiliar terminology confuses the reader. In addition, because much of his observation was done on his own three children, critics say the work is not scientific research.

Nonetheless, Piaget's stages of cognitive development have created our overall view of how children think in their early years, just as Erikson's stages of psychosocial development have helped us understand how children develop emotionally. Teachers can accept that while some of Piaget's theories are not as true of young children as was once thought, his basic concepts still help us plan curriculum to challenge young children's minds. To dismiss his work because of its flaws would be a mistake. The most sensible words I've read about Piaget's contributions came from Elizabeth Jones, who writes:

> People in all times and places invent explanations for what happens to them, and all explanations have predictive power; they enable us to say, "See, I told you." In our culture we call our explanations science and pretend they're real, not invented. But scientific explanations change, just as myth and superstition do, because even in physics, and certainly in psychology, they provide only partial explanations of the way things really happen. Learn them, use them, but don't take them too seriously. Nothing happens because Piaget says it does. Piaget says it does because it happens, and he was an unusually thoughtful observer and generalizer. All of us can grow in our ability to do the same. (1986, 99–100)

Piaget's Theories

While others of his time argued that learning is either *intrinsic* (coming from the child) or *extrinsic* (imposed by the environment or taught by adults), Piaget thought that neither position by itself explains learning. Rather, he thought that children's interactions with their environment are what create learning. He claimed that children *construct* their own knowledge by giving meaning to the people, places, and things in their

world. He was fond of the expression “construction is superior to instruction” (Hendrick 1992, 476). By this he meant that children learn best when they are actually doing the work themselves and creating their own understanding of what’s going on instead of being given explanations by adults. He was a student of Montessori’s work and built on her idea that meaningful work is important to children’s cognitive development. Like Montessori, Piaget believed children needed every possible opportunity to do things for themselves. For example, children might be interested in how things grow. If a teacher reads them a finely illustrated book on how things grow, this instruction will increase the children’s knowledge base. But if the children have the opportunity to actually plant a garden at school, the process of digging, watering, observing, and actually experiencing growing things will help them to construct a knowledge of growing things that they cannot ever achieve merely by being read to and looking at pictures.

Like Dewey, Piaget believed that children learn only when their curiosity is not fully satisfied. He thought that children’s curiosity actually drives their learning. According to Piaget, the best strategy for preschool curriculum is to keep children curious, make them wonder, and offer them real problem-solving challenges, rather than give them information. Many adults still hold the notion that a teacher is someone who shares information. Using Piaget’s theory about children’s learning requires changing the image of *teacher* into someone who nurtures inquiry and supports the children’s own search for answers.

Piaget also stressed the importance of play as an avenue for learning. As children engage in symbolic play (making a cake out of sand, using a garden hose to be a firefighter), they make sense of the objects and activities that surround them. As they imitate what goes on around them, they begin to understand how things work and what things are for. Initially, this is a process of trial and error. However, with time and repetition, they use new information to increase their understanding of the world around them.

Piaget believed that children all pass through the same stages when developing their thinking skills. The age at which children accomplish these stages of development can vary. Because of this variation, charts outlining Piaget’s stages may also differ slightly. Parents and teachers should always remember that individual children have their own rates of development.

Differences in development stretch over a broad continuum. For example, many books cite ten to thirteen months as a typical age range for first steps. Yet some children walk as early as eight months and others as late as eighteen months.

Many teachers and other adults wonder if there are things that prevent growth or if there are ways to hurry development along. Piaget believed that children's intellectual growth is based partly on physical development. He also believed that it is affected by children's interactions with the environment. He did not believe that teachers can "teach" young children to understand a concept. He was certain that children build their own understanding of the world by the things they do.

According to Piaget, children's cognitive development passes through the stages shown in Figure 4.1. Following the chart is a basic discussion of Piaget's first two stages in children's journey to build knowledge, since these are the stages that most concern teachers in early care and education settings.

Piaget's Stages of Cognitive Development

Age	Stage	Behaviors
Birth to age 2	Sensorimotor	Learn through the senses; learn through reflexes; manipulate materials.
2–7 years	Preoperational	Form ideas based on their perceptions; can only focus on one variable at a time; overgeneralize based on limited experience.
7–11 or 12 years	Concrete Operational	Form ideas based on reasoning; limit thinking to objects and familiar events.
11 or 12 years and older	Formal Operational	Think conceptually; think hypothetically.

Figure 4.1 (Piaget 1973)

The Sensorimotor Stage

Piaget believed that in the beginning, babies' reactions to the world are purely *reflexive* (without thought). He said that intelligence began when the

reactions became purposeful. For example, when we watch an infant lying below a crib gym, we notice that initially he shows a startled response if his hand or foot hits a bell or rattle, but that, over time, he hits the bell on purpose. This first stage of cognitive development Piaget calls the *sensorimotor* stage. During this time the baby relies on his senses and physical activity to learn about the world.

Toward the end of this first stage, Piaget says, *object permanence* occurs. *Object permanence* means that the baby has come to realize that something exists even when he can't see it. This is a very important development for children. Before achieving this milestone, babies only think about what is in their view at the time. For example, if we carefully watch babies, we see that before eight or nine months they drop things from the high chair tray without making a fuss. For a young baby, if things are out of sight, they are literally out of mind. From the baby's point of view, the things no longer exist. Then suddenly, at eight or nine or ten months, when that spoon drops from the tray, the baby leans over pointing and fussing and wanting it back. Often parents and providers are surprised and dismayed when they pick it up and hand it to a smiling baby who tosses it right back down again. This is not the beginning of premeditated attempts to drive adults crazy. This is the first burst of the joy of learning! This is object permanence.

This is also the age at which we see *separation anxiety* in children. They cry when their parents leave them at child care or when their primary caregiver is not present. Now the baby understands that when his parent or provider is not in sight, that person is somewhere else. The caregiver hasn't just ceased to exist. So the baby makes attempts to bring that important "other" back into view—by crying.

To support cognitive development in children under two, Piaget's theory tells teachers to keep babies safe but interested and to respond reassuringly to separation anxiety.

Keep Babies Safe but Interested

Since motor development is a significant learning task of the sensorimotor stage, one of the most important supports to cognitive development that infant/toddler teachers can establish is a safe and interesting environment. Babies need to push, pull, and manipulate objects. They need to crawl,

climb, and pull up to standing positions without being physically at risk. An infant environment with multilevel furnishing and climbing opportunities allows babies the spaces they need to experiment with spatial relationships and learn through their bodies. According to Piaget, babies also need interesting things to touch and explore. A variety of cause-and-effect toys (toys that make noise when pushed, pulled, or shaken) such as crib gyms and shape sorters are essential. Babies also need to have experiences with softer materials, such as nontoxic playdough, cornstarch-and-water, water, and sand. Mirrors and artwork at babies' eye level and board and cloth books that children can access provide even more interesting possibilities.

Babies' cognitive development is also stimulated by adults who talk with them and tell them what will be happening, and who delight in their accomplishments. Comfortable places for adults working in infant/toddler programs help them focus on the children and invite them to sit at the babies' level to provide another essential kind of interaction.

Respond Reassuringly to Separation Anxiety

When infants are beginning to experience object permanence and thus separation anxiety, it is important to make as few changes in their lives as possible. With a little experience, they will begin to see that when people they love go away, those people always return. But during the transition time, it's a good idea to keep schedules routine. For example, this is not a good time to make new child care arrangements. Providers who understand this stage can help parents see why their babies are suddenly more upset than usual when they say good-bye. They can reassure parents that this stage, too, will pass if they can just give it a little time.

The challenges of separation anxiety have implications not only for how children are handled in the program but for enrollment policy as well. For example, Gini was the director of a center I supervised. She told me about holding an intake interview with parents who were considering moving their child from another provider into her center. She listened sympathetically as parents described tearful separations every morning from their ten-month-old baby. The parents were certain that their child must not like his current child care arrangements but couldn't tell them that because he wasn't yet talking. Gini talked with them about separation problems and encouraged them to wait another month or two before making

any changes. She suggested that the baby would probably pass through this stage and be fine. The parents thanked her and left. A week later, she heard at a directors' meeting that the baby had been taken out of his current situation and enrolled at another nearby center. She was disappointed because she knew that the baby would now suffer even greater separation anxiety that probably could have been avoided if the other center's policies had supported children's developmental needs and if the family had chosen to wait a bit.

Providers can also support parents at this stage of development by welcoming them to call at any time to see how their child is doing and by acknowledging how hard it is for parents to walk away when their child is screaming. If parents are anxious, their babies will share that anxiety, which makes everything worse. Everything teachers can do to reassure parents during this stage of infant development will support the growth of the babies in their care. Some programs don't even wait for parents to call but initiate the exchange because they understand how stressful it is for parents to be away from their babies. Sometimes parents get locked into a guilt reaction when their infant screams at separation in the morning. A quick call to say the baby's doing fine and share a story about the morning often makes the day easier for parents. When parents are supported in these ways, they are more apt to be able to maintain consistent schedules for their babies, which will help the babies get through separation anxiety more quickly and successfully.

During the earliest months of life, caring for parents is a big part of supporting children's development. New parents are under stress. Some mothers have anxiety because they need to return to work before they are ready to leave their babies. Some mothers wish they could stay at home but can't afford to. Others are eager to return to work but feel guilty and conflicted about doing so. Piaget's concept of object permanence and the separation anxiety that often accompanies it is not something most young parents know about. When teachers help parents understand their children's development, they are helping parents support that development.

The Preoperational Stage

According to Piaget, after the sensorimotor stage, children's cognitive development enters the *preoperational* stage, which extends from the second year of life through age seven or eight. The preoperational stage is when children's thinking differs most from adult thought patterns. Piaget said that during the preoperational stage, children are *egocentric* (think of everything only as it relates to them), can focus on only one characteristic of a thing or a person at a time (for example, take words at their exact meaning), gather information from what they experience rather than from what they are told, and overgeneralize from their experience.

Egocentrism means seeing the world from only one's own point of view. When observing preschoolers, adults frequently hear conversations like this one:

> TEACHER: I've brought in many beautiful things for our blue display. We have blue paint at the easel, and I've put "Rhapsody in Blue" in the CD player since we are having Blue Day!
>
> CHILD 1: My mom's car is blue.
>
> CHILD 2: My mom's car is broke.
>
> CHILD 3: My TV is broke.
>
> TEACHER (TO CHILD 1): Your mom's car is blue?
>
> CHILD 1: I saw lions on TV.

These children are typical of this developmental stage. This is the egocentrism Piaget refers to. The children are not connecting with each other's stories; rather, each child's words trigger other children's thoughts about their own situations. Another familiar example of egocentrism in young children is the child who wants to buy a stuffed toy as a gift for a parent or grandparent. Because this would please the child, she believes her grandfather will also love it!

Piaget believed that in the preoperational stage, children form ideas from their direct experiences in life. This is why telling children something is less effective than finding a way to help them think their own way through a problem. For example, if a child sees birds fly away when a dog barks, she may decide that barking dogs are the cause of birds' flight. Even though this is not an accurate idea, the child will be perfectly comfortable with her own reasoning despite any attempt to tell her otherwise. It is only after she has gathered more experience on her own—seeing birds take flight

when no dog is around—that she will go through a mental process that challenges her worldview. Piaget calls this process *disequilibrium*. The child has to change her view and adapt it to her new information. Piaget calls the process of adapting one's understanding on the basis of new information *accommodation*. Accommodation returns the child to a more comfortable balanced state that Piaget calls *equilibrium*.

Because preoperational children tend to believe what they see, they do not yet have a firm grasp of qualities belonging to the objects in their world. For example, they confuse "heavy" with "large." Due to inexperience, most young children would initially be surprised that a beach ball is lighter than a baseball. Unable to separate height from age, preoperational children will insist that the tallest person is the oldest. Piaget did a classic experiment involving a *conservation task* to demonstrate this kind of thinking in children. He put two sets of coins on a table in two lines. Both sets had the same small number of coins, but the coins in one line were spread farther apart. When asked which line had more coins in it, preoperational children always said the line in which the coins were spread farther apart had more. They held to this belief even when the coins from the two lines were matched up to show that for each coin from the long line, there was a coin from the short line. *Conservation tasks* such as this one involving conservation of number show whether a child has grasped the concept that certain physical characteristics of objects remain the same, even though their outward appearance changes.

Because children at this stage are dependent on their own experience, they tend to make incorrect generalizations. They base their general belief about something on a single experience, which may cause a false conclusion. One example is the girl above who believed that a dog's barking made birds fly because she had seen birds flying when a dog barked.

Another instance is the child in a Virginia child care center whose parents told the teachers that he yelled and screamed on the weekend when they attempted to take him for a haircut. "He was hysterical and kept saying it would hurt too much!" the frustrated mother told the teacher. The teacher, who knew a great deal about young children and a little bit about Piaget, slowly explained to the mom that from her son's perspective there was good reason to be afraid of a haircut. By the age of three or four most youngsters

have had enough experience with “boo-boos” to know that a *cut* on your knee or your finger can hurt quite a bit and sometimes even make you bleed. They know that at preschool, when they make soup, the teachers are very careful to show them how to chop the vegetables so they don’t get *cut*. They know that Grandma doesn’t let them use her good scissors because they might get *cut*. And then the grown-ups say they’re taking you to get your hair *cut*! The child was overgeneralizing from his limited experience, and when his mother saw the situation from his perspective, his behavior suddenly made more sense to her.

Preoperational children also tend to focus on one attribute of an object or person at a time. It is hard for them to think of their mother as their grandma’s daughter, for instance. This single-focus thinking is revealed in children’s conversations, if adults know how to listen for it. For example, a Head Start teacher tells the story of a little girl in her class whose mom has had a new baby. The teacher shows the children pictures of babies in books. The children discuss how wrinkly and funny-looking babies are when they are born. The teacher tells the children that she heard one boy tell his mother that she should iron the baby. None of the children laugh at this or show any alarm. No one says, “Oh, that is awful. That would hurt the baby.”

Instead, Kylie says, “My big sister irons her hair to get the curls out.”

Joshua says, “That’s not what it’s for. You do it to get the lines off your clothes.”

Clearly, the children do not make the connection that an iron might be a good tool to use on clothes or curly hair but not on babies. These children are not cruel or limited, but they are incapable of holding several qualities of an object or situation in their minds simultaneously. They are focusing on one aspect of the baby—the baby has wrinkles, and one aspect of the iron—the iron is used to get wrinkles out. The children do not naturally consider at the same time that the iron is hot, hot enough to hurt, and that a baby has skin like theirs that could be burned.

The teacher, aware that she has overestimated the children’s understanding, can ask questions that make them think a little more about irons. “Is the iron you use on clothes hot?” she might ask. “How would you feel if you put it next to your skin? Does a baby have skin? How do you think it would feel to the baby’s skin?” The children would quickly work

out for themselves that an iron is not a good way to get rid of a newborn's wrinkly skin! Piaget's theory tells us that it will be more effective to ask questions that help children think through the problem on their own than to tell them flat out, "An iron would hurt the baby." If they *construct* that knowledge for themselves by puzzling through the teacher's questions, they are more apt to take it in than if the teacher gives it to them.

This characteristic of only seeing one aspect of a thing at a time also plays out in the way children this age take adults very literally. For example, Betty cared for her three-and-a-half-year-old niece Alison for a weekend. She invited Alison to help her with dinner preparations. At home, Alison's mother served her hot dogs on a roll with ketchup already on it. When Betty asked her niece to get the ketchup, Alison asked, "Should I put it on our hot dogs?" Betty, busy in the kitchen, responded, "No, just put it on the table." Betty was surprised when Alison squirted ketchup right onto the dining room table—just as she'd been told to do.

Teachers wanting to support the cognitive development of preoperational children in their care can

- provide large blocks of time for uninterrupted free-play time,
- provide many real-world experiences for children throughout the year, and
- plan open-ended activities and ask open-ended questions.

Provide Large Blocks of Free-Play Time

It is largely the influence of Piaget, building on Montessori's work, that encourages uninterrupted periods of play in early childhood classrooms. When children are interested and involved, they need teachers who respect this absorption with their work. Giving a child a little more time while others clean up for snack can be a way of saying, "I see that you are very involved with your work, and that is important." Sometimes it isn't necessary to completely clean up the room. Children need places where their ongoing work and projects can be left until they are ready to finish them. In times past, children often had abundant opportunities for this kind of ongoing work in their neighborhoods and backyards. It is now our responsibility to meet these needs for sustained projects and "works in progress" in our child care classrooms. When children are allowed large

blocks of time for sustained interest in their play and work, teachers usually get more time to work one-on-one with those who need it.

It isn't necessary to insist that the whole group of children come together for a group time when three or four are having trouble finding an appropriate focus for their energy. Those children can do something else during group time. Many teachers are finding that times like snack and story time work much better when they are done in several shifts of small groups of children rather than groups of ten or twelve or eighteen, with some of the children unable to focus on the task at hand. Organizing to do small-group work simultaneously while others enjoy extended free-play time is how some teachers are making opportunities for more project work for those who are really engaged.

Time outdoors is another gift that teachers can share with children. The natural world provides young children with just as many opportunities to learn and grow across all developmental domains as the indoor classroom. While it is easy to say that time outdoors should be as rich and meaningful for children as the time spent in the classroom, this is not often the case. Just as teachers need to learn what to do with children indoors to create rich learning experiences for them, they also need to learn what to do with children outdoors. Many teachers are afraid to let children stay outside on a beautiful day because they fear it will be perceived as "doing nothing." However, the issue is not that the children are doing nothing when they are outdoors, it's that they could be doing—and learning—so much more. When children have regular opportunities to spend time in natural spaces, they learn about the world they live in and, just as important, come to understand the importance of taking care of it.

Many teachers today are frustrated by learning standards that are not developmentally appropriate for the ages of the children they teach but are pushed on them by school districts and state offices. The current age of accountability holds many positive things for teachers and children. For too many years, as discussed in almost every chapter, teachers have misinterpreted *progressive education* or developmentally appropriate practice (DAP) as letting the children do whatever suits them. This has resulted in much random wandering and many missed learning opportunities for children. Without careful planning, observation, and documentation, we cannot achieve meaningful curriculum. Accountability

that requires observation and documentation stands to help us strive for excellence. It encourages us to help all the children to be all that they can be.

The problems arise when standards are driven by motives other than what is best for children. Standards requiring all kindergarten children to be reading at a certain level before entering the first grade are both unfair to individual children and unachievable by most teachers.

Reflecting on this aspect of teaching today can help all teachers to help children and each other to develop coping strategies for dealing with these unrealistic pressures. Talking with each other and with parents about the importance of taking time to learn is a good place to start. Sharing information with parents can help them to see that reading and other academic skills should not come at any cost or prior to a certain level of competence at prereading skills.

Provide Real-World Experiences

Like Montessori, Piaget has helped teachers of young children to see how important it is for children to experience whatever we want them to learn about. Looking at pictures of cows does not give a child the experience of cow—its size, smell, and sound, its function in our lives. Visiting a dairy farm, smelling the barnyard and the mown hay, watching machines milk the cows, and seeing the milk loaded into a truck gives children a completely different understanding of cows. Similarly, reading about “things that go” is not a substitute for riding on the subway, in a taxi, in a bus, or on a train. Providing real-life experiences doesn’t have to mean going on field trips. It can be as simple as cooking with children, bringing animals into the classroom, or studying the birds in your area as Kathy’s class did in the chapter on Dewey.

It is possible anywhere to find real-life projects for children even if child care program resources are not what they could be. In rural New Hampshire, a team of Head Start teachers on a very limited budget did a project with children on building. They visited a lumber site and watched trees being cut and processed. They went to a construction area where a neighbor was having a house built, and then they realized they knew very little about the building their school occupied. The custodian became very involved. Children viewed the plumbing and electrical systems in the

school. They did tracings of brick surfaces, floors, and other areas. The play that went on in woodworking and blocks showed a much deeper understanding of many construction principles than one usually views in a preschool room. This is what *construction of knowledge* is all about for young children.

Plan Open-Ended Activities, Ask Open-Ended Questions

Open-ended activities do not have a predetermined result or product. For example, when a teacher plans a science experiment to which she already knows the answer, the experiment is not open-ended. However, when children plant seeds and chart the days until the shoot breaks through the earth, and then measure the seedling every day and keep a graph of how it grows, the project is open-ended. Neither the adult nor the child knows what the result will be.

Similarly, open-ended questions do not have a predetermined answer. "What color is your shirt?" is a closed question. There is (probably) only one right answer, and the teacher knows what it is. "How do you think that works?" is an open-ended question. The teacher is asking the child for his reasoning and doesn't already know the answer.

Open-ended activities and questions support children's cognitive development because they ask children to think. Instead of putting children in the position of being right or wrong, they put them in the position of inquiry, of finding out what the possibilities are, like how fast the bean sprout grows. They help children look at several aspects of the same thing, as the teacher's questions about the hot iron and the baby's skin helped those children think about the consequences of ironing a baby. They help children accommodate new information. For example, take the child who thinks that a dog's barking makes the birds fly. Over time, an adult who knew that she had formed this idea about the world could help her adjust it by noticing dogs barking and birds flying, and asking careful open-ended questions such as, "I heard that dog bark behind the house, and look, those birds are sitting on the fence. Why do you suppose that is?" or "Look, there's a group of ducks taking off from the pond. Did you hear any dogs barking? Why do you suppose those ducks took flight?"

The Concrete Operational and Formal Operational Stages

The last two stages in Piaget's theory refer to school-age children and teenagers. Since the focus of this book is on the early childhood years, the discussion of these stages is very brief. It is helpful to all parents and teachers to know a little bit about these final stages. For more information, see the suggested reading list at the end of the chapter.

When children enter Piaget's stage of *concrete operations* at about age seven, many changes in their thought patterns are visible. At this age (usually from about seven through eleven or twelve) children possess the characteristic of *reversibility*, which allows them to reverse the direction of their thought. For example, a child at this stage can retrace her steps on the school yard looking for a forgotten lunch box. Children no longer count on their fingers because they are beginning to be able to think abstractly. They begin to notice differences in classes of objects. For instance, at four every dog is a "doggie," but at eight or nine there are differences between a collie and a poodle. The concrete-operational child can hold several qualities in mind, knowing that a boat is large, red, *and* a sailboat. She knows and really understands that her mother is also the daughter of her grandmother. With this new flexibility of thought, children can add, subtract, and multiply "in their heads."

The final stage Piaget outlined is *formal operations*. This stage begins around age eleven or twelve and is marked by the ability to think logically and in hypothetical terms. According to Piaget, once this stage is reached, young people can wrestle with such questions as "Is it wrong to steal food for your starving children?" or "If a tree falls in the forest and no one is there to hear it, does it make a sound?"

Piaget in the Twenty-First Century

It is interesting that Piaget and Erikson were peers and yet, in some ways, the changes to Piaget's work seem minimal compared to the psychosocial adaptations we need to make in the twenty-first century when pondering children's development. The quote from Elizabeth Jones at the beginning of the chapter is still so relevant to approaching theory over time. The foundational theorists of our field gave us such direction in understanding the developmental needs of young children that they are not diminished or

discredited by changes in society or knowledge that force us to make adaptations to their original work.

I've seen and talked with many others who have also seen in recent years a capacity for *empathy* in young children that Piaget implied was not consistent with their developmental egocentrism. I like to think of this as a positive indication that more young children are getting their attachment needs met in infancy. Erikson asserted that meeting those needs consistently in infancy would result in a greater capacity for empathy.

What strikes me in reviewing Piaget's thorough description of the thought processes of the young child is how poor a match these developmental traits are for a preschool, kindergarten, and primary grade curriculum that insists on large group instruction with leveled expectations for all children. His work is the natural predecessor to project approach, emergent curriculum, differentiated instruction, and multiple intelligences. It does not seem a good fit for No Child Left Behind expectations in the United States. I'm not sure what to say about that.

I have always been fond of stating I like to raise questions, not necessarily provide answers. I think that Piaget's work is valid in guiding us to appropriate curriculum strategies for early education. Given the "pushed down" expectations of most standards for kindergarten and primary school curriculum into prekindergarten and preschool, I am leaning toward telling my daughter who will be teaching kindergarten next year to find a poster popular in her school district, put it on her door, and close her door. Then do what she knows is best for young children . . . but I'm not sure!

Discussion Questions

1. One of the nine-month-old babies in your infant program has always transitioned easily in the morning. You can tell from several clues that he has recently achieved object permanence. He begins to fuss and cry at separation from his parents in the morning, and they are alarmed at what they see as evidence that he is no longer happy in your program. You are convinced that his recent "clinginess" is related to his development. How can you explain this to the baby's parents?

2. Kevin is a four-year-old in your preschool class. He is very interested in building. He wants to spend all of his time in the block area. Kevin's mom worries that he plays too much. She has asked you to teach him math and language skills. Drawing on Piaget's work, how can you respond in a supportive way to this parent?

3. On a trip to the children's museum with your class of three-year-olds, a parent volunteer approaches you with one of the children in hand and says, "I just caught this one shoplifting!" How do you handle this situation? What do you say to the parent? What do you say to the child? How do you talk to the museum staff? How can Piaget's theories help explain what has happened?

Suggestions for Further Reading

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Chapter 5: Lev Vygotsky

Learning and development are interrelated from the child's very first day of life.

—Lev Vygotsky

Biography

LEV VYGOTSKY WAS BORN in Russia in 1896. His family was part of Russia's middle class, and they encouraged his studies. Vygotsky graduated from the University of Moscow in 1917 with a specialization in literature. He then taught literature in secondary school. This experience intensified his interest in teaching and in how people learn. He was particularly interested in cognitive and language development and their relationships to learning. This led to his interest in psychology and its impact on educational theory. Vygotsky studied and responded to the work of contemporaries Sigmund Freud, Jean Piaget, and Maria Montessori. He searched for answers to the questions raised by his interest in children and their approach to learning new things. That search led to his discovery: in a group of children at the same developmental level, some children were able to learn with a little help while other children were not. This piece of Vygotsky's learning is a cornerstone for the theories he developed.

It is hard to say what impact Vygotsky's perspective could have brought to our field with the passage of time. His brilliant career was cut short when he died of tuberculosis in 1934, at the age of thirty-eight. Many believe that his impact on educators in the United States was overshadowed by the huge popularity of Piaget's theories (Andrade and May 2004), which were enthusiastically embraced in preschools in the 1960s and continue to guide many classroom practices today.

More recently, many early childhood educators in the United States and other countries have turned their attention to the preschools in Reggio Emilia, Italy. Discussion of the educational theories implemented there has brought about a new focus on Vygotsky's work. Vygotsky's sociocultural perspective, for example, provides a theoretical basis for the Reggio-inspired approach to early childhood education.

Vygotsky's Theories

Vygotsky's ideas were and continue to be controversial. Because he came to the field without specific training in psychology and development, he brought a fresh perspective to child study. He objected to the analysis of children's abilities based on intelligence tests. He thought research should be both qualitative and quantitative. By this he meant that careful observation (qualitative research) of children should be considered as valid as their scores on a test (quantitative research).

Vygotsky has changed the way educators think about children's interactions with others. His work shows that social and cognitive development work together and build on each other. For years, early educators, schooled in Piaget's theories, viewed children's knowledge as being constructed from personal experiences. Although Vygotsky also believed this, he thought that personal and social experience cannot be separated. The world children inhabit is shaped by their families, communities, socioeconomic status, education, and culture. Their understanding of this world comes, in part, from the values and beliefs of the adults and other children in their lives. Children learn from each other every day. They develop language skills and grasp new concepts as they speak to and listen to each other.

Like Piaget, Vygotsky believed that much learning takes place when children play. He believed that language and development build on each other. When children play, they constantly use language. They determine the conditions of the make-believe. They discuss roles and objects and directions. They correct each other. They learn about situations and ideas not yet tried. Vygotsky believed that this interaction contributes to children's construction of knowledge—to their learning. Vygotsky's primary contribution to our understanding of young children's development

is his understanding of the importance of interaction with teachers and peers in advancing children's knowledge. Today's Reggio-inspired educators also believe that what children learn from their peers and from the materials in the classroom is as important as what they learn from their teachers.

The Zone of Proximal Development

One of the most important concepts of Vygotsky's theory is that of the *zone of proximal development*, or *ZPD*. Vygotsky defined this as the distance between the most difficult task a child can do alone and the most difficult task a child can do with help. He believed that a child on the edge of learning a new concept can benefit from the interaction with a teacher or a classmate.

Vygotsky referred to the assistance a teacher or peer offers a child as *scaffolding*. A house painter working on a house uses a scaffold to reach parts of the house that would otherwise be out of reach. In the same way, adults and peers can help a child "reach" a new concept or skill by giving supporting information. Vygotsky believed this could be done not only by the teacher but also by the child's peers who already possess the desired skill. Vygotsky believed that in order to scaffold well for children, teachers need to be keen observers. He believed that teachers need to use those observations to determine where children are in a learning process and where they are capable of going, given their individual needs and the social context that surrounds them. He believed that from information gathered through observation, teachers can support children's learning. This is similar to Dewey's belief that teachers must use their greater knowledge of the world to help make sense of it for children.

Teachers who want to apply Vygotsky's ideas about ZPD and scaffolding in their early childhood programs can observe children carefully and plan curriculum that encourages children's emerging abilities, and pair up children who can learn from each other.

Observe Children Closely and Plan Curriculum Accordingly

Like Montessori and Piaget, Vygotsky placed enormous emphasis on the importance of observation. By carefully watching and listening, teachers come to know each child's development. According to Vygotsky, this is the

only way for teachers to accurately assess what is within a child's ZPD at any time. This knowledge is essential to good curriculum planning.

Curriculum planning is perhaps the area most affected by Vygotsky's theory. Unlike Piaget, who thought children's cognitive learning was more internal than interactive, Vygotsky believed that interaction had a huge impact on cognitive development. Until Vygotsky's work became better known in the United States, educators here who understood Piaget's theory hesitated to "push" children. Piaget believed that stages of cognitive development are tied to physical development. He thought that children at a particular stage of development are incapable of the reasoning that they will grow into at the next stage. This led teachers to plan curriculum that supported children at their current level of expected development without stretching their developmental limits.

Vygotsky, on the other hand, showed that children's cognitive development is affected not only by their physical development but also by their social surroundings and interactions. His idea of developmental readiness is more flexible than Piaget's because it encompasses the skills or ideas that children have not yet come to on their own but which they can acquire from the example of peers or adults. This theory encourages teachers to plan curriculum that extends children's knowledge and to scaffold their learning by putting them in situations where their competence is stretched.

Plan Challenging Curriculum to Stretch Children's Competence

Here's an example of a teacher focusing on the ZPD of Margaret, one of her students. It also illustrates how both the teacher and the child's peers quite literally scaffolded her learning and growth. I once visited a class whose project focus was on building. The children had talked about construction, looked at books about building, practiced using tools at the woodworking bench, and visited construction sites. After much research, the children drew up their own blueprints for a playhouse in their yard. The day I visited, they were working on roofing. I observed as the children, with help from their teachers, climbed onto scaffolding and began to hammer shingles onto the roof. Margaret lingered around the construction site. She wanted to hammer nails. Judy, her teacher, said, "We are roofing today. If you would like to help, I can help you climb onto the scaffolding."

Margaret said, “No, I just want to hammer nails.”

Judy was firm. “When you go back inside, you can use the woodworking bench, if you like. Right now we are roofing. If you don’t want to help, there are many other choices.”

I was troubled by this. My own training made me question this teacher’s approach. It seemed rigid to me. I thought, “Why can’t she just give the child a piece of wood, a hammer, and some nails? She could sit near the building project and hammer her nails.” My initial response was to compare the teacher’s words, “If you want to hammer, climb up the scaffolding and do some roofing,” to instructions from teachers in days of old who told the kids to draw a tree and added, “Color the leaves green, the trunk brown, and the sky blue.” I didn’t get it. I continued to watch the roofers as they hammered away.

Now and then Judy dropped a comment such as “Yesterday, Peter was afraid to climb up on the scaffolding. He thought he couldn’t hold on and hammer too.” Margaret didn’t budge from her spot though there were many interesting choices available in the yard. She continued to watch the roofers. Judy continued to watch her.

“When Ashanti first climbed up to work on the roof, she just watched for a while because she was so scared being up high that she couldn’t concentrate on hammering too,” Judy said quietly after a while. I noticed that Margaret’s initial whining and tearfulness at being prevented from hammering had stopped. She was now very attentive to the roofers, who received periodic encouragement from their teacher.

“You’re getting many shingles hammered in,” Judy said. Margaret watched.

“I wonder,” Judy finally said, “if Ashanti would hold your hand for a while to help you get used to being up high. Then maybe tomorrow you would feel like hammering too.”

At this comment, Ashanti joined in, “C’mon, Margaret. I’ll hold your hand. I was scared, too, before.” Margaret stood up. Judy offered her assistance as Margaret climbed up the scaffolding. Ashanti held her hand once she got up. The look on her face changed from the sad, tentative, and displeased expressions she had worn all morning to one of utter triumph.

Overwhelmed by her accomplishment, Margaret’s sense of competence exploded. “Gimme some nails!” she shouted joyfully. Margaret hammered

her first shingle. Judy smiled. “A job well done!” she said. I learned a lot that day. I realized that, had I been Margaret’s teacher, she’d have spent her morning happily “on the edges” of the building project. I’d have given her some nails, a board, and a hammer. She’d have been content to spend her time doing something she was comfortable with, without risking any new learning. At the end of the day, the child would have gone home much as she had arrived in the morning. Judy, however, sent home someone who had triumphed over fear, someone who had increased her skills and competence, which led to an increase in self-esteem. She had carefully observed her student and accurately judged that she was ready to take a leap with a little help. This is what Vygotsky meant by *scaffolding*. The skill of climbing the scaffold and hammering in the nails was within Margaret’s ZPD. She wouldn’t have done it on her own, but with help, she was able to achieve it.

It’s important to recognize that using Vygotsky’s ZPD requires careful observation of children and good judgment about how best to support their learning. Judy knew that Margaret was capable of doing the climbing and roofing. She knew that Margaret was afraid of being up high. She knew that Margaret would not choose to climb the scaffolding without help. All of this observation and the resulting knowledge of the individual child is crucial to the successful scaffolding in this story. Without knowing each child well and taking the time for careful observation and reflection before making the move to urge a child further, teachers can make serious mistakes.

Here’s another example of how ZPD can affect life in the classroom. Early in my teaching career, I had a five-year-old student named Lynn who did not want to fingerpaint. Lynn’s mother did not like “messes.” I wanted to “free” Lynn’s creative spirits from her mother’s tidy control! I refused to believe that she didn’t want to fingerpaint. I’m sure I thought I was “guiding” not “forcing” when I took her little hands in mine and put both of them into the fingerpaint. When Lynn threw up all over the fingerpaint and both of us, I learned the hard way that not every child should experience finger-painting. I had not listened carefully to my student. I had not observed enough. I was not respectful of her family’s approach. I wanted to force an experience on her that I had decided would expand her horizons. Because I didn’t know her individual needs, my plan backfired.

Fingerpainting was not within Lynn's ZPD that day, and my attempt at scaffolding failed.

Language Development and Learning

Vygotsky believed that language presents the shared experience necessary for building cognitive development. He believed that talking is necessary to clarify important points but also that talking with others helps us to learn more about communication. We can learn much from observing children's conversations. It can help us find out what the children know and what they are confused about. Many of us have memories of schools where we were expected to be quiet and study. Teachers at the time thought learning was a solitary journey, something each student had to do alone. Vygotsky has shown us the importance of learning as an interactive experience. Teachers who want to encourage cognitive development can do it by encouraging conversations.

Encourage Conversations

Sometimes teachers still discourage conversation. Often this happens at group time. Teachers do presentations on topics such as growing things, dinosaurs, or transportation, hoping to share their knowledge of the world with children. Interruptions are considered a disruption to the "lesson." An understanding of Vygotsky's theory allows us to see the role of language—questioning, talking, joking, interrupting—in extending children's learning. In dramatic play, we frequently hear children adjusting their view of the world. For example, one day I overheard this conversation at a child care center:

> JUAN: I'll be the nurse.
>
> NICOLE: No, you can't! My mama's a nurse. You have to be a girl.
>
> HEATHER: Yeah, the boys is supposed to be the doctors.
>
> ERLEEN: The doctor that got my mom's baby out was a girl.
>
> DYLAN: C'mon, Juan, just be a doctor so we can play this game!

Individual opinions are offered here. Experiences are shared. Dylan is even sophisticated enough to see that he and Juan are caught in a "word battle" and it's holding up the play. In this situation there is content learning

(both men and women can be doctors) but also process learning (all this talking is getting in the way of play, but if we just agree, the play will go on!).

Many teachers would have cut this discussion short by jumping in at the first incorrect statement to make sure the children knew that men and women could be nurses. In the above situation, the teacher quietly concluded for the children as the conversation ended that it sounded as though they all knew different things about doctors and nurses, but that it was true that men and women worked at both jobs. By letting the children continue their arguments and discussions, she nurtured not only the content of the conversation but also the process, which will help them all become better learners.

Social Interaction

According to Vygotsky, interactive situations like the one described above allow children to stretch and grow mentally. Too often teachers have acted as if language and cognitive abilities will develop with little help or direction. But growing and learning does not necessarily happen "naturally." One teacher I knew from a previous generation used to say, "The children will grow taller without my help but not smarter or kinder!" Teachers need to develop the skills of observing, questioning, and encouraging peer interactions that will best support children's growth and development. They need to think about when to step in with suggestions or ideas and when to let the children proceed on their own.

Vygotsky's theory that development is interactive changes the way we think about children's learning. For some teachers, the idea that children can help each other learn is very freeing. They suspect that they have sometimes interrupted excellent opportunities for group learning to call children to circle time, where they must sit and listen. Vygotsky has helped teachers to see that children learn not only by doing but also by talking, working with friends, and persisting at a task until they "get it." To support children's social learning, teachers can provide many opportunities for children to help one another or to work together on projects of their choice.

Provide Opportunities for Children to Work Together

I saw a fine example of children working together one spring day in northern New Hampshire. It was a perfect example of a teacher allowing two children to learn from each other and their joint experience. The rural Head Start program at which I was observing had a wonderful outdoor play area. Nature had provided a perfect science center. Shady areas offered patches of ice for sliding. Sunny areas offered muddy puddles of melted snow. Long icicles hung dripping from the building's low roof. Children played in every corner of the yard. In the midst of all of this activity, two four-year-old boys found a treasure. Sticking out of some ice was the top of a mitten. They decided to "excavate" for the other half. First, they tried digging for it with twigs. After large, small, and mediumsized twigs had broken, they decided they needed "real" tools. The teacher unlocked a toolshed for them and observed their choice of tools. The boys brought out a shovel that was eighteen or twenty inches taller than either of them. "It's stuck in there hard, so we need something big to get it out," Kevin said. "Yup," Jeffrey agreed.

The teacher did not say, "That's too big" or "Someone will get hurt." She stayed nearby and watched. First, the boys argued about who should dig first. Then Jeffrey, predictably, knocked the handle into Kevin when he tried to use the shovel. "Let me," Kevin said. "You're not doing it right—you keep hitting me and not the mitten." He tried—with the same outcome, of course. The teacher said, "Wow, you guys are really working on that project." The boys grinned but said, "It's not going right. Maybe we need a smaller digger." The teacher said, "Uhmm, maybe so." So off they went, returning with a small gardening rake and shovel. These boys sustained their focus and energy on this task for about half an hour. They met with frustration and talked out loud to each other and to themselves as they struggled. Eventually they got past taking turns and progressed to cooperation. They realized that one needed to dig while the other pulled.

When they finally got the mitten out, the wise teacher did not respond, "Good job." Here is what she offered instead. "You two worked really hard together. You tried many things. Some didn't work, but you didn't let yourselves feel discouraged. You kept trying other solutions. Together you worked it out. You must feel pleased with yourselves." This response to the children crystallized their experience and helped them understand it better

by reflecting it back to them concretely and explicitly. This is another example of scaffolding.

The teacher increased the children's learning by not rushing in to give them answers. Through interaction, conversation, and experimentation, the children increased their skills and accomplished their goals. Through their interactions, they learned process—how to negotiate about using tools; how to experiment to see which tool works the best. And they learned content—what's the most effective way to dig a frozen object out of a patch of ice, and, incidentally, principles of physics such as leverage. Vygotsky believed that learning and development are similar but not identical. The combination of instructing the child and honoring the child's individual development optimizes learning.

Executive Function

There is growing evidence today that suggests that a preschool-age child's ability to apply cognitive control, also called *executive function*, is a better predictor of later school success than any academic learning acquired during the preschool years. Executive function encompasses self-regulation skills, including social skills, self-discipline, and mental flexibility. Children who lack these skills, or mental tools, do not know how to learn in a deliberate manner—they are "unable to focus their minds on purpose, and consequently their learning is less effective and efficient" (Bodrova and Leong 2007, 5).

Until recently, it was generally assumed these skills were ones not easily taught in the early childhood classroom. However, new findings in brain research have established relationships between the development of self-regulation skills and the maturation of particular areas of the brain. The research suggests that as with many brain capacities, executive function can be built through practice. In addition, research shows that children develop the foundational skills for self-regulation in the first five years of life. These findings have many implications for early childhood education and highlight the important role teachers play in helping young children develop the critical skills associated with executive function.

Two of Vygotsky's concepts are thought to be especially helpful in fostering self-regulation skills among young children: the zone of proximal

development and scaffolding. Because self-regulation skills develop over time, it is important that teachers keep in mind each child's zone of proximal development and offer learning experiences that are in keeping with what each child is ready to learn (scaffolding), including experiences the child can practice with teachers and able peers. Teaching techniques that foster self-regulation skills include modeling appropriate behavior and providing hints and cues about how and when children should regulate their behavior. Only after a child has consistently demonstrated self-regulation skills on his or her own, or has *internalized* those skills, should teachers begin withdrawing support.

Foster Self-Regulation Skills through Make-Believe Play

While much is known about the positive effects of make-believe play on children's social, early literacy, and early mathematical development, research has shown that make-believe play also has positive effects on the development of self-regulation skills in young children (Singer, Golinkoff, and Hirsh-Pasek 2006). Inherent in make-believe play is the zone of proximal development, because it is during this type of social play that children frequently behave beyond their years and above their everyday behavior. As children participate in make-believe play, they are practicing regulating behavior naturally—they regulate other children by telling them what to do; they regulate themselves by staying in their roles and trying not to do anything that might interrupt the flow of the play; and they are regulated by other children when they agree to roles and rules that may not be the ones they had in mind.

Here's a great example of this. It's Deerfield Fair week in New Hampshire. RVs and campers, horse trailers, and trucks pull into the fairgrounds. School closes on Friday because experience has taught the superintendent that nobody comes that day anyway. Everyone is at the fair.

When the children return to school on Monday, the teacher has transformed the dramatic play area into a campsite at the fair. The children are ecstatic and begin at once to process and relive their weekend's experiences. Josh (6), Pete (4½), Rachel (5), and Lynn (5½) are in the area together. Rachel and Lynn immediately head to the stove and start pulling out a huge variety of "vegetables" to cook. The girls feel a sense of "social dominance" over food preparation. Josh, self-assured and clearly full of

ideas, starts laying some ground rules. “First,” he says, “we need to decide who we are. We need to be married. I’ll be married to you, Rachel.”

Rachel thinks this is wrong. All of the children know each other’s ages. “I should be married to Pete,” she says (probably based on the fact that they are close in age). “No,” Josh says. “She is the right size for Pete.” (Lynn is older but smaller than Rachel.) Josh is really into the play. He turns from the girls to Pete. “Didja bring the beer?” he says comfortably. Pete giggles and shakes his head No. He looks at the teacher. He’s not as sure of the “role play” (a perfect re-enactment). Pete thinks he’s probably not supposed to talk about beer at preschool. Lynn, content to be part of the group, says nothing at all.

We can see the interactive nature Vygotsky describes in the children’s play. Josh knew what to do immediately. He never questioned the appropriateness of his words, as they were supposed to be guys at the fair with their wives. Rachel rejected her suggested role, as she concluded age, not height, should make the match. Pete’s behavior is a good indicator of self-regulation at work. He senses “beer” is not a school word but isn’t quite sure. He’s not as confident of his role in the play as Josh. Lynn listens as her eyes dart from one to the other of her peers. She is quiet, not comfortable speaking up in the setting, yet confident enough to do just what she wants to —enjoy watching and learning from the rest of her peers.

Teachers who want to apply Vygotsky’s ideas about the ZPD and scaffolding to encourage rich make-believe play in their early childhood programs can

- ensure children have enough time for play;
- offer children appropriate toys and props; and
- observe >children’s play and, when appropriate, share ideas for themes that could enrich and extend their play.

Vygotsky in the Twenty-First Century

Vygotsky added a new voice to those of his founding peers when he suggested that interaction was as important to learning as constructing one’s own ideas. His zone of proximal development was a startling addition to those of us taught a purely Piagetian approach to young children and learning. There was great emphasis for at least three decades (’60s, ’70s,

and ’80s) on the importance of *not* pushing preschoolers. Initially, the notion of ZPD and taking children to the next possible step created an instinctive (or actually conditioned) cringe. We didn’t want to push!

But it makes sense, and the idea took some pressure off teachers by suggesting that children often learn as much or more from a more-skilled peer than they do from their teachers. As we all tried to scaffold children’s learning, we realized these ideas really do work. Then again, the pace of many preschool and primary grades these days doesn’t leave much time for teachers to encourage conversation.

We have a responsibility to share Vygotsky’s concept of the executive function’s impact on self-regulation at a time when school districts are discouraging play and conversation in kindergarten. We know from many experiences that the guidance of our founding theorists is as important today as it was when they first laid out these ideas. So what are committed educators to do with the gaps between what we know is best and what is expected from us?

I suggest that every parent and teacher interested in the future of our society and education read Maggie Jackson’s book *Distracted: The Erosion of Attention and the Coming Dark Age*. This will not be comforting in light of Vygotsky’s work, as she suggests that the current generation of young children growing up on texting, Tweeting, Skyping, and using Facebook are less competent at verbal interaction than many previous generations. As pointed out in the chapter on Dewey, we cannot look progress in the face, judge it as detrimental, and turn the other way. There is no point. But Jackson’s information gives us one more sobering piece of information to contemplate so that together we can all begin developing strategies to help young children speak to and learn from one another.

Discussion Questions

1. When your school district implements a K–3 primary program, some parents are upset that younger children will “hold back” the learning of their second and third graders. Using Vygotsky’s sociocultural theory of development, tell parents how the new program will be good for all of the children.

2. Kimberly is a five-year-old in your preschool. Her parents want her to read before entering first grade. You've read David Elkind. He says, "Don't push children." You've read Vygotsky. He says if reading is in a child's ZPD, it's okay to push a little. You've read Piaget. He says play is the best way for children to learn. You have to decide how to work with Kimberly's family to help her make the transition to public school. What do you need to know about Kimberly before you decide what to do? What are some possible ways of handling the situation? How would you choose one?

3. Many primary-grade classrooms expect children not to "socialize" with other children during their class time. What would Vygotsky think of this practice? Why?

Suggestions for Further Reading

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Glossary

accommodation: Piaget's term for the process of adapting one's understanding on the basis of new information.

attachment: According to Erikson, the bond between a young child and his parents and primary caregivers.

autonomy: The capacity to act independently.

concrete operations: Piaget's third stage of cognitive development, lasting from about six years to about twelve years of age, during which children use reasoning to make judgments.

conservation tasks: Classic experiments conducted by Piaget and associated with the preoperational stage that demonstrate whether a child knows that certain physical characteristics of objects remain the same even though their outward appearance changes.

construction of knowledge: The process by which a child creates a mental explanation for her experience or perceptions, according to Piaget.

disequilibrium: Piaget's term for a child's state of mind when her understanding of the world is being challenged by her experience, before she has created a new understanding to explain her new experience.

egocentric: Thinking of everything one encounters only as it relates to oneself; seeing the world from only one's own point of view.

Eight Ages of Man: Erikson's theory of psychosocial development, which covers the life span of human beings.

empathy: The ability to put oneself in another person's place and understand what he or she might feel.

epistemologist: A person who studies the nature and beginning of knowledge.

equilibrium: Piaget's term for the state of mind during which a child's experience in the world is adequately explained by her understanding.

executive function: Refers to the ability to manage or regulate basic cognitive and emotional processes, such as self-regulation, the ability to focus on tasks, the ability to organize thoughts and materials, and the ability to follow through and complete tasks.

extrinsic: Coming from without; imposed by something or someone else.

formal operations: Piaget's fourth stage of cognitive development, lasting from about twelve years of age through adulthood, in which people are capable of abstract, conceptual, and hypothetical thought.

identity crisis: Erikson's term for the conflict young people experience as they grow into adulthood.

intrinsic: Coming from within; an essential part of the nature of something.

learning experience: Dewey's term for an activity that meets five criteria: is based on the children's interests and grows out of their existing knowledge and experience; supports the children's development; helps the children develop new skills; adds to the children's understanding of their world; and prepares the children to live more fully.

mis-educative: Dewey's term for an activity that lacks sufficient purpose and organization to support children's learning.

object permanence: The point at which a baby realizes that objects exist even when he cannot see them, according to Piaget.

open-ended: An activity or question without a predetermined product or answer.

preoperational: Piaget's second stage of cognitive development, lasting from about eighteen months to about six years of age, during which children learn based on their perceptions and experience.

progressive education: A movement toward more democratic and child-centered forms of education and away from hierarchical and didactic instruction, beginning at the end of the nineteenth century.

reflexive: Without thought.

scaffolding: Vygotsky's term for the assistance a peer or adult offers a child that helps her learn a skill or develop knowledge she could not develop on her own.

sensorimotor: Piaget's first stage of cognitive development, lasting from birth through about eighteen months of age, in which children's growth in thinking is largely governed by what they perceive through their senses and what they learn through reflex movements.

separation anxiety: A child's reaction of distress to separation from a parent or primary caregiver.

zone of proximal development (ZPD): Vygotsky's term for the distance between the most difficult task a child can do alone and the most difficult task a child can do with help; the area of development a child has not reached on his own but that he can reach with the input of others.