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Understanding Motivation for Adult Learners

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None of us are to be found in sets of tasks or lists of attributes; we can be known only in the unfolding of our unique stories within the context of everyday events.

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Like the national economy, human motivation is a topic that people know is important, continuously discuss, and would like to predict. We want to know why people do what they do. But just as tomorrow's inflationary trend seems beyond our influence and understanding, so too do the causes of human behavior evade any simple explanation or prescription. We have invented a word to label this elusive topic—*motivation*. Its definition varies among scholars depending on their discipline and orientation. Most social scientists see motivation as a concept that explains why people think and behave as they do (Weiner, 1992). Many philosophers and religious thinkers have a similar understanding of motivation but use metaphysical assumptions to explain its dynamics.

Today, discoveries in the neurosciences offer a biological basis for what motivation is. Although this understanding is very far from complete, what we know about the working of the brain can enrich

and integrate fields as disparate as psychology and philosophy. From a biological perspective, motivation is a process that "determines how much energy and attention the brain and body assign to a given stimulus—whether it's a thought coming in or a situation that confronts one" (Ratey, 2001, p. 247). Motivation binds emotion to action. It creates as well as guides purposeful behavior involving many systems and structures within the brain and body (Ratey, 2001).

Motivation is basic to our survival. It is the natural human process for directing energy to accomplish a goal. What makes motivation somewhat mysterious is that we cannot see it or touch it or precisely measure it. We have to infer it from what people say and do. We look for signs—effort, perseverance, completion—and we listen for words: "I want to . . .," "We will . . .," "You watch, I'll give it my best!" Because perceiving motivation is, at best, uncertain, there are different opinions about what motivation really is.

As educators, we know that understanding why people behave as they do is vitally important to helping them learn. We also know that culture, the deeply learned mix of language, beliefs, values, and behaviors that pervades every aspect of our lives, significantly influences our motivation. What we learn within our cultural groups shapes the physical networks and systems throughout our brains to make us unique individuals and culturally diverse people. Social scientists regard the cognitive processes as inherently cultural (Rogoff and Chavajay, 1995). The language we use to think, the way we travel through our thoughts, and how we communicate cannot be separated from cultural practices and cultural context. Even experiencing a feeling as a particular emotion, such as sadness or joy or jealousy, is likely to have been conceptually learned in the cultural context of our families and peers as we developed during childhood and adolescence (Barret, 2005).

Roland Tharp (Tharp and Gallimore, 1988) tells the story of an adult education English class in which the Hmong students themselves would supply a known personal context for fictional

examples. When the teacher used a fictional Hmong name during language practice, the students invariably stopped the lesson to check with one another about who this person might be in the Hmong community. With a sense of humor, these adults brought, as all adults do, their personal experience to the classroom. We are the history of our lives, and our motivation is inseparable from our learning, which is inseparable from our cultural experience.

Being motivated means being purposeful. We use attention, concentration, imagination, passion, and other processes to pursue goals, such as learning a particular subject or completing a degree. How we arrive at our goals and how processes such as our passion for a subject take shape are, to some extent, culturally bound to what we have learned in our families and communities.

Seeing human motivation as purposeful allows us to create a knowledge base about effective ways to help adults begin learning, make choices about and give direction to their learning, sustain learning, and complete learning. Thus, we are dealing with issues of motivation when we as instructors ask such questions as, What can I do to help these learners get started? and, What can I do to encourage them to put more effort into their learning? and, How can I create a relevant learning activity? However, because of the impact of culture on their motivation, the way we answer these questions will likely vary related to the different cultural backgrounds of the learners.

Although there have been attempts to organize and simplify the research knowledge regarding motivation to learn (Brophy, 2004; Stipek, 2002), instructors lack the resources and educational models to consistently and sensitively influence the motivation of linguistically and culturally different adult learners (Guy, 2005). Both culturally responsive teaching (Wlodkowski and Ginsberg, 1995) and neuroscientific understanding of adult learning (Johnson and Taylor, 2006) are recent areas of inquiry and practice in adult education. As a result, instructors still tend to rely on their experience, intuition, common sense, and trial and error. Because

intuition and common sense are often based on tacit knowledge, unarticulated understanding, and skills operating at a level below full consciousness and learned within our cultural groups, such knowledge can mislead us. Regrettably, some instructors in culturally diverse settings still grade for participation and believe students should speak directly about personal or uncomfortable topics in front of their peers. These teachers are not mean-spirited or rigid. More likely, they are pragmatic. In general, they believe they get more learner participation by grading for it, and they do not have an effective alternative. And most important, such an approach does not conflict with *their* values.

Without a model of culturally responsive instruction with which to organize and assess their motivational practices, instructors cannot easily refine their teaching. What they learn about motivation from experience on the job and from formal courses is often fragmented and only partially relevant to the increasing diversity in their classrooms and training sessions. However, there are a significant number of well-researched ideas and findings that can be applied to learning situations according to motivation principles. The following chapters thoroughly discuss many of these motivational strategies and present a method to organize and apply them in a manner sensitive to linguistic and cultural differences. As we will see, current neuroscientific principles and research offer considerable support for this model and its related ideas.

Why Motivation Is Important

We know motivation is important because throughout our lives we have all seen the motivated person surpass the less-motivated person in performance and outcome even though both have similar capability and the same opportunity. We know this from our experience and observation. We know this as we know a rock is hard and water is wet. We do not need reams of research findings to establish this reality for us. When we do consult research, we find

that it generally supports our life experience regarding motivation. To put it quite simply, when there is no motivation to learn, there is no learning (Walberg and Uguroglu, 1980). In reality, motivation is not an either-or condition, but when motivation to learn is very low, we can generally assume that potential learning will be diminished.

Although there have been research studies of adult motivation to participate in adult education programs (Deshler, 1996; Benseman, 2005), no major research studies thoroughly examine the relationship between adult motivation and learning. If we define *motivation to learn* as the tendency to find learning activities meaningful and worthwhile and to benefit from them—to try to make sense of the information available, relate this information to prior knowledge, and attempt to gain the knowledge and skills the activity develops (Brophy, 2004)—the best analyses of the relationship of motivation to learning continue to be found in youth education. In this field of research, there is substantial evidence that motivation is consistently positively related to educational achievement.

Uguroglu and Walberg (1979) performed a benchmark analysis of 232 correlations of motivation and academic learning reported in forty studies with a combined sample size of approximately 637,000 students in first through twelfth grades. They found that 98 percent of the correlations between motivation and academic achievement were positive. We can reasonably assume that if motivation bears such a consistent relationship to learning for students as old as eighteen years of age, it probably has a similar relationship to adult learning. In support of this assumption, these researchers found that the relationship between motivation and learning increased with the age of the students and the highest correlations were in the twelfth grade.

Perhaps scholars of adult education have been reluctant to examine the relationship between learning and motivation because the bond seems so obvious. As researchers have found (Pintrich, 1991), people motivated to learn are more likely to do things

they believe will help them learn. They attend more carefully to instruction. They rehearse material in order to remember it. They take notes to improve their subsequent studying. They reflect on how well they understand what they are learning and are more likely to ask for help when they are uncertain. One needs little understanding of psychology to realize that this array of activities contributes to learning. In a study of adult learners in an urban university, researchers found that when adults perceived their courses as supportive of intrinsic motivation, they were likely to receive higher grades (Wlodkowski, Mauldin, and Gahn, 2001).

Motivation is important not only because it apparently improves learning but also because it mediates learning and is a consequence of learning as well. Psychologically and biologically, motivation and learning are inseparable (Zull, 2002). Instructors have long known that when learners are motivated during the learning process, things go more smoothly, communication flows, anxiety decreases, and creativity and learning are more apparent. Instruction with motivated learners can actually be joyful and exciting, especially for the instructor. Learners who complete a learning experience feeling motivated about what they have learned seem more likely to have a continuing interest in and to use what they have learned. It is also logical to assume that the more numerous their motivating learning experiences in a particular subject, the more probable it is that people will become lifelong learners of that subject.

To maintain a realistic perspective, however, we need to acknowledge that although some degree of motivation is necessary for learning, other factors—personal skill and quality of instruction, for example—are also necessary for learning to occur. If the learning tasks are well beyond their current skills or prior knowledge, people will not be able to accomplish them, no matter how motivated they are. In fact, at a certain point these mandatory learning factors, including motivation, are insufficient. For example, if learners are involved in a genuinely challenging subject for which they have the necessary capabilities, a point will come

at which further progress will require effort (motivation), whether in the form of extra practice or increased study time, to make further progress. Conversely, outstanding effort can be limited by the learner's capabilities or by the quality of instruction. Sports are a common example for the limits of capabilities. Many athletes make tremendous strides in a particular sport because of exemplary effort but finally reach a level of competition at which their coordination or speed is insufficient for further progress. An example of the influence of the quality of instruction is a learner who has the capability and motivation to do well in math but is limited by an obtuse textbook with culturally irrelevant examples and an instructor who is unavailable for individual assistance. It is unwise to romanticize or expect too much of motivation. Such a view can limit our resourcefulness and increase our frustration.

One of the indicators of motivation that we most commonly rely on as instructors is effort (Plaut and Markus, 2005). People work longer and with more intensity when they are motivated than when they are not (especially if there are obstacles). Motivated learners care more and concentrate better while they expend effort, and they are more cooperative. They are therefore more psychologically open to the learning material and better able to process information. It is much easier to understand what you want to understand. As Freud (1955, p. 435) said, "One cannot explain things to unfriendly people."

However, it is important to remember that one's cultural background can influence perceptions of effort. For example, when researchers asked what percentage of intelligence is due to natural ability and what percentage to effort, the average percentage due to effort reported by European Americans was 36 percent while Asian Americans reported 45 percent (Heine and others, 2001). Because we may vary to the extent that we recognize effort, as instructors we need to be vigilant about seeing it because motivated learners probably get more spontaneous encouragement and assistance from instructors than unmotivated learners do. We are usually more

willing to give our best effort when we know our learners are giving their best effort, an important reciprocity that can affect an entire class.

A Neuroscientific Understanding of Motivation and Learning

What happens biologically when we are motivated to learn? The neurosciences have confronted this question directly and provide remarkable information about what happens within our brains and bodies when we are learning. Although much of this knowledge comes from laboratory studies and work with children (Merriam, Caffarella, and Baumgartner, 2007), much has been learned about the basic structures of the brain and nervous system that provides a biological understanding of motivation and learning. Although this information is not definitive and has not been extensively researched in terms of what happens when adults learn, there is enough agreement in the field of neuroscience about basic structures and processes such as neuronal networks and the function of neurotransmitters to inform teaching in adult education (Johnson and Taylor, 2006).

This book aims to provide a primary understanding of this fundamental research and to use its findings to add support and insight for those ideas that are within the realm of sound adult instructional practice. Ultimately, our ideas about adult learning will need to be considered in terms of their consistency with biological research about learning. We need not make a scientific model preeminent in adult education (Belzer and St. Clair, 2005), but we can use it to strengthen and enrich our work.

An Overview of the Brain

At its most basic level, learning is a biological function, and the brain is most responsible for this process. At this moment your brain is engaged in seeing letters on this page, assembling them

into words, connecting those words with meaning, and forming thoughts while it also blocks out distracting sounds like the air conditioning, noises from the outside, and other people talking. Your brain is doing not only all this, but it is also probably suppressing your attention to various odors, sights, and sensations, as well as a few memories and your thoughts about what you might do next after reading this passage. Your brain is also regulating your breathing, blood pressure, and body temperature. And most of the functions just mentioned are happening without any conscious awareness on your part! The brain can do these many different things simultaneously because it is so complex, possibly the most complex object known to us.

Neurons

Recent estimates are that the adult brain has about 100 billion neurons (Bloom, Nelson, and Lazerson, 2001). As illustrated in Figure 1.1, neurons have a cell body, a single long branch known as an *axon*, and multiple shorter branches called *dendrites*. The junction where signals pass from one neuron to another is called a *synapse* (see Figures 1.1 and 1.2). Current brain research supports

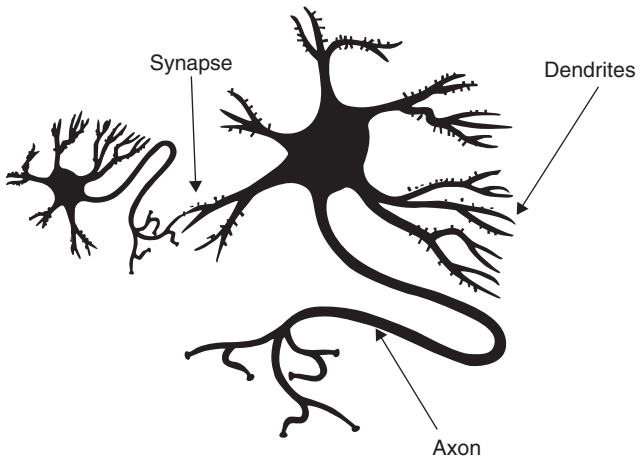

Figure 1.1. Two Neurons Connecting

Source: Jensen, 2005. Used with permission.

the idea that most learning and development occurs in the brain through the process of strengthening and weakening synaptic connections. Because each neuron may have anywhere from one to ten thousand synaptic connections, the number of different patterns of possible connections in the brain is about forty quadrillion, a staggering number, literally beyond my comprehension.

Although there are other cells within the brain, such as glia cells, the neurons are the basic functional cells that appear to control learning. They encode, store, and retrieve information as well as influence all aspects of human behavior (Squire and Kandel, 2000). Neurons act like tiny batteries sending chemical and electrical signals that create processes to integrate and generate information (Jensen, 2005). The threshold for firing at the synapse is determined by the amount of chemicals (called *neurotransmitters*) released onto the receiving neurons (Bloom, Nelson, and Lazerson, 2001). At the synapse, these chemicals either excite the receiving neurons and cause them to fire, or inhibit them from firing, or

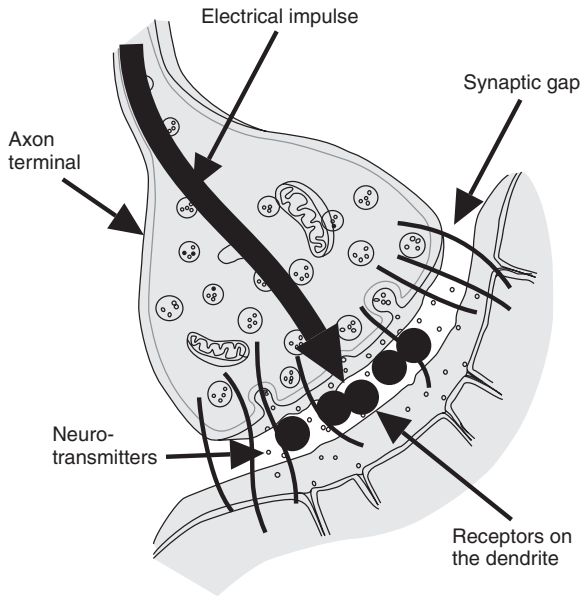

Figure 1.2. The Synapse

Source: Jensen, 2005. Used with permission.

modify their excitability. Examples of common neurotransmitters are dopamine and epinephrine, which are involved in affecting our emotions and mood.

At the most basic level, the extent to which a neuron is active depends on the mass of its dendritic and axonal systems and its overall chemical reactions. The total of all the neurotransmitters arriving from all the dendrites to a neuron's cell body at any moment determines whether it will fire. When we learn something, such as a new word or the name of a new acquaintance, connections containing that information are made between neurons. Through practice and repetition we strengthen the connections and "learn." Neuroscientists have a cliché: "Neurons that fire together wire together." When we learn something, we are building networks of neurons that represent what we are learning. According to Zull (2002, p. 99), "It seems that every fact we know, every idea we understand, and every action we take has the form of a network of neurons in our brain." The brain is constructed so that a smaller unit of knowledge, such as visual recognition of the number 3, is likely to be located in a smaller network of neurons. Small networks are connected with other small and large networks to resemble a forest of neuronal networks with tens of thousands of synaptic connections. Just imagine the possible connections one might have to the number 3! All of these connections are neuronal networks (also called *circuits*) and are apparently dormant before we think of the number 3, but active when we remember it (see Figure 1.3).

From a neuroscientific viewpoint, at the micro level, learning is long-lasting change in existing neuronal networks. When adults learn, they build on or modify networks that have been created through previous learning and experience. These networks are the adult learners' prior knowledge. This is an essential fact that we will return to frequently, both as it pertains to adults' everyday learning and to their cultural perspectives.

An instructor cannot remove the neuronal networks that exist in an adult learner's brain (Zull, 2002). They are a physical entity.

That is why, as instructors, we cannot simply explain something away, especially if it is a deeply held attitude or belief. Literally, another neuronal network has to take the place of the current attitude or belief. That biological development takes repetition, practice, and time. Probably new dendrites must grow and new synaptic connections must form and fire repeatedly. A logical explanation or well-constructed argument usually does not have the biological impact to cause the physical changes in a learner's brain that need to occur for a real alteration in the learner's attitude or belief. If a learner is ready to change a particular belief or attitude, an instructor's explanation may be more persuasive and change can occur. In this case, the learner has developed the neuronal networks through previous learning and experience which need only minimal development or stimulation (our explanation) to

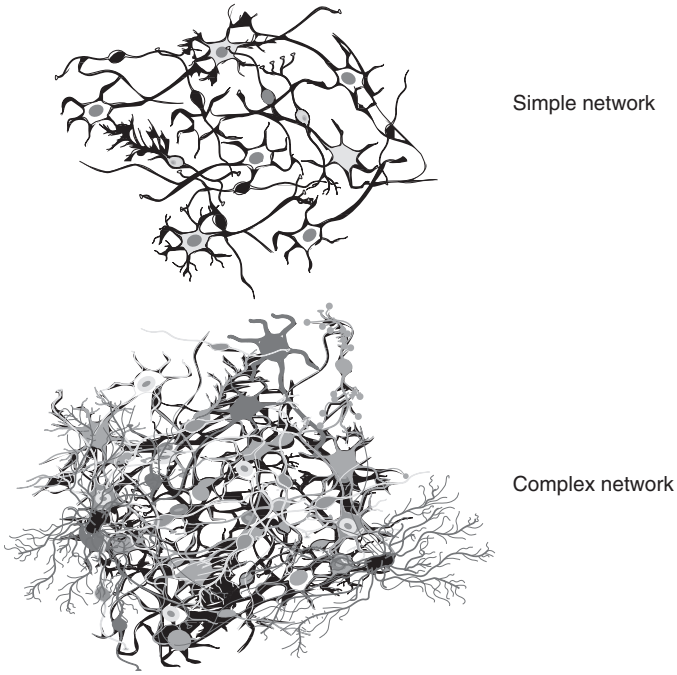

Figure 1.3. Neuronal Networks

Source: Jensen, 2006. Used with permission.

change the attitude or belief. However, in most instances, Robert Mager's aphorism holds true: "Exhortation is used more and accomplishes less than almost any behavior-changing tool known" (1968, p. 39).

New learning may be able to lessen the use of and even replace particular neuronal networks. Neuronal networks do weaken and die with disuse (Zull, 2002). For all learning, the most pragmatic approach to instruction is to find ways to connect and build on learners' prior knowledge, to begin with what they already know and biologically assemble with them the new knowledge or skill by connecting the established networks and the new networks. A biological approach to learning requires us to find out what adult learners understand and can do, to see such information as a foundation and a map for what we design for the instructional process. The road to masterful teaching takes a compassionate route.

Brain Structures

With the development of neuropsychological tools such as positron-emission tomography (PET) and functional magnetic resonance imaging (fMRI), researchers can study which brain activities are regulated by which brain structures. Both of these instruments are based on the principle that the part of the brain that is most active during a task needs the most oxygen (Bloom, Nelson, and Lazerson, 2001). Although these tools can scan the brain and represent areas high in metabolic activity, they are an indirect assessment of brain structures and their relationship to human action. Based largely on these forms of neuroimaging research and neurosurgery, neuroscientists have categorized areas of the brain and nervous system, aligning them with particular aspects of human functioning and behavior. According to this scheme, the cerebral cortex—the outermost layer of the brain, which is responsible for all forms of conscious activity—can be divided into four lobes that each carry out a set of actions (see Figure 1.4).

- *The frontal lobe*. Located in the area of the forehead; often called the executive; enables us to sustain attention, make plans, solve problems, and form judgments.
- *The parietal lobe*. Located at the top back portion of the head; enables us to locate ourselves in space and process sensory functions, such as messages from the skin and muscles related to movement.
- *The temporal lobes*. Located above and around the ears; enable us to hear, speak, and connect visual areas to language areas, enabling us to see or hear what we read.
- *The occipital lobe*. Located at the back of the head; enables us to see and is involved in the process of attaching emotions to memories and dreams.

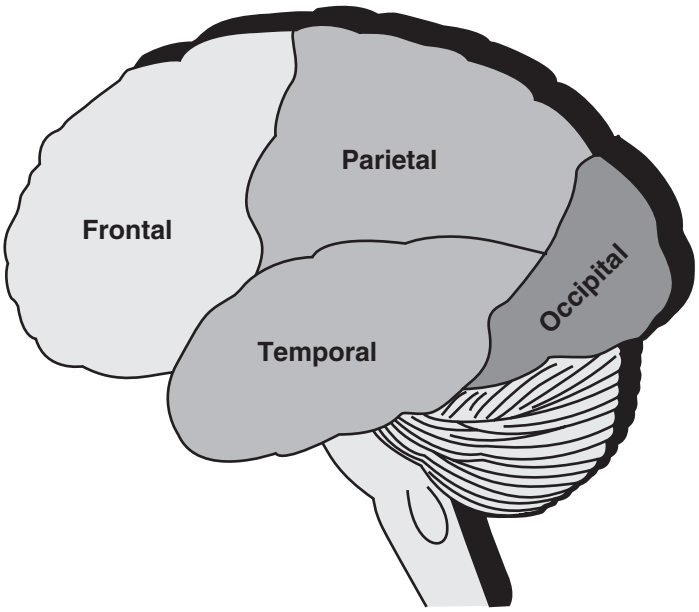

Figure 1.4. Main Areas of the Human Brain

Source: Jensen, 2005. Used with permission.

The middle of the brain, also known as the *limbic system* or *limbic region* (see Figure 1.5), represents about a fifth of the brain, and is extremely important in helping us to feel what we feel about our lives and the world. The limbic system is a group of brain structures that regulate our emotions, those feelings that indicate our motivation about anything. These six are among the most important structures of the limbic system:

- *The amygdala.* A vigilant monitor that gives meaning to human experience on an immediate level. It reacts to experiences before we consciously understand them, especially those that appear threatening or dangerous (LeDoux, 1996). In situations of uncertainty, it primes the brain to be alert and tuned to subtle cues for further possible action (Compton, 2003).

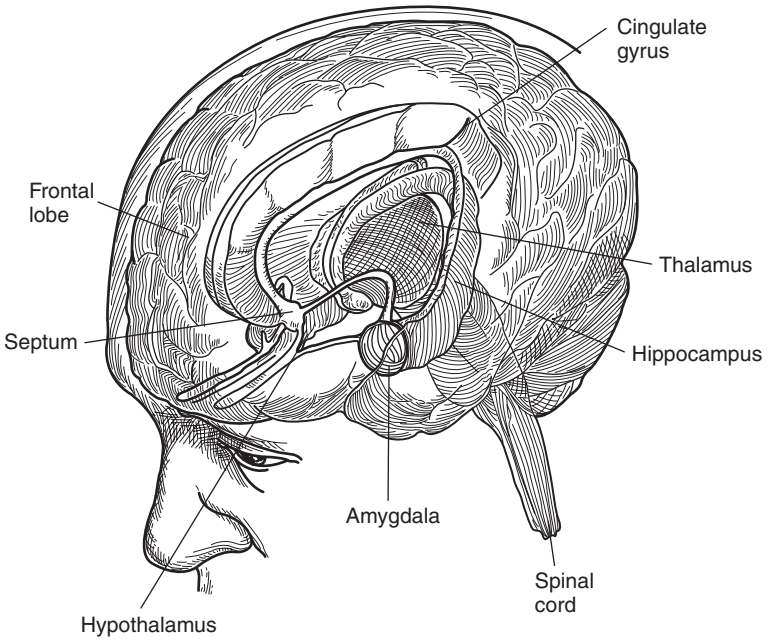

Figure 1.5. The Major Structures Forming the Limbic Region of the Brain

Source: Bloom, Nelson, and Lazerson, 2001. Used with permission.

- *The thalamus*. A relay station for almost all sensory information (Bloom, Nelson, and Lazerson, 2001).
- *The hypothalamus*. Influences and regulates hormone secretion. Because it monitors information from the autonomic nervous system, it affects appetite, sleep, sexuality, and emotions (Bloom, Nelson, and Lazerson, 2001).
- *The hippocampus*. Helps to form long-term explicit (conscious) memories. Although it does not store memories, it integrates new memories with other memories, a function very important to learning (Zull, 2002).
- *The cingulate gyrus*. Encircles the other structures of the limbic system and appears to mediate communication between them and the cerebral cortex (Bloom, Nelson, and Lazerson, 2001).
- *The septum*. Appears to facilitate the release and binding of dopamine, the neurotransmitter primarily involved in creating positive moods and emotions. It plays a role in maintaining and altering motivation (Zull, 2002).

Although identifying these structures of the brain gives us a basic vocabulary for discussing adult learning and motivation, we need to remember that the brain is part of a nervous system that extends to every part of the body. There is strong connectivity within the brain and between the brain and the rest of the nervous system. The brain works so well because its individual structures are so efficiently interdependent.

This broader understanding of the connection between the brain and the central nervous system can lead to some confusion. In conventional usage, the neursoscientific literature does not distinguish between *neuronal networks* and *neural networks*. When

it does make a distinction, neuronal networks are usually discussed in relation to brain functioning, whereas neural networks are more often discussed in relation to the central nervous system, which includes the brain, the spinal cord, and the peripheral nervous system. As I use these two similar terms in this book, I will follow this distinction.

Our current knowledge of the central nervous system is still inadequate to explain with specific certainty how the brain operates. The brain's dynamism also makes it an elusive subject for study. As Jensen writes (2005, p. 11), "Whether you are 2 or 92, your brain is a cauldron of changing chemicals, electrical activity, cell growth, cell death, connectivity, and change." For these reasons we need to use our knowledge of the brain judiciously to discuss learning and motivation. Before we carry out any instructional ideas based on neuroscience, we need to understand how well they are integrated and consistent with our current models, research, and practice in adult education.

A Neuroscientific Perspective of Motivation

Merging a neuroscientific understanding of motivation with current knowledge from psychology and education creates ideas that are richer, more nuanced, more complex, and, fortunately, quite promising. The brain has evolved over millions of years as the major organ for ensuring human survival. In evolutionary terms, the neocortex, the part of the brain fundamental to thinking, analyzing, and planning, is considered young because it has evolved within only the last five to ten million years (Zull, 2002). As human beings, we *want to learn* because learning is our means for survival. Knowing what to fear and what to desire is essential to our future. We use cognition to maintain control and to generally navigate away from fear and toward pleasure.

The brain has an inherent inclination for knowing what it wants. In human terms, that means relevance (Ahissar and others, 1992). We are compelled to pay attention to things that matter to

us. Every moment of our lives is a competition among our senses to perceive what matters most. Our emotions usually tell us this, often before we can reflect upon the situation and especially when we feel threatened. What matters is defined through our cultural perspectives which carry language, values, norms, and perceptual frameworks to interpret the world we live in.

As we experience our world, events that are accompanied by feelings receive preferential processing in the brain (Christianson, 1992). Because they are salient for survival, emotions add importance to our thoughts and experiences. Structures in the brain and their related neurotransmitters convey these emotions to us moment by moment. For example, the neurotransmitter dopamine is usually connected with feelings of pleasure and elation, and norepinephrine seems to induce a state of arousal.

Although emotions capture our attention, we spend most of our waking hours in mind-body states that are made up of sensations (for example, hunger and fatigue), emotions (joy and anger), and thoughts (optimism and concentration) that combine and recombine simultaneously (Damasio, 1999). These mind-body states are made up of millions of neurons in complex web-like signaling systems that represent our behavior. They are quickly shifting neuronal networks that involve multiple structures of the brain. Jensen (2005) draws an apt analogy when he compares their operation to the dynamic atmospheric patterns we call weather. From a neuroscientific perspective, when we are doing something, these mind-body states represent our motivation. We are likely to identify them by the emotion or mood most obvious to us at the moment, such as "I'm getting *bored* with reading this textbook." Although our mind-body state may seem stable as we proceed with a task, in reality it is in a state of flux, diminishing, strengthening, or changing into another state. On the single page of a book or in the span of five minutes in a course, we may go from feeling inspired, to feeling frustrated, to feeling creative, and then inspired again.

The theories of intrinsic motivation fit very well with a neuroscientific understanding of motivation. As defined by Ryan and Deci (2000, p. 16), "intrinsic motivation is entailed whenever people behave for the satisfaction inherent in the behavior itself." For example, people read a novel because they find it inherently interesting. Behavior that people find intrinsically satisfying probably conforms to what their brains are physiologically disposed to want and induces or is compatible with a positive mind-body state.

We know from psychological research that it is part of human nature to be curious, to be active, to make meaning from experience, and to be effective at what we value (Lambert and McCombs, 1998). These are primary sources of motivation that reside in all of us, across all cultures. When adults can see that what they are learning makes sense and is important according to their values and perspective, their motivation emerges. Such circumstances elicit intrinsic motivation and probably facilitate a mind-body state conducive to learning. Intrinsic motivation is evoked; it is a physical energy aroused by an environment that connects with what is culturally relevant to people.

A neuroscientific understanding of intrinsic motivation confirms that we need to create learning environments that access what biologically motivates adults from within. In addition, intrinsic motivation is probably more emotionally salient and varied than it was originally conceived to be. We feel many different emotions while learning, and they may not all be consistently positive. As instructors, we need to pay close attention to the emotions of adult learners and construct with them a learning environment that supports the optimal expression of their emotions in service of their learning. This topic will be addressed throughout this book.

Although Csikszentmihalyi's theory of intrinsic motivation and flow (1997) directly addresses the importance of feedback in learning, a neuroscientific perspective also emphasizes that feedback is essential to the human need for survival. For how the brain operates, this means the feeling of being in control. Feedback

about one's learning and behavior significantly contributes to one's sense of control and is vital to intrinsic motivation and improving learning (Zull, 2002). Extensive coverage of strategies to enhance feedback is found in Chapter Eight.

The Intersection of Cultural Relevance, Intrinsic Motivation, and Neuroscientific Understanding

In 1996, Brookfield emphasized the need for a culturally relevant perspective of adult learning: "The differences of class, culture, ethnicity, personality, cognitive style, learning patterns, life experiences, and gender among adults are far more significant than the fact that they are not children or adolescents" (p. 379). Today, the cultural context is recognized as an essential consideration for defining as well as facilitating adult learning (Merriam, Caffarella, and Baumgartner, 2007). Theories of intrinsic motivation respect the influence of culture on learning. They include the understanding that the learner's perspective, language, values, and ways of knowing must be considered in order to foster adult motivation to learn (Wlodkowski and Ginsberg, 1995). When adults care about what they are learning and know they are becoming more effective at what they value by means of that learning, their intrinsic motivation surfaces like a cork rising through water. The instructor can feel it when the learning environment has stimulated the adults' neurophysiological propensity to provide energy for what matters!

Intrinsic motivation is governed to a large extent by emotions, which in turn are socialized through culture. Emotions influence task engagement, the visible outcome of learner motivation. For example, one person working at a task feels frustrated and stops; a second person working at the task feels joy and continues; and yet another person, with a different set of cultural beliefs, feels frustrated at the task but continues with increased determination. The response to the task—frustration, joy, or determination—may differ across cultures because cultures differ in their definitions

of novelty, hazard, opportunity, and gratification and in their definitions of appropriate responses (Kitayama and Markus, 1994). Thus, a person's response to a learning activity reflects his or her culture.

From this viewpoint, culturally responsive teaching is necessary if we are to teach all adults effectively. Even though the learners' internal logic may not coincide with our own, it is present nonetheless. To be effective we must understand that perspective. Rather than trying to figure out what to "do to" learners, we should "work with" them to elicit their intrinsic motivation. Through relationships and teaching strategies, we access their prior knowledge (existing systems of neuronal networks), as expressed through their cultural perspectives, in order to build bridges between what adult learners know and their new learning. Seeing adults as unique and active, we emphasize communication and respect, realizing that through understanding and sharing our resources we create greater energy for learning. When it is working, excellent teaching and learning is like breathing together.

Emotion, Memory, and Intrinsic Motivation

Research in the neurosciences and the field of intrinsic motivation indicates that emotions are critical to learning. Not only do emotions largely determine what we pay attention to and help us to be aware of our mind-body states, they also affect what we remember. We are much more likely to remember things that engage us emotionally. It appears that the more powerful the feeling that accompanies an experience, the more lasting the memory.

Long-term memory, durable neuronal networks, seems to be strongly affected by emotions. We know now that long-term memory is not a permanent trace or print of a past event. It works dynamically, reassembling feelings and information from our past into our present understanding. For example, during stressful experiences, hormones such as adrenaline and cortisol

are released. They heighten alertness and mobilize parts of the nervous system responsible for movement. They also enhance memory for the experience (LeDoux, 1996; Abercombrie and others, 2003). These hormones are likely to have been present while some of our strongest memories—such as those of births, deaths, and romances—were being made. These chemicals help to create a system of sounds, images, and locations represented by neural networks that are activated and reintegrated among various structures of the brain when they are stimulated by an experience or object such as a question, a person's face, or a particular song (Shimamura, 2002). In the moment, we recall a memory, unaware that thousands of neurons have fired in a particular pattern involving multiple locations in our brain and nervous system.

The biological process of how emotions affect memory is complex and our understanding is incomplete. However, we are reasonably certain that moderate stress and positive emotions such as satisfaction, joy, and feeling creative help us to retain what we are learning and to reassemble what we have learned when we need to recall it (Zull, 2002). Emotions also give texture to events and help us to understand them. Because neurotransmitters such as dopamine that are associated with pleasurable emotions tend to be released in situations of moderate challenge and excitement, we as instructors can create lessons that encourage these emotions and consequently better memory for what is being learned.

In theories of intrinsic motivation, emotions are critical to learning as well. Optimal emotional states for learning, such as flow, have been extensively studied and documented across and within cultures (Csikszentmihalyi and Csikszentmihalyi, 1988). When people are in flow—whether at work, play, or while learning in a course—they feel totally involved, immersed in a seemingly effortless performance, fully alive, and without self-consciousness (Csikszentmihalyi, 1997). Often while being in flow, people report feelings of joy, happiness, creativity, and capability. Emotionally,

intrinsic motivation is not static and does not remain constant during learning or work. Flow is one of the most positive states of intrinsic motivation. During this time we are fully absorbed, emotionally positive, and very focused. In other intrinsically motivating situations we may be less consistently involved, only mildly interested, and, at times, feel a bit worn or fatigued. Emotions are labile, neurophysiologically undergoing chemical and biological change. A mere distraction, such as the noise of construction work outside the classroom, can disrupt our concentration. The processes of reading, writing, listening, and problem solving undulate with varying degrees of stimulation and appeal whatever their source.

My experience as a teacher and a learner is that intrinsic motivation often fluctuates during a learning activity. Overall, I may judge my involvement as intrinsically motivated but with periods when I am bored or disinterested. For an entire learning experience, it might be more accurate to gauge my intrinsic motivation along a scale from mildly intrinsically motivated to deeply intrinsically motivated or in flow. However, such a measure does not register all the possible emotions that I may have felt during the learning activity, such as interest, wonder, and worry. Also, I know from experience that the degree of value that adults have for an activity affects their perception of how motivating that activity is. For example, writing, at times, can be frustrating and tedious. My value for it is obviously strong and there are periods when I seem to be anesthetized from the tedium. But moment to moment, it is my emotions that tell me the degree of my intrinsic motivation for the task at hand. Given the physiology and dynamics of brain functioning, an understanding of intrinsic motivation as a supple phenomenon is fitting. Eventually, intrinsic motivation will probably be more accurately measured by an instrument that has the capacity to measure intensity as a thermometer determines temperature. Beyond brain functioning, this instrument will also need to be sensitive to differing emotional states.

Underserved and Diverse Adult Learners in Postsecondary Education

As a field of study and advocacy, adult education has been a force for increasing adults' access to and success in postsecondary education. Through political action, literacy efforts, and program development, adult educators have contributed to increasing the number of adults who have earned professional certification and degrees in two-year and four-year colleges. Partially but significantly due to these efforts, nearly 40 percent of all college students today are adults 25 years and older (National Center for Education Statistics, 2002). Programs responsive to the needs and development of adult learners abound in industry, business, and college. If current trends continue, more than 50 percent of all adults between 25 and 55 will be involved in some form of adult education by 2010 (Cook and King, 2004).

However, success in higher education for historically underrepresented groups (African Americans, Latinos, and Native Americans) and low-income adults continues to be a serious concern. In 2002, 29 percent of all 25- to 29-year-olds had completed four or more years of college. For whites, the percentage was nearly 36 percent; for African Americans, 18 percent; and for Latinos, slightly less than 9 percent. Although there has been improvement since 1974 for each racial/ethnic group, the improvement parallels the current disproportionate rates of progress. While the Latinos who completed four or more years of college increased 3 percent and African Americans increased 10 percent, whites increased nearly 14 percent during the same period (Mortenson, 2003).

Research indicates that family income is a major factor affecting college graduation. Forty percent of adult undergraduates, roughly 2.5 million people, have annual incomes less than $25,000 (Cook and King, 2004). In 1995–96, among low-income adults who were pursuing either a bachelor's or associate degree, only 7 percent achieved a bachelor's degree and 8 percent an associate's degree

within the next six years. In this same time period, 42 percent of traditional-age students (18- to 24-year-olds) who were pursuing a bachelor's degree accomplished their goal (Cook and King, 2004). The competing demands of family and work as well as educational challenges due to insufficient academic preparation likely combine to lessen the chances of success in college for many low-income adults. With 70 percent of current jobs requiring some form of postsecondary education (Carnevale and Desrochers, 1999), low-income adults are ensnared in low-wage occupations with little prospect of moving themselves or their families out of poverty.

Historically underrepresented groups and low-income adults are underserved students, lacking the accessibility and support, financial as well as academic, to be successful in postsecondary education. This situation is a critical issue for adult educators. In 2002, 50 percent of people living in poverty in the United States were African American or Hispanic (U.S. Department of Labor, 2003). Their economic status is undeniably due to their lack of education beyond high school and their historic underrepresentation in higher education. As adult educators, we have a moral and professional obligation to render postsecondary education accessible and successful for all adults. In my opinion, this mandate applies as well to trainers in business and industry, where educating adults is an enterprise that matches or exceeds postsecondary education in financing and resource allocation.

Improving higher education and making it more equitable is far more than an altruistic venture. The nation needs to remain competitive with skilled and effective workers in a global marketplace (Friedman, 2005). At the time of this writing, we are in the midst of the largest immigration in the history of this country. Between 1991 and 2001 approximately 10.2 million people immigrated to the United States (Constitutional Rights Foundation, 2006). Today, this trend continues. In addition, there is an estimated population of 12 million undocumented workers residing in the United States. Such demographics emphasize the need for adult

educators and trainers to make higher education and advanced training accessible and successful for all adults.

Postsecondary education benefits the United States citizenry as well as the individual. Higher levels of education correlate with higher incomes, better health, and lower levels of mortality (Lleras-Muney, 2002). Education is associated with lower rates of crime, fewer illegitimate births, and less dependency on welfare benefits (Lochner and Moretti, 200l; Wolfe and Zuvekas, 1995). According to the U.S. Department of Education (1998), college-educated adults (85 percent) are more likely to vote than high school graduates (72 percent) and high school dropouts (50 percent). From their review of postsecondary education and employment, Anthony Carnevale and Donna Desrochers conclude (2004, p. 33), "Adults who are not equipped with the levels of knowledge and skill necessary to get, and keep, good jobs are denied full inclusion and tend to drop out of the mainstream culture, polity, and economy."

Among the greatest losses for our society when underserved adult students are not present in our college programs are their cultural perspectives and aesthetics. As microcosms of the broader society, college courses often implicitly and explicitly perpetuate stereotypes and larger systems of inequality—for example, conspicuous consumption without consideration of the common good. Adult students from underrepresented economic backgrounds and ethnic or racial groups can offer ideas, language, examples, and frames of reference that can help majority groups examine ways in which they may unknowingly use dominant beliefs and values that inhibit the welfare of others. For example, individual freedoms may favor the more privileged. And how government monies are allocated is a topic likely to be more informed by adults from different income groups.

In general, diversity as a broad category including race, class, gender, ethnicity, sexual orientation, religion, disability, age, and other significant differences is central to education as preparation

to live and work within a global economy with many different people. In fact, research with traditional-age college students indicates that when they are exposed in their courses to diverse perspectives through interaction with students different from themselves, they develop more complex thinking skills and learn more (Gurin and others, 2002). My personal experience with adult students supports this finding. For a more equitable and effective pluralistic society, we need to learn with diverse adults. For the future, diversity in adult education is an imperative and an opportunity.

Instruction as a Path to Improving Educational Success among All Adults

Efforts to increase the success of adult learners in higher education offer promising policies and insights. They include financial assistance, especially to low-income adults (Cook and King, 2005; Choitz and Widom, 2003); stronger student support services including academic advising, personal counseling, tutoring, and remediation (Purnell and Blank, 2004; Flint and Associates, 1999); a commitment to adult learners with a focus on meeting their needs (Cook and King, 2005; Flint and Associates, 1999); and faculty and instruction responsive to adult learners (Cook and King, 2005; Flint and Associates, 1999; Grubb and Associates, 1999). Many of the studies cited in this paragraph were conducted at community colleges, where the majority of adult learners in postsecondary education are enrolled. However, the largest number of adult learners, approximately 61 million, participate in work-related courses and training (Paulson and Boeke, 2006). Unless specifically referenced to higher education, all instructional methods, principles, and models suggested in this text apply to this population as well.

No single policy, program, or response significantly raises the persistence and degree completion of adult learners (Cook and King, 2005; Flint and Associates, 1999). What is required is a systemwide effort to improve a range of elements from financial

assistance to instruction. Three books and reports that outline, discuss, and offer examples of these elements and how they might be implemented are *Best Practices in Adult Learning: A Self-Evaluation Workbook for Colleges and Universities* (Flint, Zakos, and Frey, 2002), *Improving Lives through Higher Education: Campus Programs and Policies for Low-Income Adults* (Cook and King, 2005), and *Promoting Student Success in Community College and Beyond* (Brock and LeBlanc, 2005).

The focus of this book is on how instructors, teaching, and learning environments can enhance the motivation of all adults to learn. Researchers have found that improvements in instruction can contribute to increased student persistence and success (Grubb and Associates, 1999; Kuh and others, 2005). Their suggestions include more active learning, greater relevance of subject matter to students' lives, and higher levels of student engagement. Best practices for adult learners in postsecondary institutions include the same three suggestions as well as inclusive learning environments, use of the language of learners and their communities, and assessment of learner competence through performance outcomes (Flint, Zakos, and Frey, 2002).

Thus, we can see some convergence between the recommendations from research to improve adult success in college and the literature about best practices for adult learners. This gives us more confidence about what we need to do in the area of instruction to enhance adult learning and motivation. The Motivational Framework for Culturally Responsive Teaching (Wlodkowski and Ginsberg, 1995), which forms the major focus of this book (see Chapter Four), systematically includes these instructional practices as an integral aspect of instructional design and teaching. Factors of this motivational framework have been significantly associated with higher grade point averages (Wlodkowski, Mauldin, and Gahn, 2001) and higher performance (Wlodkowski and Stiller, 2005) among adult learners. This framework can serve as an effective guide for educators and trainers as we plan and carry out our

instruction with adult learners. A strength of this model is that it recognizes that human motivation is inseparable from culture and at the same time understandable as energy resulting from biological processes largely within the brain. This approach to teaching allows for a useful integration of these two important sources of pedagogical knowledge. In the next chapter we will deepen our understanding of motivation to learn as it relates to culture and adult development.