16 HR TEACHING TECHNIQUES AND TEACHING STRATEGIES COURSE

Psychology of learning

Imagine a school where teaching is considered to be a profession rather than a trade. The role of teachers in a student's education -- and in American culture -- has fundamentally changed. Teaching differs from the old "show-and-tell" practices as much as modern medical techniques differ from practices such as applying leeches and bloodletting.

Instruction doesn't consist primarily of lecturing to students who sit in rows at desks, dutifully listening and recording what they hear, but, rather, offers every child a rich, rewarding, and unique learning experience. The educational environment isn't confined to the classroom but, instead, extends into the home and the community and around the world. Information isn't bound primarily in books; it's available everywhere in bits and bytes.

Students aren't consumers of facts. They are active creators of knowledge. Educational center are centers of lifelong learning. And, most important, teaching is recognized as one of the most challenging and respected career choices, absolutely vital to the social, cultural, and economic health of our nation.

Today, the seeds of such a dramatic transformation in education are being planted. Prompted by massive revolutions in knowledge, information technology, and public demand for better learning, schools nationwide are slowly but surely restructuring themselves.

Leading the way are thousands of teachers who are rethinking every part of their jobs -- their relationship with students, colleagues, and the community; the tools and techniques they employ; their rights and responsibilities; the

form and content of curriculum; what standards to set and how to assess whether they are being met; their preparation as teachers and their ongoing professional development; and the very structure of the schools in which they work. In short, teachers are reinventing themselves and their occupation to better serve schools and students.

RELATIONSHIPS AND PRACTICES

Traditionally, teaching was a combination of information-dispensing, and sorting out academically inclined students from others. The underlying model for schools was an education factory in which adults, paid hourly or daily wages, kept like-aged youngsters sitting still for standardized lessons and tests.

Teachers were told what, when, and how to teach. They were required to educate every student in exactly the same way and were not held responsible when many failed to learn. They were expected to teach using the same methods as past generations, and any deviation from traditional practices was discouraged by supervisors or prohibited by myriad education laws and regulations. Thus, many teachers simply stood in front of the class and delivered the same lessons year after year, growing gray and weary of not being allowed to change what they were doing.

Many teachers today, however, are encouraged to adapt and adopt new practices that acknowledge both the art and science of learning. They understand that the essence of education is a close relationship between a knowledgeable, caring adult and a secure, motivated student. They grasp that their most important role is to get to know each student as an individual in order to comprehend his or her unique needs, learning style, social and cultural background, interests, and abilities.

This attention to personal qualities is all the more important as America continues to become the most pluralistic nation on Earth. Teachers have to be committed to relating to students of many cultures, including those young

people who, with traditional teaching, might have dropped out -- or have been forced out -- of the education system.

Their job is to counsel students as they grow and mature in their field -- helping them integrate their social, emotional, and intellectual growth -- so the union of these sometimes separate dimensions yields the abilities to seek, understand, and use knowledge; to make better decisions in their personal lives; and to value contributing to society.

They must be prepared and permitted to intervene at any time and in any way to make sure learning occurs. Rather than see themselves solely as masters of subject matter such as history, math, or science, teachers increasingly understand that they must also inspire a love of learning.

In practice, this new relationship between teachers and students takes the form of a different concept of instruction. Tuning in to how students really learn prompts many teachers to reject teaching that is primarily lecture based in favor of instruction that challenges students to take an active role in learning.

They no longer see their primary role as being the king or queen of the classroom, a benevolent dictator deciding what's best for the powerless underlings in their care. They've found they accomplish more if they adopt the role of educational guides, facilitators, and co-learners.

The most respected teachers have discovered how to make students passionate participants in the instructional process by providing project-based, participatory, educational adventures. They know that in order to get students to truly take responsibility for their own education, the curriculum must relate to their lives, learning activities must engage their natural curiosity, and assessments must measure real accomplishments and be an integral part of learning.

Students work harder when teachers give them a role in determining the form and content of their schooling -- helping them create their own learning plans and deciding the ways in which they will demonstrate that they have, in fact, learned what they agreed to learn.

The day-to-day job of a teacher, rather than broadcasting content, is becoming one of designing and guiding students through engaging learning opportunities. An educator's most important responsibility is to search out and construct meaningful educational experiences that allow students to solve real-world problems and show they have learned the big ideas, powerful skills, and habits of mind and heart that meet agreed-on educational standards. The result is that the abstract, inert knowledge that students used to memorize from dusty textbooks comes alive as they participate in the creation and extension of new knowledge.

TOOLS AND ENVIROMENT

One of the most powerful forces changing teachers' and students' roles in education is new technology. The old model of instruction was predicated on information scarcity. Teachers and their books were information oracles, spreading knowledge to a population with few other ways to get it.

But today's world is awash in information from a multitude of print and electronic sources. The fundamental job of teaching is no longer to distribute facts but to help students learn how to use them by developing their abilities to think critically, solve problems, make informed judgments, and create knowledge that benefits both the students and society. Freed from the responsibility of being primary information providers, teachers have more time to spend working one-on-one or with small groups of students.

Recasting the relationship between students and teachers demands that the structure of school changes as well. Though it is still the norm in many places to isolate teachers in cinderblock rooms with age-graded pupils who rotate through classes every hour throughout a semester -- or every year, in the case of elementary school -- this paradigm is being abandoned in more and more schools that want to give teachers the time, space, and support to do their jobs.

Extended instructional periods and school days, as well as reorganized yearly schedules, are all being tried as ways to avoid chopping learning into often arbitrary chunks based on limited time. Also, rather than inflexibly group students in grades by age, many schools feature mixed-aged classes in which students spend two or more years with the same teachers.

In addition, ability groups, from which those judged less talented can rarely break free, are being challenged by recognition that current standardized tests do not measure many abilities or take into account the different ways people learn best.

One of the most important innovations in instructional organization is team teaching, in which two or more educators share responsibility for a group of students. This means that an individual teacher no longer has to be all things to all students. This approach allows teachers to apply their strengths, interests, skills, and abilities to the greatest effect, knowing that children won't suffer from their weaknesses, because there's someone with a different set of abilities to back them up.

To truly professionalize teaching, we need to further differentiate the roles a teacher might fill. Just as a good law firm has a mix of associates, junior partners, and senior partners, schools should have a greater mix of teachers who have appropriate levels of responsibility based on their abilities and experience levels. Also, just as much of a lawyer's work occurs outside the courtroom, so, too, should we recognize that much of a teacher's work is done outside the classroom?

PROFESSIONAL RESPONSIBILITY

Aside from rethinking their primary responsibility as directors of student learning, teachers are also taking on other roles in schools and in their profession. They are working with colleagues, family members, politicians, academics, community members, employers, and others to set clear and obtainable standards for the knowledge, skills, and values we should expect America's students to acquire. They are participating in day-to-day decision making in schools, working side-by-side to set priorities, and dealing with organizational problems that affect their students' learning.

Many teachers also spend time researching various questions of educational effectiveness that expand the understanding of the dynamics of learning. And more teachers are spending time mentoring new members of their profession, making sure that education school graduates are truly ready for the complex challenges of today's classrooms.

Reinventing the role of teachers inside and outside the classroom can result in significantly better schools and better-educated students. But though the roots of such improvement are taking hold in today's schools, they need continued nurturing to grow and truly transform America's learning landscape. The rest of us -- politicians and parents, superintendents and school board members, employers and education school faculty -- must also be willing to rethink our roles in education to give teachers the support, freedom, and trust they need to do the essential job of educating our children.

A critical teacher role in promoting student learning is increasing student's desire or motivation to learn. To accomplish this task, teachers need to know their students well enough to be able to provide learning experiences that they will find interesting valuable, intrinsically motivating, challenging and rewarding. There is clear support in the research of literature for positive relationship between student's motivation and important variable such as self-esteem, academic achievement and school success. Some educators are critical of motivational factors based upon extrinsic worth. Pleasing others and receiving rewards may result in shot term learning gains but may not prepare students for life long learning. Many educators believe it is equally important to assists students in making the transition from a focus on tangible external rewards to self motivated learning. This means students are making the transition from the extrinsic need to please others and participate in order to obtain a reward to the intrinsic need to obtain knowledge or satisfy an interest. Teachers should emphasize the value of the learning activity and structure that activity in ways to make all students believe they will succeed.
Teachers facilitate the internalization process and the most effectively way to do so is by designing learning activities to promote a positive academic or cognitive self concept. One of the most important teacher roles is to

convince students that they are involved with them in each and every challenge and are in their corner. This requires both organizational and personal strategies that focus on the worth and power of intrinsic motivational and its positive impact on student's academic achievement. It is difficult for students to achieve if they lack the motivation to stay focused during challenging extended tasks.

During the course of this class you will learn the psychology of learning and the basic guideline to critical thinking and advance achievements.

Subliminal Perception. The study of thresholds raises an interesting question. Can stimuli that are below the threshold for perception have any effect on us? Such events are called **subliminal stimuli** because, even though they do activate our receptors, we are not consciously aware of them. For example, if a persuasive message could arouse our unconscious motives, it might stand a better chance of succeeding because we would not consciously try to resist it. This is the premise behind the use of subliminal perception in advertising. Because subliminal are below the level of conscious awareness, they should have a direct effect on unconscious motivation. To accomplish this goal, visual stimuli may be presented so rapidly that we do not consciously perceive them, or tape recordings may be played during sleep. Thus, some researchers believe that both subliminal visual and auditory stimuli may have an effect on our learning and behavior.

Many people would argue that vision is the most important and most highly valued sense. Ask several people which of their sense they would least be willing to lose, and almost all of them would say vision. We fear blindness because we are primarily visual creatures. Why? Our brain has more neurons devoted to vision than to hearing, taste, or smell.
What adjustments would you have to make in your lifestyle if you lost your sight? Compare these changes to the adjustments that would be required if you lost your sense of smell. Given the importance of vision and the ease with which the eyes can be studied, it is not surprising that vision is the sense that has been studied most thoroughly.

LET'S DISCUSS VISION……..

VISION

To appreciate our visual abilities, we need to know two things: what we see and the components of our visual system.

WHAT WE SEE

Vision is a process that involves the reception of electromagnetic waves by visual receptor cells. This kind of energy travels in waves that vary greatly in length. For example, gamma waves are very short, whereas some of the waves involved in broadcasting are miles long (Block & Yuker 1989). We measure **wavelengths**, or the length of waves in nanometers (nm), which are billionths of a meter. The only light waves that humans can detect have wavelengths between approximately 380 nm and 760 nm. This limited range of stimuli (the human eye can see only a small portion of the spectrum) Is called the *visible spectrum.* Different light wavelengths are associated with different colors. For example, we see a wavelength of 425 nm as violet and a wavelength of 650 nm as red. Thus the psychological counterpart of wavelength is *hue* or color.

Amplitude refers to the strength or intensity (brightness) of the light.

Saturation refers to the "trueness" or purity of the colors we perceive. The more saturated a color seems; the more likely you are to be seeing only one wavelength. To understand the concept of saturation we need to distinguish between radiant light and reflected light. With **radiant light,** visible energy is emitted (released) directly by an object. There are only a few sources of radiant energy: the sun, light bulbs, and other hot, energy-releasing objects. If you place a piece of red cellophane in front of a light bulb, you will see a red light because red wavelengths are shown through the red cellophane.

What happens when you simultaneously look at red and green lights? If you add a blue light to the red and green mixture, you will see white. Why? Because the three primary wavelengths are added together and are being sensed at the same time. Adding the three primary wavelengths results in the perception of white (in other words, no specific wavelength is dominant.

With **reflected light,** by contrast energy is reflected by objects. Most of the light waves we receive are not radiant; they are reflected from objects in our environment. In other words, the light waves strike an object and bounce off it; we receive the waves that have bounced off the object. You perceive the colors of grass, a rose, and your sweater as a direct result of the reflection of light from those objects.

ANOTHER WAY WE LEARN IS THROUGH HEARING……..

AUDITION (HEARING)

Next to vision, the sense of hearing, or **audition**, is our most important link to the environment. Just as we see light waves, we hear sound waves. In this section we explore what we hear (the auditory stimulus) and how we hear (the auditory system).

WHAT WE HEAR: THE AUDITORY STIMULUS.

Have you ever stopped to ask, 'What is a sound wave"? To understand audition, we need to answer that question. A *sound wave* is essentially moving air. Objects that vibrate cause air molecules to move, and the movements of these molecules make up sound waves.

Like light waves, sound waves have three distinct characteristics: wavelength (frequency), amplitude (intensity), and purity (also known as *timbre).* Shorter wavelengths occur more frequently; longer wavelengths occur less frequently. Frequency is measured in cycles per second and expressed in **hertz (Hz).** People with longer vocal cords have lower voices (lower-voiced people do not vibrate as rapidly.

As with light waves, the amplitude, or height, of the sound wave affects its intensity. Greater amplitude results in a more intense sound. The volume control on your CD player adjusts the amplitude or intensity of the sound you hear. The amplitude of sound waves is measured in **decibels (db)**. Decibel levels represent the amount of energy producing the pressure of the vibrations we perceive as sound; the greater the pressure, the stronger or more intense the vibration.

Just as we seldom see pure colors, we do not hear only one pure tone at a time. Consider the variety of sounds you hear when you listen to the radio. Then add your roommate talking, traffic noise from the street, and a ringing phone. The purity or *timbre* of a sound wave can be measured, but we do not experience many pure tones in our lifetimes.

Like the visual receptors, the auditory receptors are sensitive to a limited range of sound waves. Basically, we hear sounds with wavelengths between 20 and 20,000 Hz. Even within this "normal" range of hearing, we do not hear all sounds equally well. Our hearing is more acute at 1,000 Hz; greater

intensity (amplitude) is required if we are to hear tones at lower and higher frequencies. Thus to hear all of the low and high frequencies on a CD, we would need to turn the volume up very high.

HOW WE HEAR: THE AUDITORY SYSTEM.

The remarkable range of our auditory ability suggests the presence of an intricate system. The auditory system is divided into three components: the outer ear, the middle ear, and the inner ear.

The outer ear, especially the *pinna*, gathers sound waves and starts them on their way to the auditory receptors. The sound waves are then funneled down the *auditory canal*. Ultimately they strike the *eardrum* and cause it to move. Movement of the eardrum in turn causes the three bones (hammer, anvil, and stirrup) of the middle ear collectively called the **ossicles,** to vibrate. **The *hammer*** (malleus), which is attached to the eardrum, strikes the anvil (incus). The anvil in turn strikes the stirrup (stapes). The stirrup is connected to the **oval window,** which connects the middle ear to the snail shaped cochlea of the inner ear.

When the stirrup causes the oval window to vibrate, fluid located in the cochlea is set in motion. The motion of the fluid produces vibration in the **basilar membrane**. This vibration in turn causes the **organ of Corti,** which rests on it, to rise and fall. When the organ of Corti moves upward, the hair cells that project from it brush against the **tectorial membrane** located above it.

The hair cells are the auditory receptors where transduction occurs. Contact with the tectorial membrane causes them to bend; when they bend, they depolarize. Sufficient depolarization of the auditory receptors cause the neurons that synapse with them to fire. The axons of these neurons come together before they leave the cochlea to form the auditory nerve, which transmits auditory information to higher brain centers. From the cochlea, the auditory nerve travels to the medulla, where some fibers cross to the opposite hemisphere. The remaining fibers do not cross. The next stop is the thalamus. Ultimately the information reaches the temporal lobe of the cortex for processing. At present there are two theories to explain how we hear different tones or pitches. The older **place theory**, proposed by Herman von Helmholtz in 1863, says that hair cells located at different places on the organ of Corti transmit information about different pitches. For example, bending hair cells located near the oval window results in the perception of higher frequencies, whereas bending hair cells farther away results in the perception of lower frequencies. The place theory to be correct, the basilar

membrane has to vibrate in an uneven manner, which is exactly what happens with frequencies above 1,000 Hz. This uneven vibration, known as a *traveling wave*, is caused by the differential thickness of the basilar membrane. The basilar membrane is thinnest near the oval window and becomes progressively thicker.

What about frequencies below 1,000 Hz? Here the **frequency theory** of Ernest Rutherford applies. In 1886, Rutherford suggested that we perceive pitch according to how rapidly the basilar membrane vibrates. The faster the vibration, the higher the pitch, and vice versa. The frequency theory works fine with frequencies up to 100 Hz; typically, however, neurons do not fire more than 100 times per second. How do you get from 100 to 1,000 Hz, where the place theory begins? The *volley principle* (Rose et al., 1967) suggests a likely possibility. According to this view, at frequencies above 100 Hz auditory neurons do not all fire at once; instead they fire in rotation or in volleys. For example, for a 300 Hz tone, one group would fire at 100 Hz, to be followed by a second group that also fired at the next 100 Hz interval, and then by a third group that fired at the next 100 Hz interval. The activation of these three groups of neurons would tell the nervous system that you had heard a tone of 300 Hz. Certainly the ability to discriminate among various pitches is an important attribute. Equally important is our ability to locate sound in space. Think of how confusing our world would be if we could not tell where sounds were coming from. Driving would be a nightmare, we could not tell which people were talking to us unless we saw their lips moving, and it would be impossible to find a lost child by hearing a call for help.

Two mechanisms help us locate the source of a sound. The first is blockage of certain sounds by the head. Because the head partially blocks sound waves coming from the opposite side of the body, those sounds are a bit weaker and are perceived as farther away. For example, if someone on your right side is talking to you, the sounds of his or her speech enter your right ear unblocked. Your head, however, partially blocks these sounds before they enter your left ear. In this way the sounds entering your right ear are a bit stronger than those entering your left ear and you are aware that the person is on your right. Similarly, your pinnas (outer ears) help block sounds coming from directly behind you.

The second mechanism is time delay in neural processing. The brain processes the difference in time when a sound enters one ear and when it enters the other ear to enable you to locate sounds in space. If a sound is presented on your right, it enters your right ear first, and then enters the left ear. Even though the time difference may be only a few milliseconds, it is enough time for your brain to process and help you locate objects in space.

DEFINING LEARNING

Most psychologists define **learning** as a relatively permanent change in behavior or the potential to make a response that occurs as a result of some experience (Hergenhahn &Olson, 2001; Mazur, 1998). This definition distinguishes learned behaviors from those that occur automatically in response to external events, like shivering in a cold wind or sweating when it is hot. By including the concept of experience in the definition of learning, we distinguish between learned behaviors and behaviors that become possible as our physical capabilities develop--- that is, *maturation.* For example, when you were 6 months old it is unlikely that you were able to walk. Around your first birthday (or shortly after), the ability to walk emerged. Did it occur as a result of learning? As we will see, the answer is no. When you were 2 years old, you did not have the strength to lift a 5 pound weight. By the time you were 10, however, lifting 5 pounds was easy. You did not have to learn anything to be able to walk or pick up the 5-pund weight. As a result of the process of maturation, your muscles and nerves had developed to the point that you were able to walk and to lift weight. Let's take a look at this question: why would Linda's improved driving ability in Chicago is considered an example of learning? Unless Linda was very young at the time she began big-city driving, we can rule out maturation as a cause for the change in her behavior.

Likewise, the change in Linda's driving behavior is not an automatic response, like shivering in a cold wind or blinking when a puff of air is directed toward your eyes. Rather, the repeated experience of rush-hour city driving has brought about a change in her behavior.

Psychologists study color vision in animals such as Ruby the elephant. Ruby's painting also provides us with a good example of learning. Initially, the sound of the word "paint" had no meaning, and Ruby made no response to it. After the word was associated (paired) with one of her favorite

activities, Ruby began to squeal when her trainer said "paint". Ruby had learned that this word signaled the opportunity to engage in an enjoyable activity. The elephant's response is an example of a relatively permanent change in behavior that occurs as a result of experience; she has *learned.*

There are three basic types of learning, *classical (or respondent) conditioning and operant (or instrumental) conditioning.* The third basic type of learning, is *observational* learning or modeling. Keep in mind that the word ***conditioning*** refers to the fact that the learner forms an association, usually between a stimulus and a response or between two stimuli.

CLASSICAL CONDITIONING

A psychology class is participating in an unusual demonstration. The instructor passes a can of powdered lemonade mix around the room; Each student puts a spoonful of the powder on a sheet of paper. Once all students have their own lemonade powder, they are instructed to wet one of their fingers. When the instructor says "now," each student puts a small amount of lemonade powder on his or her tongue with the moistened finger. The effect of putting lemonade powder on the tongue is predictable: The mouth puckers, and saliva begins to flow. The instructor has the students repeat this procedure several times during the class period until all the lemonade powder is gone. Before the class period ends, the instructor says "now" without warning. The student's mouths pucker, and saliva flows. What is the purpose of this class demonstration?

This demonstration is an example of *classical conditioning*, which has become so closely associated with the Russian scientist Ivan Pavloc (1849-1936) that it is often called *Pavlovian conditioning.* Pavlov was a physiologist whose work was so well respected that he received a Nobel Prize in Medicine in 1904 for his research on digestion.

Although Pavlov conducted much of his research with dogs, examples of classical conditioning can be found in many human behaviors. **Classical conditioning** is a form of learning that occurs when two stimuli—a neutral stimulus and an unconditioned stimulus—that are "paired" (presented together) become associated with each other. For example, the sight of McDonald's golden arches and the smell and taste of a juicy burger have occurred together, and as a result many people associate the golden arches with tasty fast food.

BASIC ELEMENTS OF CLASSICAL CONDITIONING

We have said that the procedure for establishing classical conditioning is to present two events called *stimuli* so that the pairing of these two events causes a human participant or animal to make an association between them. At the start of conditioning, the first event, which in a laboratory setting may be presentation of a light or a tone, is neutral---that is, not currently associated with the response to be established? What was the neutral stimulus in the lemonade example at the start of this section? Keep reading and you will find out. When this **neutral stimulus (NS)** is presented, the participant may notice that it is there, but it does not cause any particular reaction. By presenting the second event, called an **unconditioned stimulus (UCS),** after the NS however, we transform the NS into a **conditioned stimulus (CS).** The NS becomes a CS because it is repeatedly paired with a UCS. This pairing eventually causes the participant to establish an association between the two events; the CS comes to *predict* the occurrence of the UCS. In the lemonade powder example the work "now" was the NAS it became a CS after it was paired with the lemonade powder.

COGNITIVE AND SOCIAL PERSPECTIVES ON LEARNING

The door to the garages was ajar and Mary became frightened; she was afraid that someone might be trying to rob the house. Trembling, she peeked into the garage to discover that her 3-year old son was in the driver's seat, fiddling with the car key. Suddenly the engine started to run and Mary made a dash to the car to prevent an accident. At a family gathering several weeks after this event, Mary was discussing what had happened; family members seemed quite surprised that a 3-year-old could start the car. One of Mary's cousins, Sally, is a psychology major who had some ideas concerning what happened that day. *How would psychologists explain how this 3-year-old managed to start the car?*

We encountered contingency theory and blocking in our study of classical conditioning. These processes suggest that classical conditioning is not a simple mechanical process; rather, mental activity or thought processes (cognition) are involved to some degree. The relation of cognition to basic learning processes, such as insight learning and latent learning, has been studied for many decades.

THE ROLE OF COGNITION

Two of the most compelling examples of how cognitive factors are involved in learning are: insight learning and latent learning. We will discuss these next. **Insight Learning.** The importance of cognition to operant conditioning can be seen in the process known as insight learning. **Insight learning** is a form of operant conditioning in which we restructure our perceptual stimuli (we see things in a different way), make an instrumental (operant response, and generalize this behavior to other situations. In short, it is not blind, trial-and-error learning that develops gradually but a type of learning that occurs suddenly and relies on cognitive processes. It is the "aha!" experience we have when we suddenly solve a problem.
Research by the Gestalt psychologist Wolfgang Kohler (1927) exemplifies insight learning. Using chimpanzees as his test animals, Kohler gave them the following problem. A bunch of bananas was suspended out of reach of the chimps. To reach the bananas, the chimps had to stack three boxes on top of one another and then put together the pieces of a jointed pole to form a single, longer pole. After several unsuccessful attempts at jumping and trying to reach the bananas, Kohler's star pupil, Sultan, appeared to survey the situation (mentally rearrange the stimulus elements that were present) and solve the problem in the prescribed manner. Kohler believed that Sultan had achieved insight into the correct solution of the problem.

Consider the solution of a particularly difficult math problem. You struggle and struggle to solve the problem, without success. In frustration you set the problem aside and turn to another assignment. All of a sudden you understand what is required to work the math problem successfully; you've had an "aha!" experience. How you perceive the situation has changed; insight has occurred. Once this problem has been solved, you are able to solve others like it. Similarly, one of the authors of this book works on word puzzles; the daily newspaper carries two of them almost every day. Sometimes he struggles to rearrange the mixed up letters to form words, and, some times the answers appear almost instantly. Quite often (especially after he takes a brief break from the puzzle), the answer seems to occur quickly, as insight has been achieved. Thus cognitive processes are important in helping us to adapt to our environment. As we shall see, other organisms---- even rats----- may use cognitive processes as they go about their daily activities.

Latent Learning

Psychologist Edward C. Tolman presented persuasive evidence for the use of cognitive processes in basic learning in his study of maze learning by rats (Tolman & Honzik, 1930). Tolman is associated most often with his study of **latent learning,** which occurs when learning has taken place but is not demonstrated. In one of Tolman's most famous studies, three groups of rats learned a complex maze that had many choices and dead ends. One group of rats was always reinforced with food for successfully completing the maze. These animals gradually made fewer and fewer errors until after 11 days of training, their performance was nearly perfect. A second group was never reinforced; the rats continued to make numerous errors. The third (latent-learning group of animals did not receive reinforcement for the first 10 days of training. On the 11th day, reinforcement was provided. The behavior of these animals on the 12th day is of crucial importance. IF learning occurs in a gradual, trial-and-error manner, the rat's performance on the 12th day should not have differed much from their performance on the 11th day. If, however, the rats used cognitive processes to learn to navigate the maze, they would exhibit dramatic behavior changes. In fact, on the 12th day these rats solved the maze as quickly as the rats that had been continually reinforced. How did these rats learn so quickly? Tolman argued that by wandering through the maze for 10 days before the introduction of reinforcement, these animals had formed a cognitive map of the maze. In other words, they had learned to solve the maze, but this knowledge had remained latent (unused) until reinforcement was introduced on the 11th day. Then, on the 12th day, these rats demonstrated that they knew how to get to the location of the reinforcement. Their latent learning had manifested itself. The implications of this finding are clear: It is possible to learn a behavior, yet that learning is not directly observed.

OBSERVATIONAL LEARNING

As the previous discussion suggests, our behavior and the behavior of other animals is not just mechanically stamped in or out. There is a degree of cognitive activity or processing of information that is involved when we learn. Consider the following example. Imagine that you have given permission for your 6-year-old son and 8-year-old daughter to participate in a psychological experiment at the local university. During the experiment each child watches an adult play with a large inflatable doll that can double as a punching bag. Because the doll's base contains sand, the doll bounces back when it is punched and then is ready for more punches. The adult gives

the doll a merciless beating; then each child is given an opportunity to play with the doll. Control participants, who had not observed the adult model, behaved less aggressively. Because the children made no responses while they were watching, the researchers concluded that simply observing the behavior and reinforcement (or punishment) of another participant could result in learning. (Bandura, 1977). Such learning is termed **observational learning** or modeling. Because the observation of other people is a central factor in this form of learning, this approach is often called social learning theory.

While a great deal of concern has been raised concerning the possible effects of learning violence from television, a more recent concern focuses on video games, which can be highly violent. Researchers Craig Anderson and Karen Dill (2000) found that playing violent games was positively correlated with aggressive behavior and delinquency in children. The cautions we raised concerning correlation evidence. In a second study, the researchers found that exposing a random sample of children to a graphically violent video game had a direct and immediate impact on their aggressive thoughts and behavior. What's more, a review of the literature on the effects of video game violence led researchers (Anderson & Bushman, 2001) to the following conclusions:
The results clearly support the hypothesis that exposure to violent video games poses a public-health threat to children and youth, including college age individuals. Exposure is positively associated with heightened levels of aggression in young adults and children, in experimental and non-experimental designs, and in males and females. Exposure is negatively associated with pro-social behavior.

If you stop to think about it, observational learning is the main way we learn about our culture and its customs and traditions. Let's return to the story that opened this section. Observational learning is most likely how Mary's 3-year-old son learned to start the car. He has most likely observed his mother and father put the key in the ignition and turn it hundreds if not thousands of times.

One key to observational learning appears to be that the participant identifies with the person being observed. If we put ourselves in the other person's place for a moment, we are better able to imagine the effects of the

reinforcer or punisher. This phenomenon is called *vicarious reinforcement or vicarious punishment*.

Observational learning is a widespread phenomenon, it is even found among a number of animals. For example, rats that observed the extinction behavior of other rats subsequently stopped responding more rapidly than rats that did not observe extinction performance (Heyes, Jaldow, & Dawson, 1993). In another experiment, monkeys reared in a laboratory didn't fear snakes. After watching another group of monkeys react fearfully to snakes, however, the non-fearful monkeys developed a pronounced fear of snakes.

Attempts to influence behavior through observational learning occur every day. Turn on the television and you are bombarded with commercials, which are nothing more than a form of observational learning. If you drive this kind of car, wear these clothes, use this brand of perfume, shower with this soap, use this shampoo, and eat this kind of breakfast, you will be rich, famous, powerful, sexy, and so forth, just like models in the commercials. According to the social learning theory proposed by Bandra (1986), for observational learning to be effective, the following conditions must be present:

1. You must pay attention to what the other person is doing and what happens to him or her.
2. You probably will not make the modeled response immediately, so you need to store a memory of the situation you have observed. For example, catchy advertising jungles that run through our heads continuously help us remember a particular commercial and its message.
3. You must be able to repeat or reproduce the behavior you observed. It might be wonderful to dream of owning a Porsche, but most of us will never be able to reproduce the behaviors needed to obtain one, regardless of how often we watch the commercial.
4. Your motivational state must be appropriate to the behavior you have learned through observation. Watching numerous commercials of people drinking a particular soft drink will not normally cause you to purchase one if you are not thirsty.
5. You must pay attention to discriminative stimuli. Sometimes we do not choose the best time and place to imitate someone else's behavior.

For example, it would not be wise for teenagers to model some of their peers' behaviors at the dinner table.

The Brain's Hemispheres and Emotions

Clearly subcortical areas are involved in fear but the entire brain plays a role in emotion. Physicians, clinical neuropsychologists, and family members of people who have suffered brain damage have noted that right hemisphere damage is processing facial expressions or emotionally charged speech. The right hemisphere appears to be specialized for perceiving emotion from facial expressions.

When normal people report negative emotions such as fear or disgust, there is increased activity in their right hemisphere; the left hemisphere is more active during positive emotions such as happiness (Davdson, 1993; Ekman, Davidson & Friesen 1990). The frontal regions of the left and right hemisphere may be specialized for approach and withdrawal processes, respectively (Davidson, 1993).

Lack of Emotion

Although we think all humans share and express emotions some people have difficulty expressing their emotions and understanding the emotions of others. (McDonald & Prkachin, 1990). As a result, these people find it difficult to maintain relationships, and their lack of emotional responsiveness often infuriates their partners. This emotional difficulty, called *alexithymia*, is derived from Latin: a (without), *lex* (word), and *thymia* (feeling). Thus, the word refers to a deficiency characterized by having no words to describe feelings (Linden, Wen, & Paulhus, 1995). People with alexithymia lack self-awareness; they rarely cry, are described as colorless and bland, and are not able to discriminate among different emotions. They are often unaware of what others around them feel. They do not differ from others in the number or type of words used to describe their dreams; however, their dreams are rated as less fantastic. People with alexithymia tend to be men who come from families that provided little positive communication and few models for expressing emotions. Their characteristics tend to be stable across time.

Twin studies indicate that the facets of alexithymia are probably caused by either shared environmental factors or genetic factors; in other words, a clear case has not been made for either environmental or genetic factors (Valera &

Berenbaum, 2001). Although alexithymia is not an officially recognized psychiatric or psychological diagnosis, interest in this condition has grown because it is associated with physical symptoms, drug problems, depression, and stress-related disorders.

THE OPPONENT-PROCESS THEORY. Did you ever wonder why depression may follow a joyous event or why guilt follows on the heels of careless abandon or why satisfaction occurs after completing a nagging job? Richard Solomon's (1980, 1982) **opponent-process theory** states that once a particular emotional reaction has been activated, the brain tries to achieve homeostasis by initiating the opposite reaction. For example, if the initial emotional state is pleasant, the second emotional state is unpleasant. To simplify the discussion, the first emotion is called the "A process" and the second, or opposing, emotion the "B process". The following example illustrates these processes.

"There is no way that someone could convince me to sky-dive!" Those were your thoughts before your friend persuaded you to try it. The fear you felt just before and during that first jump was almost unbearable (A process). Once you were safely on the ground, the feelings of fear were replaced by elation (B process). Perhaps the experience was not so bad. A dozen jumps later, the intense fear has been replaced by mild anxiety, and the elation you experience after the jump has increased dramatically. What can we learn about emotion from this sequence?

The opponent-process theory makes two interesting predictions concerning the effects of repeated emotional experiences. The A process should decrease in strength, and the B process should increase in strength. The more sky dives you make, the less terrified you should be, and the more you should enjoy the experience.

These effects, once again, show the importance of the brain and the entire nervous system in understanding emotional responses.

NONVERBAL COMMUNICATION

Imaging spending an hour among people who speak another language. You might be surprised that you can learn a lot about people even if you do not speak their language. You would find it almost impossible not to communicate. For example, your quizzical facial expressions, eye contact,

personal space, and touching rather than words, we are using **nonverbal communication.**
Tone of voice and posture can convey information that is different from what we verbalize. Someone who claims to be fine but is sobbing is viewed differently from when he or she is smiling. Consider the word *no*. It can be simple, unemotional response to a question. If it is uttered while you are stomping your foot and pounding the table, however, the meaning becomes "Absolutely not!" Add a rising inflection, and it is converted into a question. A crooked smile and a slight hand wave alters the meaning to disbelief.

BODY LANGUAGE. In addition to facial expressions, we communicate messages about our feelings through gaze, gestures, posture, and gait. The following examples can convey emotion: the "high five," handshakes, and putting a hand on a person's shoulder. We will briefly discuss several types of body language: emblems, illustrators, regulators, and adaptors.

Emblems are nonverbal gestures and movements that have well-understood definition. We use emblems intentionally to communicate a specific meaning. Nod your head and most people know you mean "yes". There is general agreement on emblems for "I warn you" and "it's cold". Ask a restaurant server in southern Italy for something not on the menu and the likely response is not a side-to-side head shake but a quick upward head toss often accompanied by a "tsskk" sound. Winston Churchill, prime minister of Great Britain during World War II, used the "V for victory" (palm forward). Change the gesture to the palm-back position, and it becomes a gross insult. *Illustrators* are nonverbal gestures or movements made while speaking that accent or emphasize words. Unlike emblems, however, they do not communicate specific meanings. Illustrators such as waving your arms or pounding a table may enhance your words, but they do not stand alone. Illustrators clarify verbal statements or a position by drawing a picture or pointing. They also communicate intensity of emotion: Active gestures indicate strong intensity, whereas gestures such as shrugging indicate weak emotional involvement. *Regulators* are actions such as eye contact and head nods that coordinate the flow of communication among two or more people. They are used to begin conversations and to signal when a listener is ready to speak and a speaker is ready to listen. The most common regulator for initiating an interaction is the handshake. *Adaptors (or manipulators)* are movements or objects manipulated for a purpose; we use these when we find

ourselves in a particular mood or situation. They include what we do with our bodies (scratching, grooming) or with objects (doodling, fiddling with a pencil or pen). Adaptors have no specific meaning, although they generally increase when people become uncomfortable.

PARALANGUAGE

A great deal of nonverbal communication occurs by way of vocal expression such as tone of voice, rate of speech, pauses, sighs, loudness, emphasis, and even silence. Silence, for example, frequently accompanies sadness, shame, guilt, fear, and disgust. **Paralanguage** involves communication above and beyond the specific spoken words. “It is not what you say, it is how you say it. And the *how* is conveyed by paralanguage”. Emotions are often associated with shifts in tone of voice. The frequency of vocalizations increases in many emotions. Although emotions presented at similar levels arousal (intensity) cannot be distinguished from one another, utterances associated with various emotions are usually presented at different intensity levels. These differences allow us to recognize different emotions from the voice alone at better than chance levels. Sadness and anger are the easiest emotions to recognize, followed by fear.

GENDER EFFECTS

A frequently asked question about emotion is, Do men and women differ in their emotional reactions or their ability to detect (decode) emotions in others? One approach to answering this question involves use of the *Interpersonal perception Test* (IPT), which consists of 30 brief videotaped scenes used to evaluate and teach about forms of communication. For example, one scene shows a man telling two versions of his life: a true version and a fabricated one. Viewers are asked to determine which version is the lie and which is the truth. Across ages, cultures, and stimulus persons, women are more accurate than men in decoding emotion from nonverbal cues offered by the face, body, and voice. Objective observations support the common stereotype that compared with men; women exhibit a greater degree of facial expressivity of positive and negative emotions except anger.

In one study, researchers asked men and women to generate verbal descriptions of their anticipated feelings and those of another person for each of 20 scenarios. The responses were scored for the degree to which discrete emotion terms were used in describing self and others. "Women displayed more emotional awareness than did men… women used emotion language to represent their own and others' emotional experience with more differentiation and complexity". What's more, the results were not due to any difference in verbal ability between men and women.
One possible explanation for these differences is that women are expected to be nurturing and are often the primary caregivers in the family and workplace.
These roles and occupations require sensitivity to others' needs and emotional expressions; men's typical roles are less likely to emphasize emotional responsiveness. There are also differences in infancy and preschool years: a greater variety of emotions are displayed to, and discussed with, infant and preschool girls than boys.

Researchers have also examined facial muscle differences in men and women exposed to slides of positive and negative stimuli. Women exhibit a higher level of facial muscle movement than men, which suggest that the self-reports on emotional responsiveness are accurate. These differences occurred when the participants were given no clear instructions concerning the appropriate emotional response; thus participants probably relied on their knowledge of the typical roles that men and women engage in. When participants were given instructions that associated either an increase or a decrease in emotional responsiveness with psychological adjustment, there were no differences between men and women.

Neuroscientists have also investigated possible differences between men and women in judging emotions from facial expressions. Volunteers judge whether the face of a man or a woman showed happiness or sadness. When judging facial expressions of happiness, men and women were almost infallible. The results were different however, when they judged sad faces. Women correctly identified a sad face 90% of the time whether presented by a man or a woman; in contrast men recognized sadness on the faces of men 90% of the time (same as the women) but were only 70% correct when judging sadness on women's faces. The findings make sense in evolutionary

terms; men would need to be especially vigilant about men's faces, lest they miss early hints that they were about to be attacked.

HUMAN MEMORY

INITIAL STUDIES

The scientific study of human memory is almost as old as scientific psychology itself. The pioneer in this area was Hermann Ebbinghaus, a patient and thorough German psychologist who conducted his studies of memory in the late 1800s and early 1900s. Ebbinghaus asked questions such as "What conditions are favorable (or unfavorable) for linking or associating the words, sounds, and visual stimuli that make up our store of learned knowledge?"

Because everyday words already have meanings and associations attached to them, Ebbinghaus decided not to use them as stimuli in his experiments. Instead, he invented special stimuli that he called *nonsense syllables.*

Nonsense syllables are usually composed of three letters arranged in a consonant-vowel-consonant sequence. Fo example, *gok, taf, ceb, and tup* are nonsense syllables. Because nonsense syllables were supposed to have no meaning, Ebbinghause believed that he would be able to study how associations between these stimuli are formed without any other factors, such as previous learning, complicating the results.

Armed with these stimuli, Ebbinghaus began his studies with only one research participant: himself. In most instances the task consisted of memorizing lists of nonsense syllables. Before you start questioning the importance of studying how one learns a sequence of nonsense syllables, think about all the lists or sequences that we learn. As grade school children we learn the alphabet, the names of the presidents, and the multiplication tables. As we grow up, we learn telephone numbers, zip codes, addresses, and lock combinations. Ebbinghaus's studies of lists were actually quite relevant.

MEASURING MEMORY

PSYCHOLOGICAL DETECTIVE

Ebbinghaus's next step was to devise a way to measure memory. Now, if someone says that all you have to do to measure memory is to ask a participant what he or she has learned, you might be skeptical. Measuring memory is more complicated than that. Before you read further, write down some ideas about how you might measure memory when a participant is

learning a list of nonsense syllables. Be sure to identify the specific response you are measuring.

Ebbinghaus's method for measuring learning of lists of nonsense syllables was called **serial learning** (also known as ordered recall). As a participant, you would be asked to repeat the material in the *order* in which it had been presented. This technique shows whether you have mastered the correct sequence. For example, if you dial or key in 343-7355 on the telephone instead of 343-3755 (the number that was supposed to be learned), serial learning is not perfect. A second method, **paired-associate learning,** was developed by another early German memory researcher, George Elias Muller, a few years after Ebbinghaus began his work. In this task you associate an unfamiliar word of nonsense syllables with a familiar word.

This technique is often used to learn the vocabulary for a foreign language—remember the flash cards you used to learn Spanish or French? The test consists of presenting the familiar word and then producing the foreign word associated with it.

A third method of measuring is **free recall**. Here the task is to remember as many items as possible, regardless of their sequence. Naming the major parts of a neuron or the components of classical conditioning are examples of free recall. Free recall is now the preferred method of measuring learning.

THE CURVE OF FORGETTING

An important finding of Ebbinghaus's research is the *curve of forgetting.* Ebbinghaus found that our memory for learned material is best right after the learning session. As time passes, we forget more and more. This basic finding has been replicated (reproduced) numerous times since Ebbinghaus discovered it. Jenkins and Dallenback (1924) found that participants recalled the most when they were tested immediately after learning. The participants learned a list of 10 nonsense syllables and then were asked to recall the list ½ hour, and 2,4 and 8 hours later. One-half hour after the initial training session, the participants were able to recall only half of the list; their performance continued to deteriorate with the passage of time. The importance of these results s clear: You can expect your best recall shortly after a learning session. This is why students cram for a test as close to the time of the test as possible.

RECOGNITION AND RELEARNING

Researchers have developed two additional procedures for measuring memory, the recognition test and the relearning test, to supplement the three methods just described. In the **recognition test,** participants pick out the items to which they were previously exposed from a longer list that also contains unfamiliar items. This type of memory task is involved in taking a multiple-choice test.

How good is our memory for faces after a long interval of time? The results of a research project indicate that our ability to remember faces for a long time is quite good. The researchers asked participants to match current photographs of former high school classmates with photos taken approximately 25 years earlier. Those individuals did much better at matching photos than a group of participants who had not gone to high school with the people in the photos.

A **relearning test** is exactly what the term implies. After the passage of a certain amount of time (called a *retention interval),* the original material is learned again. For example, you might study a list of 15 nonsense syllables on Monday afternoon. You study the list until you can repeat it three times without an error; this level of performance, your *performance criterion,* is established by the researcher. One week later you study the same list. The researcher calculates the amount of time, or number of trials, it takes to relearn the material so that you can match your performance criterion; and the two scores are compared. If learning occurred more rapidly the second time you studied the list, this difference is reported as a **savings score** (or relaxing score). A good example of relearning is studying for a comprehensive final exam. Chances are good that, with the right concentration, it will take you less time and effort to relearn the material.

Although the work of Ebbinhaus and other early psychologists provided a basic understanding of human learning and memory, much more has been discovered since then. Today few psychologists study how people learn lists of nonsense syllables; they are more interested in examining the processes by which memories are formed, stored, retrieved, and used. This shift in interest occurred because most psychologists abandoned the mechanical, association-based model of memory in which items were simply linked to other items. A new view of the mind began to emerge---one suggesting that the mind is an active agent with many other organizational properties. This

developing view prompted different questions. How do we store items in memory? Once memories are stored, how do we retrieve them?

HUMAN MEMORY AS AN INFORMATION PROCESSING SYSTEM

Like the computer, researchers have characterized human memory as an information processing system that has three separate stages: an *input or encoding stage*, a *storage stage, and a retrieval stage*, during which an already-stored memory is called into consciousness. Let's take a closer look at each of these stages.

ENCODING

In the **encoding** stage, sensory information is received and coded, or transformed into neural impulses that can be processed further or stored for later use. Just as the computer changes keyboard entries into usable electronic symbols that may be stored on a computer disk, sensory information is used and stored by the brain.

In addition to transduction, a great deal of the encoding process appears to be devoted to rehearsing (practicing or repeating) the input, organizing it into groups, and relating the groups to already stored information. Encoding may even involve giving this information a special name or label.
Suppose that as you drive to school, you listen to a new song on the radio. The sounds are transduced into neural impulses, which are then recognized as making up a song. You remember hearing similar songs and classify the one you are listening to as belonging to that group for example "smooth jazz" or "oldie." This procedure is very much like installing a computer program; information is encoded in the central processing unit, and the user gives it a name and file path that helps relate it to similar programs.

STORAGE.

The second stage of memory processing is **storage**. Like the computer program, the encoded information must be stored in the memory system if we plan to retain it for any length of time or use it more than once. Although some bits of information are stored briefly, used only once, and then discarded, others, like certain telephone numbers, are used frequently and are therefore stored on a more permanent basis.

RETRIEVAL

Once a computer program has been named and stored, we can "call it up " by its name and use it again. Human memory works in much the same way. When we recall or bring a memory into consciousness, we have retrieved it. This recall process is known as memory **retrieval.**

We do not store information in memory randomly. The information is organized and related to already stored information in ways that allow us to use certain cues to retrieve it.

THE STAGES-OF-MEMORY MODEL

The rest of this section describes the three types of memory and the ways they are used in our daily lives.

SENSORY MEMORY

As the name implies, **sensory memory** is a memory or storage of sensory events such as sights, sounds, and tastes, with no further processing or interpretation. Because sensory memory provides us with a fleeting image of the stimuli present at a particular moment, it has the potential to be huge. Because many stimuli are received all the time, sensory memory appears to last only briefly, about 0.5 of a second to 1.0second, depending on which sensory system is involved.

Sensory information that is not selected for further processing by higher brain centers decays and is replaced by incoming stimuli. Stimuli that we attend to are those that are selected from sensory memory for further processing; other stimuli are lost.

After a moment's reflection, you might ask, "If sensory memories last such a short time, how can you demonstrate that they really exist?" In a compelling set of experiments on this topic, researchers presented a display of 12 letters to participants. The pattern might look like this:

D	C	R	M
Y	N	S	V
I	E	G	Z

In the original experiments, the entire pattern was flashed for 1/20 of a second. The participants then recalled and wrote down as many letters as possible. Typically they were able o identify only 4 or 5 of 12 letters. That does not seem like good evidence for any kind of memory! Some changes made in later experiments, however, produced dramatic improvement. One modification involved assigning a different audible tone to each row of the stimulus pattern: a high tone to the top row, a medium tone to the middle row, and a low tone to the bottom row. As before, the entire pattern was

flashed for 1/20 of a second. Immediately afterward, one of the three tones was sounded, and the participants were asked to write down the letters in the row designated by the tone.
Imagine you are a participant in such an experiment. The pattern of letters has just been presented. Now you hear the medium tone, so you write down as many of the letters from the middle row as you can remember. How many letters do you think you will remember?
Sperling found that when tones accompanied the presentation of the letters, participants correctly identified three or four letters in a row, regardless of which row was signaled. Clearly, much more information was potentially available in memory than the original experiments had indicated. Because they did not know in advance which row would be signaled, the participants had to have a memory of all the letters when one of the tones was sounded. Timing is important, however; when the tone was sounded a second after the letters were presented, the participants could remember only one or two letters in the designated row. Thus a significant amount of information is list from sensory memory very quickly after the stimuli are presented.

The amount of information lost from sensory memory is not a fixed quantity. Rather, it depends on the amount of processing effort that is expended in the next stage of memory. We can either process a few items very thoroughly and lose a great deal from sensory memory, or we can process a larger number of items less thoroughly and retain more from sensory memory.

Because it is important and easy to study, we have been talking exclusively about visual sensory memory. Do we have brief sensory memories for our other senses? Although not much research has been done on this topic, the answer appears to be yes.
Psychologist Ulrich Neisser (1967) proposed the existence of an auditory sensory memory. His proposal was supported by a study in which participants heard simultaneous lists of letters from three loudspeakers in different locations. If the students tried to report the letters from all three loudspeakers, they did poorly; if they were asked to repeat the letters from a specific speaker immediately after the list was read, they did much better. If a delay was imposed, their performance decreased noticeably. These results are very similar to those Sperling reported for visual stimuli. You can also experience auditory sensory memory. Hit your hands against the top of your

desk. Do you still hear the sound for a brief instant after you have stopped? This sound is an *auditory sensory memory*.

Consider the following situation. Jim is sitting in class but is not really paying attention to the lecture. His mind is on the movie he is planning to see that evening. Without realizing it, he is rubbing one hand along the edge of the desk. After rubbing his hand on the desk several times, Jim becomes aware of his behavior. Each time his hand leaves the desk, he is sure he is still feeling the sensation. What causes the sensation that Jim experiences after he rubs his hand along the edge of the desk?

Sensory memory appears to be involved in the sensation Jim is experiencing. Try it yourself. Rub your hand quickly along the edge of your desk or a table--- heel first, fingertips last. For a brief instant after your hand leaves the desk, you will have the sensation that you are still touching it. You have just experienced an example of tactile *(touch) sensory memory*.

According to the stages-of-memory model, what happens to the information that is selected from sensory memory and not lost? To answer this question we need to continue our exploration of the various types of memory.

SHORT-TERM MEMORY

Once information has been attended to or selected from sensory memory, it is transferred to our conscious awareness. According to the stages-of-memory view, information must be processed in **short-term-memory (STM)** before it can be transferred to more permanent storage in long-term memory. What is this STM? As the name implies, STM lasts for only a short period perhaps several seconds. Although researchers have not determined exactly how long such memories endure, it appears that items are lost from STM in 10 to 20 seconds.

For example, research in which participants recalled a three-letter stimulus found that recall fell from 90% correct immediately after presentation of the stimulus to 10% correct after 18 seconds. Why? Two processes appear to be at work: (1) Unless memories are practiced or rehearsed, they become weaker and fade away; and (2) to make room for new, incoming information, some for the memories STM are pushed out or displaced. In the Brown and Peterson and Peterson studies, the participants counted backward by threes to prevent practice after learning the three-letter stimulus. Their results indicated that much of this displaced information is simply lost, but some is transferred to long-term memory.

PSYCHOLOGICAL DETECTIVE

Study the following phone numbers for 15 seconds:
316-343-5800
401-246-4531
912-692-3423
Now write them on a piece of paper without looking at this page. You probably found this task difficult. You would be able to handle two phone numbers better Why?

Exercises like this one, coupled with extensive research, prompted psychologist George Miller (1956) to propose that we can hold approximately seven items (plus or minus two) in STM at any one time. After a moment's reflection you might be sure that this 7+/2 proposal is incorrect. When we remember two telephone numbers, we are dealing with more than nine items (7+/2). That would be true if you counted each digit separately. Phone numbers, however are broken up by dashes. The result is that we are actually dealing with two groups of numbers (343,5800) rather than with a series of individual numbers (3,4,3,5,8,0,0). When the area code is added (316-343-5800), there still are only three groups of numbers. Say your own phone number aloud. Did you hear the pauses? Those pauses separate the *chunks*, or clusters of information. With two phone numbers, each having an area code, you have only six chunks to remember.

What Miller demonstrated with the principle of grouping or chunking is that although STM may be limited to five to nine items (7+/2) each of those items may consist of a chunk or group of items. In this way the capacity of STM can be increased significantly.

PSYCHOLOGICAL DETECTIVE

What would you do it you wanted to remember the following list? Study it for 15 seconds; then close your book and write down as many of the items as possible.

Telephone	Ford	Pine
Poplar	Fax	Chevrolet
Oak	compact disk	walnut
Buick	Mazda	Television
Cedar	mail	audiocassette

There are 15 items in this list, considerably more than the magic number 7+/-2. Hence it will be difficult for you to remember each word by itself. If, however, you set up three categories (trees, automobiles, and communication devices) and put each item into the appropriate category, you should have no trouble remembering all 15 items.

The original concept of STM posed a major problem: It was too short. Although 10 or 20 seconds was sufficient to input and store new information, it did not allow time for the processing of this information. It appears that the initial 10-to 20-second STM period often leads to a second phase, **working memory,** during which attention and conscious effort are brought to bear on the material at hand. For example, let's say you are listening to a lecture in which your instructor makes an interesting but complicated point. While you hold the sentence in STM, you retrieve word meanings from *ling-term memory*. Then, in light of what you already know (retrieval from long-term memory), you use working memory to make sense of this new sentence you've just heard.

Working memory seems to be an intermediate processing stage between STM and long-term memory. Research, using several of the brain-imaging, has begun to isolate the portions of the brain that are active when we are using working memory. For example, Smith (2000) indicates "that human spatial working memory is partly mediated by regions in the parietal and prefrontal cortex". Future research using brain imaging techniques will define these and other brain regions involved in working memory more precisely.

LONG-TERM MEMORY

What would your interactions with your environment be like if STM was the only type of memory you had? Because you lacked any capacity for permanent memory storage, you would have to learn the same things over and over again. It is critical to be able to transfer information from STM to more permanent storage in **long term memory (LTM).** The stages-of-memory model stresses the importance of rehearsal or practice in this transfer. Items that are rehearsed seem more likely to be transferred than unrehearsed items. For example, you will remember your friend's new telephone number better if you repeat (rehearse) it several times rather than repeating it just once.

There are different types of rehearsal; some types aid in transferring information to LTM, and others do not. One researcher conducted a series of studies of a phenomenon know as *directed forgetting*. In these experiments two groups of participants were asked to learn several lists of items, such as nonsense syllables or telephone numbers. Both groups were given the same amount of time to rehearse each list after it was presented. A retention test was given before presentation of the next list. Before beginning the experiment, one group was told to forget all the items from a given list immediately after the retention test. The second group was told to remember all the lists. A typical directed-forgetting experiment.

Although no differences were found between the groups in retention of individual lists of nonsense syllables, large differences were apparent on a retention test given after all the lists had been presented. The participants who had been directed to forget did much worse than those who had been directed to remember. These differences appear to be caused by different types of rehearsal.

Two types of rehearsal maintenance and elaborative have been studied. We use **maintenance rehearsal** when we want to save or maintain a memory for a short period. Examples of maintenance rehearsal include the telephone number for the pizza restaurant you have just looked up or the material you tried to cram for a test. Maintenance rehearsal ensures that the memory until it has been used and is then discarded; research participants who are directed to forget a list as soon as they have learned and repeated it use this type of rehearsal. Participants who are instructed to remember a list use **elaborative rehearsal,** which adds meaning to material that we want to remember. For example, you increase your chances of remembering someone's name if

meaningful elements are presented when you are introduced. Where does the person work or live? What are his or her hobbies? An introduction such as "I would like you to meet my friend Jason Downey. Jason works as the chief parole officer for the state. He is an avid sky diver" provides several elements that are useful to memory. Earlier we saw that the more meaningful material is, the better it is learned. Elaborative rehearsal is an example of this process at work; it results in a more permanent memory and promotes the transfer of information to LTM. Unlike STM, LTM has a very large, if not unlimited, capacity.

Forgetting. Once a memory has been transferred from STM to LTM, it is supposed to be there on a permanent basis. If that is true, why do we forge? Some memory loss may be due to the fading or *decay* of memories, but much loss appears to be caused by *interference.* Old memories that are already stored may be recalled instead of the specific memory we are seeking. This effect is called **proactive interference**. Proactive interference occurs when old information hinders our memory of the new information. When you move to a new house or apartment, you have a new address and telephone number. How often do you find yourself using the old address or phone number? Sometimes this problem lasts for years. Another example of proactive interference can be seen every January, when millions of people continue to write the previous year on their bank checks.

Similarly, information that was learned *after* the material we want to remember may hinder the recall of the earlier learned material. This process is called **retroactive interference,** sometimes it is important to remember old addresses and phone numbers, but try as we might, new addresses and phone numbers are the only ones that come to mind. The other information may be stored in LTM, but we simply cannot retrieve it.

What happens when we retrieve a memory from LTM? When a memory is recalled from LTM and enters consciousness, it is placed directly into STM. There it may be combined with new information that has been received, creating a new memory. If this new memory is properly rehearsed, it may be transferred to LTM for more permanent storage.

PROBLEM SOLVING

Every day we encounter a variety of minor problems; occasionally we face major ones. You may find that the wheels of your car spin on the ice, a zipper on your luggage breaks as you wait to board a flight, or your

computer crashes at the most inconvenient time. Some problems are easy to solve, others require great effort, and some may be unsolvable.

The problems we must solve can differ along several dimensions; some are well defined and others are ill defined. Well-defined problems have three specified characteristics: a clearly specified beginning state (he starting point), a set of clearly specified tools or techniques for finding the solution (the needed operations), and a clearly specified solution state (the final product). A well-defined problem might take the form of "How should I program my word processor to fit a 500-word essay on two pages?"

Here's another example of a well-defined problem. A certain psychologist (with little training in mechanics) took his riding lawnmower to a repair shop for a spring adjustment. The mechanic got the mower running but said the battery might be going bad. The battery was then replaced. When the psychologist tried to start the mower, however, nothing happened (starting point). He reasoned that because it was unlikely that the new battery was bad, the problem must be elsewhere. Because the motor would not turn over at all, the psychologist deduced that the new battery was not properly connected. Once the battery's connecting cables were tightened (needed operations), this well-defined problem was solved and the lawnmower started (final product).

On the other hand, ill-defined problems have a degree of uncertainty about the starting point, needed operations, and final product. An ill-defined question might take the form of "How can I write the type of paper that will earn a grade of A?"

Problem solving methods.

When you recognize that a problem exists, you can search your memory to determine if you have faced a similar problem in the past; if so, you can retrieve the solution from memory and apply it to the current problem. If the problem is new and there is now solution in long-term memory, you can use several strategies to attack the problem. High-speed computers have provided scientists with a model that can be used to understand human thinking.

To use the computer as a model of human thought, however, researchers need to know what human beings do when they solve problems. Two general approaches to solving problems can be programmed into a computer: algorithms and heuristics.

Algorithms. One strategy you could use to solve some problems guarantees a correct solution in time (provided that a solution exists). An **algorithm** is a systematic procedure or specified set of steps for solving a problem, which may involve evaluating all possible solutions. This approach guarantees a solution, if there is one. One example of an algorithm is the mathematical formula used to determine the enclosed by a rectangle: Length multiplied by width gives the answer.

PSYCHOLOGICAL DETECTIVE

Here is an opportunity for you to solve a problem that could involve use of an algorithm. An *anagram* is a collection of letters that can be rearranged to form one or more words. Consider the following anagram:

O E V S L

How would you go about finding the word? As you try to solve this problem, pay attention to exactly what you do.

Finding the solution to our anagram problem is a bit more complicated than using the formula for the area of a rectangle. Before you start writing all the possible arrangements of the five letters, not that they can be arranged in 120 different ways. Of course, not all such arrangements are words and few of them are even remotely similar to real words.

Algorithms tell us exactly what to do to reach a solution, but they can be time consuming. If you spent 1 second on each combination of five letters, you could spend 2 minutes solving this simple anagram. Because most people solve the anagram in considerable less than 2 minutes, they probably use a method other than an algorithm. (The possible answers to the anagram are *solve, loves, an voles).*

Algorithms do not provide answers when the problems are not clearly specified. No procedures can be set up in advance to guarantee a solution for such problems. What's more, some problems are so vast that algorithms are impractical. For example, chess players do not rely on algorithms because it would take centuries to examine all the possible arrangements of the chess pieces!

HEURISTICS. While you were trying to solve the anagram, you may have decided that the vowels O and E should be separated. It might also be good idea to separate the V and the S because this combination of letters does not occur frequently in English words; on the other hand, SO is a common

combination. These "rules of thumb" are examples of a problem-solving approach known as **heuristics.** Heuristics do not guarantee solutions, but they make more efficient use of time. Using heuristics may lead to quick solutions or to no solution at all.

OBSTACLES AND AIDS TO PROBLEM SOVING. Researchers have compared the problem solving of experts and non-experts and found that experts know more information to use in solving problems. More important, experts know how to collect and organize information and are better at recognizing patterns in the information they gather. We can use the knowledge researchers have gained to improve our own problem-solving capabilities and avoid obstacles.

SETTING SUBGOALS.

As we have noted, one way to study problem solving is to ask people to think aloud. This procedure enables a researcher to follow a person's problem-solving efforts. Using this technique, psychologists have found that expert problem-solving efforts. Using this technique, psychologists have found that expert problem solvers are adept at breaking problems down into sub-goals, which can make problems more manageable and increase the chance of reaching a solution.

PSYCHOLOGICAL DETECTIVE

Try this problem. Nine adults and two children want to cross a river, using a raft that will carry either one adult or two children. The raft must be paddled by a person' it cannot be pulled across the river by a rope. How many times must the raft cross the river to accomplish this goal? (A round rip equals two crossings.) Write down your answer before reading further.

This is not an easy problem. Remember that effective problem solvers break down large problems into smaller sub-goals; it is difficult to solve such a massive problem in one swipe. First you need to know how many crossings are required to transport one adult across the river. You find that it takes four crossings to move one adult across the river and return the boat to the original dock. If the two children cross the river, one of the children can return the boat. When the child returns, an adult can cross alone and the other child returns the boat. To move the nine adults across the river you must repeat that sequence of four trips eight more times; it will take 36 trips to move nine adults. One final trip is needed to move the two children across, for a total of 37 trips.

The keys to solving this problem are (1) to identify the sequence needed to transport one adult across the river and (2) to determine that the sequence can be repeated. Finding the solution requires that you break the problem into manageable intermediate sub-goals (one person at a time).

APPROACH TO REPRESENTING PROBLEMS

Information that is not organized effectively can hinder problem solving. At times we may rely on memory; at other times external representations of a problem are helpful.

Consider the following problem. There are three boxes of equal size. Inside each box are two smaller boxes. Inside each of the smaller boxes are four even smaller boxes. How many boxes are there all together? The chances of solving this problem improve if it is represented somewhere other than in our heads. Students who were prompted to draw the problem solved it more frequently.

What is 2/3 of ½? When you first read this problem, you may become confused and conclude that it is difficult. Now let's represent the problem as 2/3 x ½. This shows us that we could represent it as "What is ½ of 2/3?" This small change in representation converts a moderately difficult problem into a simple one in which the answer almost jumps off the page.

PSYCHOLOGICAL DETECTIVE

How would you put 27 pigs into four pens with an odd number of pigs in each pen? Most problem solvers try to figure a way to divide 27 into four odd numbers. This approach seems reasonable until you realize it is not possible. You tried this approach because you perceived the solution to involve four separate and distinct pens. Hint: Try looking at the relationship among the pens again.

RIGIDITY.

Using past experience is often helpful in solving problems, but sometimes it can block the path of our problem-solving efforts. Rigidity is the tendency to rely too heavily on past experience in solving problems. A specific example of rigidity is the difficulty we experience in using familiar objects in new ways, which is termed **functional fixedness.** One example of functional fixedness, is Maier's classic two-string problem (Maier, 1931). The two strings hanging from the ceiling are to be tied together. Among the objects in the room are a chair and a set of pliers.

The strings are too far apart to allow the person to grasp both of them and tie them together.
Not surprisingly, most of the solutions tried by participants in Maier's study involved the chair, although unsuccessfully. What is the solution? Think about it for a while.
The solution to this problem is to tie the pliers to the end of one string, set the string in motion like a pendulum, then catch it and tie it to the other string. The solution may seem obvious to you now, but only 39% of participants solved the problem in 10 minutes allotted. Why did they experience so much trouble with this problem? They displayed functional fixedness: They did not see that the pliers could be used in an unusual way.

MAKING DECISIONS

Each day we make dozens perhaps hundreds of decisions. What is the easiest way to get to the family reunion next week? Should I go to the bank today, or wait until tomorrow? Some of these decisions are easy; others are more difficult. How do we make such decisions?
The human brain enables us to process vast amounts of information quickly and accurately. Heuristics are often helpful and economical and can lead to good decisions; at times, however, they may also lead to bad decisions. The same principles that allow us to make judgments easily and often successfully are also responsible for some of our errors. For example, suppose that you see a red car that was involved in an accident. Have you ever decided that people who drive red cars drive faster and less safely than other drivers? If you were asked to estimate the number of crimes in which people plead "not guilty by reason of insanity, " it is very likely that you would overestimate the actual number by quite a bit.

SEEKIGN INFORMATION TO CONFIRM A SOULTION.

The series 2,4,6 follows a rule concerned with how the numbers relate to one another. Your task is to discover the rule by suggesting other sets of numbers that follow it. Because the numbers increase by 2, many people suggest a series such as 12,14,16 followed by one like 22,24,26. Both series follow the rule. Buoyed by these two confirmations of the proposed rule, you might feel confident in announcing that the rule requires that the numbers increase by 2; however, you would be wrong! In fact 79% of

participants in a study confidently stated an incorrect rule when given this problem.

A common mistake in testing hypotheses is to commit to one hypothesis without adequately testing other possibilities; this is known as **confirmation bias**. In our example, the correct rule is that the series must consist of three positive numbers that increase. If you tried series like 1,2,3 we would tell you that the series follows the rule and you could modify your initial hypothesis. People who found the correct rule earliest had generated more negative instances, which provided them with information that they could use to modify their hypotheses. This example illustrates an important aspect of our problem-solving and decision making behavior: the tendency to seek instances that confirm our beliefs, solutions, or hypotheses and to avoid instances that disconfirm them.
The following story illustrates the power of the confirmation bias. A group of children were playing a game of "20 Questions"; the goal in this case was to find a number between 1 and 10,000, and groaned when the answer was "No, it is not between 0 and 5,000." Although both answers conveyed the same amount of information, confirmation was met with jubilation, and lack of confirmation was greeted with disappointment. As adults we do not outgrow the tendency to seek confirmation.

Representativeness.
When we use the **representativeness heuristic,** we determine whether an event, an object, or a person resembles (or represents) a prototype. Suppose that Ted, a college graduate, is very careful and concerned about details. He rarely tells jokes and seems to lack creativity. Give him a task, and he will carry it out according to the rules. Is Ted an accountant or a writer? Your conclusion would most likely be based on the similarity you perceive between Ted's characteristics and those you believe are common among accountants and writers; you would be using the representativeness heuristic. In essence you are looking for a match between Ted and the prototype of either an accountant or a writer. Including information about the number of accountants (30%) and writers (70%) in a group did not alter predictions of Ted's occupation. Participants were swayed by the similarity of Ted's personality characteristics to commonly held stereotype of an accountant,

which is quite different from the stereotype of a writer, who may be perceived as creative, tolerant, and open to experience. Because Ted's profile sounds like one we associate with accountants, it therefore represents our prototype of accountants. In this case the representativeness heuristic a rule of thumb leads us to assume that the similarity in the personality profile is a more powerful predictor than the odds of selecting an accountant from a group with a small number of accountants.
Here is a simple exercise that will illustrate the representativeness heuristic. Take a few pennies from your pocket and drop them on the table.

PSYCHOLOGICAL DETECTIVE

Suppose that you and a friend are tossing coins. Your friend tosses five heads in a row. It is your turn to bet on the next coin toss. Will it be heads or tails? Write down your choice and your reason for making the choice before reading further.

We expect the numbers of heads and tails to be approximately equal in the long run. Research findings and our own experience tell us that fair coins behave this way across many tosses. Although we also expect to find this approximate equality in the short run, chance does not operate that way. Betting that the next toss will be tails after your friend has tossed five heads in a row is like saying the coin "knows" what happened on the previous five tosses and therefore heads is "due". Although a run of five heads does not seem to be representative of a random distribution of heads and tails, the odds on the next coin toss are still 50:50. Those prior tosses do not affect the odds. This faulty assumption is called the *gambler's fallacy* another example of the representativenss heuristic. A series of heads and tails that does not look like chance is taken as evidence that some non-chance process is operating. Surprisingly, consecutive runs of heads and tails in random sequences can appear to be quite ordered. Some gamblers may misread the series of heads and tails and assume they have a better chance of predicting the next toss than is actually the case.

AVAILABILTIY

The **availability heuristic** involves making judgments of revaluations based on what comes to mind first. Consider the following: Are there more words with r as the first letter than as the third letter? A quick word inventory leads you to conclude that there are more words that begin with r, but you are

wrong. Why? Words that begin with r—rich, reward, right come to mind easily is also more likely to occur in the future. Ease of recall often but not always is correlated with actual data. Who is most likely to be killed in a drunken driving accident? Most people believe the answer is an innocent victim. According to the National Highway Traffic Safety Administration (2001), however, the person most likely to die in a drunk-driving accident is a drunk driver. Why do we give the wrong answer? It is easier to recall incidents in which an innocent person was the victim of a drunken driving accident because such events are considered newsworthy. Drunk drivers die on the nation's highways every day, yet few of those accidents receive media attention.

Although the events covered by the media may not affect us directly, they play a role in how we assess our risk of accidents, catastrophes, or diseases. Imagine two of your friends discussing the relative safety of traveling to a vacation destination by either plane or automobile. News coverage of a recent plane crash leads them to decide in favor of travel by car, which they believe is safer. We may be misled because examples of airline accidents are dramatic and thus easy to recall. Yet more people are killed in cars and trucks during a single week than in plane crashes over the course of an entire year. For example, in 1998 there were 47,471 deaths in motor vehicle accidents (an average of almost 800 a week), whereas aviation-related accidents caused 667 deaths (U.S. Bureau of the Census, 2000). Almost all of the aviation deaths occurred in charter operations or general aviation, not the major carriers.

COMPARISON.

We often make decisions by comparing the information we have obtained to some standard. Your standards are constantly changing, and these changes can affect your judgments. For example, a temperature of 68 degrees F seems pleasant in the winter but cool in the summer.

Would you drive 20 minutes to save 5? Your answer may depend on the basis of comparison. If a toaster costs $45 at one store and the same toaster is available for $40 at another, are you likely to drive to the store with the lower price? Would you make the drive to buy a suit priced at $295 instead of $300? Most people say they would make the drive for the toaster but not for the suit, yet the amount of money saved would be the same. These choices are examples of the just noticeable difference. In short, we tend to

see the benefits or gains of a comparison in relative rather tan absolute terms.

FRAMING

When we make decisions we are also influenced by whether our attention is drawn to positive or negative outcomes; psychologists refer to this presentation of an issue as **framing.** When we make decisions we are generally risk avers; that means we want to stay away from negative outcomes. Unfortunately, this tendency has the potential to mislead us at times, causing us to fail to see that the way identical information is presented (framed) can make a dramatic difference in decision making.

Consider an example. Imagine that you have lung cancer, and the treatment options are surgery or radiation. To help you make an informed decision, your physician tells you the results for lung cancer patients who selected surgery: 68% are alive after 1 year, and 34% are alive after 5 years. For lung cancer patients who selected radiation, 77% are alive after 1 year and 22% are alive after 5 years. Given this information, which treatment do you select? The vast majority of people would select surgery.

Now let's change the framing a bit and see what happens. Suppose you are given the following information: Among patients who selected surgery, 32% are dead after the following information: Among patients who selected surgery, 32% are dead after 1 year and 66% are dead after 5 years. Among patients who selected radiation, 23% are dead after 1 year and 78% are dead after 5 years. Which treatment do you select now? Only a slight majority would select surgery. Not that the choices framed in terms of living or dying are identical, yet the framing affects the option selected.

Keep in mind that the scenarios we have just described did not result from stupidity or a malfunctioning brain: "They illustrate how the mind actually works. Put in evolutionary terms, the mind has evolved to be effective in situations that are most likely to arise. We have developed some tried-and-true methods of making decisions that work most but not all of the time.

CREATIVITY

Although we often face difficulties when trying to solve problems or in making decisions, we are capable of impressive and creative solutions and judgments. Yet **creativity**, or the ability to produce work that is both novel and appropriate, is a difficult concept to actually explain.

DEFINING CREATITIVY.

If there is no absolute standard for creativity, how can we judge whether a work is creative? Teresa Amabile (1982) has proposed a consensual assessment of creativity. She asked a group of judges to make global ratings based on their own definitions of creativity. The judges' ratings of both verbal and artistic products were consistent and reliable. People seem to agree on what is and is not creative.

MEASURING CREATIVITY.

Intelligence tests were not designed to measure creativity, so it is not surprising that the correlation between measures of creativity and intelligence is not strong (it is generally positive but low to moderate at best).

High intelligence does not guarantee high creativity; low intelligence does not halt creativity. In many cases, "The creative solution is not known beforehand, and there is an immense range of possibility for new developments once we get into a problem. Not only are there no 'right or wrong' answers at all, until they have been tested in someone else's perception, or by external reality. This analysis suggest that many examples of creativity may begin as ill-defined problems.

Imagine that thinking is like a line. When all lines of thought converge on one correct answer, we have an example of *convergent thinking*. By contrast *divergent thinking* takes our thinking in different directions in search of multiple answers to a question. Of the two, divergent thinking is related more closely to creativity.

Creativity typically involves seeing non-typical yet plausible ways of associating items or seeing aspects of an item that are real and useful but not usually the primary focus of our attention. You can gain insight into this process by completing items from the Remote Associates Test. This test was designed to measure the process of making new associations. Success on the test calls for flexibility in making associations, fluency in the use of language, and originality.

Psychologists have devised other ways to measure creativity. In the Unusual uses Test, for example, you would be asked to think of unusual uses for common objects such as a brick, a ball, or a paper clip. In another measure of creativity, the Consequences Test, you would offer responses to questions such as "What would happen if people could become invisible at will? What would happen if all electrical generating plants closed at noon each day?"

What would happen if everyone could read everyone else's mind?" The responses are judged on the basis of novelty and appropriateness. For example, in response to the first item, you could say, "It would rain for 40 days and 40 nights." Although this response is novel (statistically rare), it is not appropriate in the context of the question. Conversely, if someone replied, "We couldn't see other people," the response would be appropriate but not novel. Thus there are two key elements in the definition of creativity as the ability to produce work that is both novel and appropriate.

PERSONAL FACTORS IN CREATIVITY

Are there other keys to understanding creativity? Several personal characteristics distinguish creative people from less creative people. Creative people are not afraid of hard work; they give it their undivided attention and often persevere in the face of obstacles: "Almost every major creative thinker has surmounted obstacles at one time or another and the willingness not to be derailed is a crucial element of success". For example experts declared Fred Smith's concept for Federal Express to be unworkable. Today Federal Express is the world overnight. Creative people seem able to tolerate ambiguity, complexity, or a lack of symmetry. According to one expert, "It is clear that creative persons are especially disposed to admit complexity and even disorder into their perceptions without being made anxious by the resulting chaos. It is not so much that they like disorder per se, but that they prefer the richness of the disordered to the stark barrenness of the simple".

SITUATIONAL FACTORS IN CREATIVITY

Creativity often emerges when we rearrange what is known in new and unusual ways that can yield creative ideas, goods, and services. Humor and playfulness provide fertile ground for forming new associations and arrangements. Mozart recognized this possibility when he wrote, "When I feels well and in a good humor, or when I am taking a drive or walking after a good meal,…thoughts crowd into my mind as easily as you could wish". In a study, participants were asked to tell a story or make a collage. Some of them completed the work in exchange for a reward; others were not rewarded. Judgments of the creativity exhibited in the stories or collages were lower when the participants had received a reward. This result was consistent with other studies that have found that extrinsic rewards (as opposed to intrinsic rewards) can change the perceptions of activities and also lower interest in them.

Another perspective on motivation underlying creativity focuses on how the motivator actually affects the person: Does it direct attention toward the task rather than the goal? A *task-focusing* motivator energizes a person to work and keeps the person's attention on the task. By contrast, a *goal-focusing* motivator leads a person to focus attention on rewards are noticeable and distinct from the task. People vary, however, as to how they focus on the task. Thus extrinsic motivators may have either benefits or negative effects, depending on how they influence the person's focus.

Creativity often flourishes under the right mix of intrinsic and extrinsic motivation. Thomas Edison's first invention was an automatic vote recorder for Congress. When he presented it to a member of Congress, he was told that efficiency in lawmaking was the last thing Congress wanted. From that point on, Edison stated that the only reason he invented was to make money; he didn't have the time or interest to modify the world to fit his inventions.

ENHANCING CREATIVITY AT WORK

Business grow and prosper by adapting and creating new products and developing markets. Consequently, the business community has an interest in developing their employees' creativity. Such companies as Frito-Lay and Texas Instruments have introduced creativity-enhancing creativity; it takes the right attitude and technology in a work climate that is receptive to creative thinking and new ideas. Individual and organizational creativity are closely interlocked. For example, environmental conditions at work—including freedom over one's work and sufficient time to think facilitate creativity.

One key to developing creativity is to be alert to potential problems that might be solved with creative solutions. For example, a track coach paid attention when his runners complained their running shoes were causing blisters. The coach, Bill Browerman, was confident he could improve the design of existing shoes. He cut patterns for the shoes out of grocery bags and found lightweight materials that improved cushion and traction. Browerman's shoes are known today by the brand name *Nike*.

We could also learn from the storey of Swiss inventor George de Mestral. The name may be unfamiliar, but his invention is well known. One day he went hunting with his dog; they accidentally brushed against a bush that left both of them covered with burrs. When he tried to remove them, they clung

stubbornly to his clothes. To most of us this would be a minor annoyance, not to de Mestral. After he got home, he looked at the burrs under a microscope and discovered that hundreds of tiny hooks on each burr had snagged the threads on his pants. The result of this accident was the invention of Velcro fasteners.

We may not all brush up against new ideas like de Mestral did, but we can set the table for creativity. Unfortunately, most people believe the world is divided into two types of people: the creative ones and the rest of us. Yet if you spend some time watching children play, you'll see a great deal of creativity. What happens to diminish creativity as we become adults? Children's imaginations roam freely and are not limited by reality because they are not constrained by adult rules of thinking: "They don't know that they have to color inside the lines". Adults are expected to be serious, yet playfulness and humor can help develop flexible thinking. We need to be open to "fooling around" with ideas to explore new mental connections. Injecting a bit of humor and playfulness into the work situation can stimulate a creative mind-set, including using games and puzzles designed to enhance creativity.

Quite often people fail to develop creative ideas because they do not believe they can be creative. The first step in developing one's creativity is to acknowledge and confront these negative thoughts and replace them with positive thoughts. For example, many workers say to themselves, "Ill never be able to do it." This thought can be altered to the following: "Ill do a little bit at a time to get started. There's no reason that I have to do it all on a crash schedule."

Creativity consultants also aim to inject change into the lives of employees. The encourage employees to break habits by taking a different route to work, listening to a different radio station, or reading a different newspaper. These minor changes are designed to help employees break out of a rut, expose them to new ideas, and get them thinking rather than operating on automatic pilot. Employees are encouraged to look around, to make notes, and to collect lots of ideas.

We also need to recognize that creativity can take many forms. Henry Ford said he invented nothing new; he combined the inventions of others into a car. Ivory soap was run through an ice cream machine to add air that increased the sudsing and allowed bar to float. Sometimes the creativity is remarkable simple: The key to the initial success of Domino's pizza was promising home delivery in 30 minutes or less.

Creative people can look at the same thing as everyone else but see something different. For example, Arthur Fry, a chemist, was working with a glue that was to be used on fixed surfaces like bulletin boards. Unfortunately, it did not work well. One day while singing he had a creative insight: The adhesive could be used on a bookmark that would replace the little pieces of paper he used to mark his hymn book. Fry used the glue to develop Post-It notes.

While learning the psychology of the way students learn, teaching is basically a combination of art and science. While research tells us in a systemic way differences between effective and less effective teaching strategies {the science of teaching), teachers must practice and apply what is known according to their own personality and to a certain extent their own intuition (the art of teaching). There is no one best way to teach, no super strategy. Having identified goals, you are now prepared to attempt to help learners reach these goals. The specific experiences and learning tasks you design for students to reach or master your goals fall under the umbrella of implementation. Implementation is simply how you teach.
A cornerstone for all effective teaching is classroom questioning. In the classroom teachers ask questions for a variety of reason. What teachers should be checking for is:

- Does the student understand the instruction?
- Evaluating the effectiveness of the lesson
- Increasing higher-level thinking

Asking questions is an essential teaching strategy that can be used with virtually any subject matter or teacher personality. When done effectively it can promote involvement, enhance learning, motivate students and provide both teachers and students with valuable feedback about the learning process.

The qualities of effective questions are that they are brief, clear, focused, relevant, constructive, neutral and open –ended. Additional practices that enhance effective questioning include planning your questions carefully, listening to students responses and asking fewer questions. Questioning also helps promote a student- centered learning environment while maintaining a goal focused activity. The effective use of questioning techniques will

significantly improve this interaction by expanding student understanding and getting them actively involved. Teachers use questions for five major purposes:

- To involve students in the lesson
- To promote students thinking and comprehension
- To review important content
- To control students
- To assess students progress

The key to effective questioning is to ask questions that allow you to reach your instructional goal most effectively. The difference between good and effective teachers is that in addition to doing all the things good teachers have always done, effective teachers direct their instruction at a clear and specific goal. Different types of questions are effective at different times and teachers ask questions for several reason, some which include:

- Asking questions that help teachers keep students actively involved in the lesson
- While answering questions, students have the opportunity to openly express their ideas and thoughts
- Questioning students enables other students to hear different explanations of the material by their peers
- Asking questions helps teachers to pace their lessons and moderate student behavior
- Questioning students helps teachers to evaluates student leaning and revise their lessons as necessary

At certain times, questions that establish knowledge of informational foundation recall are required, whereas at other times we want students to link information and apply it to thinking about our world.

Often low level questions elicit a yes or no response or simply allow for a choice between two alternatives. In that the teacher cannot be absolutely sure that the student has truly conceptualized the material, the use of these kinds of questions should be limited. However, when used, the technique of probing can be used to check the depth of student's perceptions and knowledge. Teachers use low levels questions to:

- Assess student background knowledge

- Establish an informational base that will be used in higher-level operations.

High Level Questions

For certain goals low level questions are important and valuable, but at other time we want students to connect ideas and expand their thinking. The characteristic that separates a low level question from a high level question is that the latter requires intellectual processing or the connecting or transforming of ideas by students, whereas the former is limited to memorization with the information being recalled upon demand. A high level question is any question that requires the student to do more than recall previously learned information. Obviously, high level questions vary in difficulty and demands placed on the students, but the key characteristic they posses is that they required more than mere recall. Research on the relative merits of high and low level questions underscores the complexity of teaching and the importance of clear goals. While it might seem that higher level questions are intrinsically better than lower ones because they are more challenging, teachers must also consider the fact that low level questions can expand and reinforce the students knowledge base. This suggests the need for teachers to first consider goals or reasons for asking particular questions. If the purpose is to identify or reinforce a particular bit of information such as a color fact questions then lower level questions would be appropriate. If your goal is to encourage students to think about the content they're learning, higher-level questions are more effective at accomplishing that goal. Research has now established that asking higher-level questions, alone does not ensure academic success. Your students must also have the knowledge base necessary to engage in complex thinking task.

By asking students questions beginning with phases such as "why do you suppose" and "how does the United States seek" the teacher extends students thinking beyond memory. Both students had to integrate prior information and were therefore working at a high level.

An alternate way to encourage student thinking is to ask students to provide and explain examples of abstract ideas. Consider the statement "Give me an example that we haven't previously discussed, of a color wheel." A student responding to this question must generate, on the basis of previous information, a new example of the concept color wheel. Because it requires

students to think about content in a deep, rather than superficial, manner, it is another excellent way to stimulate higher level thinking.

Another effective high level question asks students to state an idea or definition in the students owns words, high level questions can also require students to provide the solution to a problem, such as and Item originally selling for $40.00 us marked 30% off. What is the sale price? The solution to the problem requires a high level response.

Guided Teaching

Many teachers have the misconception that discovery lessons don't require planning and that teachers only need to turn their students loose to discover things about the world. A far more effective way of ensuring that students will learn an abstraction is to explicitly plan for such learning and to provide enough guidance to be sure it takes place. Guided discovery provides this instructional scaffolding. A comparison of teacher directed and discovery teaching reveals that the planning for discovery strategies also begins with identifying a topic and forming and objective. A consideration of student's background knowledge's is also critical in both approaches to instruction. The selection of examples is all the more important in guided discovery lessons because students must rely solely on the data or examples to form the abstraction being taught.

In teacher directed lessons, the teacher can make allowances for the lack of adequate examples by explaining the abstraction more thoroughly. This option is not a viable in guided discovery lessons because students depend more heavily on the examples than they do in a teacher directed lesson. An essential question the teacher should ask in planning or guided discovery is "what illustrations can I provide to help students understand the concept or generalization? These amounts to selecting good examples that offer observable characteristics for concepts or that illustrate an observable relationship for generalizations. The next step in the planning process is to order the examples. Placing obvious examples of an abstraction first will lead to quicker attainment of the abstraction, where as placing less obvious examples first provides students with more practice in analyzing data and forming hypotheses. The sequence of examples can also be varied to match the difficulty level of the task with the ability of the students. A more difficult sequence might be used to challenge brighter students, while an easier one might be used to help less academically talented students.

One final consideration in planning for guided discovery lessons is time, because students don't have a definition or generalization written down to focus on, their initial responses will tend to be more divergent than those in teacher-directed lessons. Therefore the lesson may take longer than a teacher directed lesson covering the same material. The extra time is well spent in terms of motivation and the possibilities for incidental learning, but time is a factor the teacher should consider in planning guided discovery activities.

Implementing

While the planning phase for teacher directed and discovery lessons are essentially the same, the implementation phase is markedly different. In a teacher directed lesson, the abstraction is defined or described for students, whereas in guided discovery teaching it is not. In a discovery lesson, students construct the abstraction themselves using the examples and the teacher's guidance. As students use the examples to construct the abstraction, teacher guidance is essential. Teachers should have a clear content goal in mind as they implement the lesson and use questioning strategically to guide students in their efforts to discover the abstractions.

Developing Thinking Skills

The development of student thinking has become a top priority in education. Increasingly, educators are realizing that teaching students to think is essential in this rapidly changing world. In this section we present an overview of the thinking skills movement, describe the processes involved, and illustrate how you can encourage your students to think more analytically and critically. The renewed interest in teaching thinking skills is a result of several factors. The obviously desirable goal of teaching students to think is a reaction to the long standing emphasis on basic skills and facts and research indicating that recall of factual information is the dominant pattern in schools.

Thinking skills can be classified into three broad categories:

- |Basic congnitive processes such as observing, comparing, inferring, generalizing, hypothesizing and reasoning inductively and deductively
- Higher order congnitive processes such as problem solving, decision making and critical and creative thinking
- Metacagnitive processes or the ability to think about thinking and control our mental processes

Within the context of regular classroom activities, teachers can do much to encourage students to think. They can ask students to look for relationships among examples or items of information. They can explain why a relationship exist, provide an additional example and explain why an existing example fits a pattern. Even when teachers simply observe and describe, they're encouraging the development of thinking skills.

Cooperative Learning Strategies

Cooperative learning is a generic term for teaching strategies designed to foster group cooperation and interaction among students. Common to all of these strategies is students working together in small groups on common goals. These strategies are designed to eliminate the competition found in most classrooms, which tends to produce winners and losers. Cooperative learning can be used to accomplish many different but compatible goals. It can be used to teach traditional academic goals, basic skills and higher level thinking skills. It also can be an effective strategy to teach interpersonal skills and to help to foster acceptance of special education students mainstreamed into the regular classroom.

Whatever the goals, five essential elements undergo all effective cooperative learning strategies:

- Face to face interaction
- Group goals
- Individual accountability
- Collaborative skills
- Group processing

Face to face interaction between students has several benefits. It encourages students to put their sometimes fuzzy thoughts into words. This is a cognitively demanding task that promotes clear thinking and learning. Social interaction also allows for the sharing of alternate perspectives,

helping students view ideas in different ways. Face to face interaction allows student to co construct knowledge, building upon the ideas of other. A group goal focuses student's energy on an agreed upon and shared learning task. The group goal was for all members to learn how to perform multi-digit multiplication. Group goal motivate students to help each other, which in turn gives them a stake in one another success. In support of this view, researchers found that successful groups had extensive interaction focusing on content and group goals encouraged students to explain content to their teammates. Group goals also encourage students to ask for and give help. Teachers can promote group goals by setting up grading systems that reward students for the whole group's performance. The reward for team performance can be anything that is important to students, such as free time, certificates of achievement or bonus points for grades. Individual accountability means that each individual in the group is held responsible for learning essential content through quizzes, test or individual assignment. Individual accountability can also be combined with group goals when the group grade or reward is bases on the average of individual members quiz scores. Without individual accountability, the most able students in the group may do all the work with teammates being ignored or given a "free ride". Collaborative skills are interaction skill that students learn and use in effective cooperative learning groups. They include:

- Turn taking
- Listening
- Learning to disagree constructively
- Giving feedback
- Reaching Consensus and involving every member in the group

These Collaborative skills are some of the most important skills learned in cooperative learning activities and often must be taught and developed. Group processing encourages members to reflect on the affectiveness of their group. This makes the group more effective and helps individuals understand how their actions contribute to the working of the group.

Successful cooperative learning activities don't just happen. Instead, they are the result of thoughtful planning and preparation. When students have had limited experience with these instructional strategies, the teacher needs

to make a special effort in introducing cooperative learning to students. Teachers implementing cooperative learning strategies in their classes identify the following potential problem areas:

- Off-task behaviors
- Failure to get along
- Misbehavior
- Ineffective use of group time

Off –task behaviors typically result form two factors, unclear task goals and lack of accountability. Before breaking student into groups the teacher should clearly indicate the goal for the activity and the specific product that should result. In addition, specify the amount of time students have to accomplish the task. When first introducing students to cooperative learning, start with short, simple tasks, and make goals and directions clear. This clear description of a product also relates to accountability. When students know exactly what they are to produce they have a clear target at which to aim.

Failure to get along: leaning to work together effectively doesn't automatically happen; social skill needs to be developed. Cooperative learning requires the students to talk, listen and help one another learn. The process is often made more complicated by the group's heterogeneous nature.

Teacher can use the following cooperative team building exercises to develop student's interactive skills:

Name learning: Allocate some time at the beginning of the group to formation for students to learn each other name that will be participating in the group.

Interview: extend the name learning by interview student about hobbies interest, and let them tell something about themselves that no one else knows about

An important goal for cooperative learning in particular and school in general is for students to learn to treat each other with courtesy and respect. Breaking this rule should be the one cardinal sin in your class. With effort and persistence, you can enforce this rule, and many of the problems associated with students wanted to work only with their friends will disappear.

Given the interactive nature of cooperative learning strategies, the freedom and lack of structure may result in increases student management problems. Solutions to this potential problem are specific task demands and agenda setting accountability and careful student monitoring. Many management problems occur because of unclear student roles and expectations. Before you break students into groups make sure that all students know what they are expected to do. Don't just describe student tasks, directly model them with the same learning materials students will be using. Student's accountability also helps create structure and minimize management problems. When students know a product is expected or a quiz will be given, their efforts become more focused on the learning task at hand.

Once students are in groups, monitor the groups by circulating around the room and helping individual groups. Public praise is a powerful tool to help other students understand effective and appropriate group behavior. Stand back from time to time and observe the whole classroom. Which group re working well? Which students are busy and which ones are dawdling or playing? Spend extra time with those groups that need extra help. Make sure that groups that do work effectively are rewarded with positive comments and make a special effort to call the whole class's attention to effective groups

Researchers have found that teachers use a variety of hybridized cooperative learning strategies in their classroom, borrowing elements of different ones to maximize learning. They found the most successful strategies included high levels of individual or group accountability, teaching monitoring, feedback and the use of concrete or manipulative materials that provided a focal point for students thinking.

Group work is an instructional strategy that uses students working together to supplement other strategies such as teacher-centered direct instruction or lecturing. Group work can be used to teach both low and higher level goals. Group work can also be used to stimulate students thinking in the same content area such as:

- Improving students problem solving skills
- Helping students trends and cause and effect
- Teaching students how to design experiments
- Providing feedback about written drafts

Group work exists in a number of forms depending on the goals of the lesson, the size and composition of the group, and the learning task. The simplest group work arrangement consists of learning pairs. When they are seated next to each other, students working in pairs can be easily integrated into existing lesson.

Think pair share is most effective when embedded in whole group, teacher-led instruction. In this strategy, the teacher asks routine questions but instead of call on one student, the teacher asks all students to think about the answer and discuss it with their partner. After a short time, the teacher asks a person in each pair or several of the pairs to share his or her thoughts with the whole class.

Four Factors contribute to the effectiveness of this strategy:

- It elicits responses form everyone in the class and promotes active learning
- Because each member of the pairs is expected to participate, it reduces "free rides".
- It is relatively easy to plan for and implement
- It can help learner make the transition to other, more complex group work strategies

A second type of group work popular in schools is pairs check. This strategy involves student's pairs in activities at their desks focusing on problems with convergent answers. The strategy usually follows instructions in which a concept or skill has been taught. It provides students with opportunities to practice on the topic by alternating roles between "solver" and "Checker." Pairs are given handouts containing convergent problems or questions that have clearly right or wrong answers, one member

of the pairs work two or three problems, the second member checks the answers and then the roles are reversed, as the students work, the teacher monitors the process and encourages students to discuss, when appropriate, the reasons the answer are correct. If they don't, pairs check amounts to little more than individual students checking their work in the back of the book. In addition, time is reserved at the end of the activity to allow whole class discussion on areas of disagreement or confusions.

In student teams achievement divisions (STAD) Which Sasha Harris used high and low ability students are paired on evenly matched teams of four or five, and team scores are based on the extent to which individuals improve their scores on skill test. An important feature in STAD is that students are rewarded for team performance, thus encouraging group cooperation.

The steps involved in implementing STAD are:

- Pretest students, this can be an actual pretest or work from previous units
- Rank students from top to bottom
- Divide students so each team of four has high low and medium ability students and that group is diverse in terms of gender and ethnicity.
- Present contents as you normally would
- Distribute prepared worksheets that focus on the content to be learned
- Monitor groups for learning progress
- Administer individual quizzes to each student
- Assign team scores based on individually gained scores

STAD is a popular cooperative learning strategy because of its wide applicability across most subject matter areas and grades.

Cooperative learning can also be used to promote higher levels learning. Group investigations place student's together in teams of three to six to investigate or solve some common problems. Examples might include how to change the hair color to natural black to Auburn Red or what steps will it take to do a bob cut. Students are responsible for developing group goals, assigning individual responsibilities and bringing the project

to completion. Cooperation is fostered through common group goals and grades are assigned to the total project

Designers of the group investigating(sharen et al., 1984) identify six steps in the strategy

- Topic selection: students choose topics to investigate within a general area
- Cooperative planning: students, with the help of their teacher, plan how to gather data and other learning activities, such as internet or library searches
- Implementation: students carry out the plan they've devised, using different learning strategies and data sources
- Analysis and synthesis: students analyze and organize the information they've gathered to present to other groups
- Presentation of final product: students share the information they gathered
- Evaluation: students compare findings and perspectives and discuss similarities and differences

To accommodate diversity, teachers should ensure that groups are heterogeneous and that different group members all contribute to the final product.

Cooperative Learning: A Tool for Capitalizing on Diversity

Unfortunately, people tend to be somewhat wary of others who look or act differently than they do, or of those who come from backgrounds that are different from their own. This tendency is common in social setting, and it also occurs in schools. Students of a particular ethnic group tend to spend most of their time together, so they don't learn that all of us are much more alike then we are different. As teachers we can't mandate tolerance, trust and friendship among students with different backgrounds. We can place them in situations where working together results in positive outcomes and healthy relationship.

Research supports this idea, students working in cooperative groups improves their social skills, increase their acceptance of students with exceptionalities and develop friendships and positive attitudes with other who differ in achievement, ethnicity and gender.

The positive effects of cooperative learning on racial and interpersonal attitudes probably stem from four factors:

- Opportunities for different types of students to work together on joint project
- Equal status roles for participants
- Opportunity for different types of students to learn about each other as individuals
- The teacher's implicit but unequivocal support for diverse students working together

Cooperative learning's positive effects on inter-group relations may result from opportunities for friendships and blurring of inter-group boundaries. As students work together, they develop friendship across racial and ability groups, which tend to soften and blur well-defined peer group boundaries that lead to other cross-group friendships. To achieve these positives benefits, teachers need to plan carefully and implement strategically. Effective interaction doesn't just happen; it must be planned and taught. "Helping" behaviors can be learned, and these skills are especially valuable for minority students, who are often hesitant about seeking and giving help

Guidelines for helpful interaction skill include:

- Listening and questioning: encouraging other student to verbalize their standing and listening to others ideas without criticizing them
- Checking for understanding: Asking for elaboration when answers are incomplete
- Staying on task: Making sure that discussions remains focused and time limits are met
- Emotional support: Offering supportive comments for incorrect answers

Discussion Strategies

We have now discussed both teacher-directed and guided discovery teaching and found that they are planned essentially the same way but are implemented in different sequences. In contrast to discussions, they are both

strongly teacher directed and are both designed to teach specific forms of content, such as a particular concept or generalization. Discussion strategies are quite different, both in terms of goals and procedures. They are not designed to teach specific types of content like concepts or generalizations, and they are fewer teachers directed and more time-consuming, instead, they are used to reach other important classroom goals such as learning:

- To understand the connections and relationships between ideas
- To become an active listener
- To develop leadership skills
- To summarize group opinions
- To develop self-directed learning skills
- To develop analysis, synthesis and evaluative skills
- To Arrive at a Consensus
- To handle controversy and differences of opinion

Students learn these skills by actively engaging in classroom discussions. A second difference between discussions and teacher centered strategies relates to the teachers role. In discussions, the teacher becomes less a director of learning and more a facilitator. In many ways this role is more difficult, because the teacher has less control over the lesson's direction and pace. Nevertheless, the teacher's role remains critical, for the teacher must ensure the promotion of learning through student interaction and exchange of ideas. This can be accomplished by the teacher carefully initiating, informing, supporting, monitoring and evaluating the group activity.

Planning

While fewer actual materials are required to implement a discussions lesson than are required for either teacher-directed or discovery lessons, the thought and planning needed for greater and ultimately determine the success of failure of discussion activities. The bottom line in planning and implementing discussion lesson is organizations. It is absolutely critical that the activity be carefully organized, or the activity will result in non-learning at best or disintegrate into chaos at worst.

The single biggest problem with discussions is the tendency for students to drift away from the central focus or topic of the lesson. Only careful planning and organization can help prevent this problem.

Five crucial decisions must be made when planning g for a discussion activity. First the teacher carefully considers goals. As noted previously, discussion goals include the acquisition of communication and social skill in addition to content goals. **Second** the teacher must decide if the activity would be best implemented in a large-group, teacher led discussion or in a small group, student led activity. /This decision relates to the teachers goal. If the primary goal is to develop leadership skill, active listening, or other related interactive skill, small group activities are more effective. On the other hand, exploring the relationships among ideas and the development of analysis, synthesis or evaluation skill can probably be facilitated more through teacher directed discussions. **Third** the teacher must consider the background and experience of students. Students need structure in the form of explicit directions a relatively simple task, and a short time period. As they acquire experience, they can take on more initiative themselves. Our discussion goals should be developmental; a teacher hoping for success what the strategy needs a full grading period or more for students to develop the skill for effective discussions. A clear task that requires students to produce something concrete in a short time period can help considerably with this problem. **Fourth,** the teacher should consider the time allotted for the activity. In general the time allotted should be short. We have all had experience where we were put into groups and we discussed the given task for a short time and then talked about everything from our friends to the weather. This tendency to drift away form the task is on of the major problems with small groups. It can be remedied by accountability in the form of specified products and specific time frames. And **fifth** the discussion should result in a specific product such as a summary list series of conclusions, or something concrete that can be shared with the class.

Implementing

In implementing discussions strategies, teachers use lesson plans to provide structure and use questioning to guide students during the lesson.

Let’s examine the lesson plan below

Unit: BBC Beauty School

Goals Objective: the cosmetologist students will understand the art of color and color formulas, the student will understand the concept of color and how color formulas are used.

Rationale: The ability to assess conclusion with evidence is important developing analysis, synthesis and evaluation skills

Content: the color content what colors make up the color wheel and how the color wheel is formed
Procedures:
Introduce the color wheel and show the concept of color
Show a film illustrating the concept of color and how it is applied
Break student into groups to take a position on the issue, summarize the information to be reported and prepare a group statement

Materials: Film illustrating the issue of color concepts

Evaluation: have students present their findings.

Problem base learning

In problem base learning, a broad family of strategies is designed to teach inquiry and problem solving skill, content and self directed learning development. Problem based learning as its name implies used a problem as a focal point for student investigation and inquiry. Included within the family of problem-based learning are inquiry, problem solving, project-based teaching, case based instruction and anchored instruction. The more popular forms of problem –based learning are inquiry and problem solving. Common to all of these strategies is the active involvement of students in trying to solve some problem or answer some question.

Problem based learning strategies share the following common characteristics:

- Lessons begin with a problem or a question that serves as the focal point for students investigative efforts.
- Students assume primary responsibility for investigating problems and pursuing questions. This responsibility is important both instructionally and motivationally because students in problem based lessons literally learn by doing.
- The teacher's role in problem-based learning is primarily facilitative. As opposed to more content oriented models in which the teacher actively disseminates information, problem based learning requires teachers to assist more indirectly by posing problems or questions and asking helpful, probing questions.

Problem based lessons have three interrelated goals. One is to develop students understanding and ability to systematically investigate a question or problem. By participating in structured problem based activities, students learn how to attack similar problems in a comprehensive and systematic manner. A second goal of problem based learning is the development of self directed learning. By assuming responsibility for their own investigations, students learn to regulate and control their own learning.
A third, but less important goal for problem based learning is content acquisition. Much of the content students learn in problem based lessons is implicit and incidental in the sense that neither the teacher nor students know exactly where the investigation will proceed. Because of this, problem based strategies can be less effective for teaching content than more teacher centered strategies such as teacher-directed teaching. However, there is some evidence that information learned in this way is retained longer and transfers better. Problem –based learning is based on the work of the educational philosopher John Dewey (1923, 1938), who emphasized the importance of learning through experience. A second influence is social cultural learning theory forms one of the foundations of constructivism a view of learning that emphasizes students active involvement and social interaction.

Inquiry is a process for answering questions and solving problems based on the logical examination of facts and observations. Inquiry strategies use these processes to teach content and to help students think analytically. Inquiry teaching begins by providing students with content related problems that serve as the focus for the class's research activities.

In working with a problem, students generate hypotheses and evaluate these data to arrive at a conclusion. Through inquiry lessons, students learn the content associated with the problem along with strategies for solving problems in the future.

Today's teacher must teach to an overwhelming variety of students. Any educational class may have students who cannot read past a second grade level. These students are sitting alongside others trying to prepare for next year's Advanced Placement class. There may be as many as five different native languages spoken and each student at a different level of English proficiency. Several special education students are likely to be mainstreamed into the class. There are visual learners, auditory learners, tactile learners, and plain old reluctant learners. Sprinkled in are students with attention deficit disorder and hyperactivity.

As a cosmetologist teacher I am expected to take this eclectic collection of human beings and teach them the curriculum laid out by the state. At first glance this appeared an impossible task, but over the course of the class, you can design and created a workable method to differentiate my classroom. The result is a simple five step solution for differentiating your classroom. I call it Layered Curriculum.

Step One: Take the mystery out of your lesson plan by handing it to the students in advance. Students can receive a copy of the lesson objectives and assignment options at the beginning of each two week period. These unit sheets contain a variety of assignment options that are designed to meet specific core objectives. Each assignment has a point value based on the complexity and time requirement.

Step Two: Divide the sheet into three layers. Each layer will represent a level or depth of study on the topic. The bottom layer is called the *C layer* because students working strictly within this layer can earn a grade no higher than a "C" on the unit. Students are free to choose the assignments they want and in any order. Different assignments are worth different amounts of points based on the complexity of the assignment. Students can choose any number of assignments for any combination of points up to, but not passing a grade of a C.

This section represents a basic understanding of the topic and is structured so that any student in the room can achieve this level of success. The greater the diversity in the classroom, the greater the diversity of assignments in the C layer.

In the first, C layer, offer a variety of basic assignments to meet the needs of every type of learner you may have. Make sure to have enough assignments so that even students that take time to articulate can achieve success. This layer includes hands-on activities for the tactile learners, video and art projects for the visual learners and optional lectures for the auditory learners. Include textbook assignments for students who prefer this traditional method of learning. Include at least one assignment that must be done in any language except English. It is really exciting to watch the interaction between the English-only students and the limited-English proficiency students when faced with having the tables turned.

Step Three: Create a second or *B layer* requiring more complex types of thinking. This layer requires the students to manipulate or apply the information they learned in the C layer. Here students carry their newly learned basic knowledge a step further. Students "play" with their new information at this layer. They build, design, use, apply, problem solve, create, brain-storm, etc. Other B layer assignments may include interdisciplinary studies, history fairs, application of new words, creative displays of compare & contrast, etc.

A problem solving lab is required in this layer. I simply suggest problems such as "Do the main structure of the hair includes the hair root and follicle?"; "Do hair consist of protein?"; "What is a chemical side bond that differs greatly for the kind of physical bonding seen in a hydrogen or salt bond ?"; "Which hair is consider straight?" List four or five questions that pertain to the unit we are studying. The students are always free to choose another question if they wish. Give no other information regarding the lab. They must write their hypothesis and a detailed procedure. They need to gather whatever materials they need, although help will be provider for them to find materials after they have written their procedure. It is critical not to give any information or help with procedural designs until after they have written their own ideas. You will be amazed at the creativity on the part of your students when left to their own imaginations.

Step Four: Add a final layer called the A Layer which requires the most complex thinking - critical thinking. Here students mix traditional research with other things like values, morality and personal opinion. Offer students several issues in the topic that are currently under debate in the real world. Students must conduct a literature search to find three recent studies on their topic and then write a critical evaluation of that issue.

Step Five: The final and most important step to Layered Curriculum is assessment through an oral defense of the students' assignments. As students finish an assignment they spend a couple of minutes, on a one-on-one basis, discussing what they learned. Based on the pre-arranged objectives, ask several key questions and help clarify their ideas and verify that the learning objectives have been met. This is a wonderful way to meet face to face with every student and assure that they are indeed learning. Carry note cards with the objectives on them to use during these discussions. The cards help students understand that there is a criteria involved in assessing their learning experience.

To manage the classroom easily, you may want to set up various learning stations in your room to free up your time for evaluation and facilitation. One successful idea has been to put your lectures on audio tape. You can use a cassette player with four headsets attached at a listening station. Since lecture is an option, the students can listen to the lecture whichever day they choose. The headsets are wonderful for the attention deficit students who may have a difficult time focusing on a live lecture. This helps isolate them and the information. Physical props can be set out at the table to assist points made in the lecture. Never again will students have to get notes from a classmate because of an absence. It is also wonderful to be able to record your lecture in the quiet comfort of your home or empty classroom ahead of time, free from any interruptions.

The video cassette player and television are set at desk level in an isolated corner for those students watching a video. Headphones can be used here too to isolate the noise from the other working students.

Technology should be used whenever possible. Computer programs make wonderful assignment options especially for the limited English proficiency student because concepts are graphically represented.

If you are fortunate enough to have internet access in your room make sure to include research as an assignment option.

To save time with oral reports and presentations, a video camera may be set up in a storeroom or quiet area so that the students can record their presentations for your later viewing. This is especially helpful with students who are reluctant to speak before a large group.

Another successful idea has been color coding each unit. You can photocopy each unit on a different color of paper. This makes it so easy for us to refer to the "green sheet" or "orange sheet", etc. It also makes it much easier for the students to find their assignment sheets in notebooks filled with school papers. Have a file cabinet in your classroom so that students may keep their unit sheets and work in progress in the classroom. This is important for those students who lack organizational skills. When a unit is due, the students turn in their colored unit sheet and you record the points they have acquired. At the end of the grading period they fill out a term summary showing how many points they received on each unit and write down their final term grade. They attach this summary sheet to the four colored units we've completed and turn it in for their final grade. There are no surprises. The students understand what it takes to get a certain grade and they have all the control to obtain that grade.

Layered Curriculum has been very successful in all types of classrooms subjects and grade level. It requires a bit of a shift in thinking on both the part of the teacher and the student. The grades are not based on the traditional percentage of correct information remembered, but rather on the depth in which a student pursues the study of a topic. A "C" grade denotes a basic understanding of core concepts. A "B" grade indicates not only an understanding of the material but a personal discovery through an original lab or an application or manipulation of the material. An "A" indicates that the students have mastered the concepts and have included a critical analysis of current issues relating to the subject matter.

Good practice in higher education:

1. **encourages contact between students and faculty,**
2. **develops reciprocity and cooperation among students,**
3. **encourages active learning,**
4. **gives prompt feedback,**
5. **emphasizes time on task,**
6. **communicates high expectations, and**
7. **Respects diverse talents and ways of learning.**

These seven principles are not Ten Commandments shrunk to a 20th century attention span. They are intended as guidelines for teachers, students, and administrators to improve teaching and learning. These principles seem like good common sense, and they are because many teachers and students have experienced them and because research supports them. They rest on 50 years of research on the way teachers teach and the way students learn.

While each practice can stand alone on its own, when all are present their effects multiply. Together they employ six powerful forces in education:

- Activity: something that somebody takes part in or does
- Expectations: anticipation of something happening
- Cooperation: working together; compliance
- Interaction: communication or collaboration
- Diversity: variety or social inclusiveness
- Responsibility: accountability or something to be responsible for

Good practices hold as much meaning for professional programs as for the liberal arts. They work for many different kinds of students -- white, black, Hispanic, Asian, rich, poor, older, younger, male, female, well-prepared, under prepared.

But the ways different institutions implement good practice depend very much on their students and their circumstances. In what follows, we describe several different approaches to good practice that have been used in different kinds of settings in the last few years. In addition, the powerful implications of these principles for the way institutions are run are discussed briefly.

As teachers, we have spent most of our working lives trying to understand our students, our colleagues, our institutions and ourselves.

We have conducted research on higher education with dedicated colleagues in a wide range of schools in this country. With the implications of this research for practice, we hope to help us all do better.

We address the teacher's *how*, not the subject-matter *what*, of good practice in education. We recognize that content and teaching interacts in complex ways. We are also aware that there is much healthy ferment within and among the disciplines. What is taught, after all, is at least as important as how it is taught. In contrast to the long history of research in teaching and learning, we cannot, therefore, make responsible recommendations about the content of good education. That work is yet to be done. This much we can say: Education should prepare students to understand and deal intelligently with modern life. What better place to start but in the classroom? What better time than now?

Seven Principles of Good Student Practice.

1. Encourages Contact between Students and teachers

Frequent student-teacher contact in and out of classes is the most important factor in student motivation and involvement. Teacher concern helps students get through rough times and keep on working. Knowing a few teachers well enhances students' intellectual commitment and encourages them to think about their own values and future plans.

2. Develops Reciprocity and Cooperation among Students

Learning is enhanced when it is more like a team effort than a solo race. Good learning, like good work, is collaborative and social, not competitive and isolated. Working with others often increases

involvement in learning. Sharing one's own ideas and responding to others' reactions sharpens thinking and deepens understanding.

3. Encourages Active Learning

Learning is not a spectator sport. Students do not learn much just by sitting in classes listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences and apply it to their daily lives. They must make what they learn part of themselves.

4. Gives Prompt Feedback

Knowing what you know and don't know focuses learning. Students need appropriate feedback on performance to benefit from courses. When getting started, students need help in assessing existing knowledge and competence. In classes, students need frequent opportunities to perform and receive suggestions for improvement. At various points and at the end, students need chances to reflect on what they have learned, what they still need to know, and how to assess themselves.

5. Emphasizes Time on Task

Time plus energy equals learning. There is no substitute for time on task. Learning to use one's time well is critical for students and professionals alike. Students need help in learning effective time management. Allocating realistic amounts of time means effective learning for students and effective teaching for faculty. How an institution defines time expectations for students, faculty, administrators, and other professional staff can establish the basis of high performance for all.

6. Communicates High Expectations

Expect more and you will get more. High expectations are important for everyone -- for the poorly prepared, for those unwilling to exert themselves, and for the bright and well motivated. Expecting students to perform well becomes a self-fulfilling prophecy when teachers and institutions hold high expectations for them selves and make extra efforts.

7. Respects Diverse Talents and Ways of Learning

There are many roads to learning. People bring different talents and styles of learning. Brilliant students in the seminar room may be all

thumbs in the lab or art studio. Students rich in hands-on experience may not do so well with theory. Students need the opportunity to show their talents and learn in ways that work for them. Then they can be pushed to learn in new ways that do not come so easily.

Teachers and students hold the main responsibility for improving education. But they need a lot of help. Leaders, state and federal officials, and accrediting associations have the power to shape an environment that is favorable to good practice in higher education.

What qualities must this environment have?

- A strong sense of shared purposes.
- Concrete support from teachers for those purposes.
- Adequate funding appropriate for the purposes.
- Policies and procedures consistent with the purposes.
- Continuing examination of how well the purposes are being achieved.

There is good evidence that such an environment can be created. When this happens, teachers and administrators think of themselves as educators. Adequate resources are put into creating opportunities for teachers, administrators, and students to celebrate and reflect on their shared purposes. Teachers receive support and release time for appropriate professional development activities.

States, the federal government and accrediting associations affect the kind of environment that can develop in educational setting in a variety of ways. The most important is through the allocation of financial support. States also influence good practice by encouraging sound planning, setting priorities, mandating standards, and reviewing and approving programs. Regional and professional accrediting associations require self-study and peer review in making judgments about programs and institutions.

These sources of support and influence can encourage environments for good practice in education by:

- setting policies that are consistent with good practice in education,

- holding high expectations for institutional performance,
- keeping bureaucratic regulations to a minimum that is compatible with public accountability,
- allocating adequate funds for new programs and the professional development of faculty members, administrators, and staff,
- encouraging employment of under-represented groups among administrators, faculty members, and student services professionals
- Providing the support for programs, facilities, and financial aid necessary for good practice in undergraduate education.

LECTURE

In lecturing the teacher need to consider the:

STRENGTHS:

- presents factual material in direct, logical manner
- contains experience which inspires
- stimulates thinking to open discussion
- Useful for large groups

LIMITATIONS:

- Experts are not always good teachers
- Audience is passive
- Learning is difficult to gauge
- Communication in one way

PREPARATION:

- needs clear introduction and summary
- needs time and content limit to be effective
- should include examples, anecdotes

LECTURE WITH DISCUSSIONS

STRENGTHS:

- involves audience at least after the lecture
- Audience can question, clarify & challenge

LIMITATIONS:

- Time may limit discussion period
- Quality is limited to quality of questions and discussion

PREPARATION:

- requires that questions be prepared prior to discussion

PANEL OF EXPERT

STRENGTHS:

- allows experts to present different opinions
- can provoke better discussion than a one person discussion
- Frequent change of speaker keeps attention from lagging

LIMITATIONS:

- Experts may not be good speakers
- Personalities may overshadow content
- Subject may not be in logical order

PREPARATION:

- Facilitator coordinates focus of panel, introduces and summarizes
- Briefs panel

BRAINSTORMING

STRENGTHS:

- Listening exercises that allows creative thinking for new ideas
- encourages full participation because all ideas equally recorded
- draws on group's knowledge and experience
- Spirit of congeniality is created
- One idea can spark off other ideas

LIMITATIONS:

- can be unfocused
- Needs to be limited to 5 - 7 minutes
- People may have difficulty getting away from known reality
- If not facilitated well, criticism and evaluation may occur

PREPARATION:

- Facilitator selects issue

- must have some ideas if group needs to be stimulated

VIDEO TAPES

STRENGTHS:
- entertaining way of teaching content and raising issues
- keep group's attention
- looks professional
- stimulates discussion

LIMITATIONS:
- can raise too many issues to have a focused discussion
- Discussion may not have full participation
- Only as effective as following discussion

PREPARATION:
- need to set up equipment
- Effective only if facilitator prepares questions to discuss after the show

CLASS DISCUSSIONS

STRENGTHS:
- pools ideas and experiences from group
- Effective after a presentation, film or experience that needs to be analyzed
- allows everyone to participate in an active process

LIMITATIONS:
- Not practical with more that 20 people
- Few people can dominate
- Others may not participate
- is time consuming
- can get off the track

PREPARATION:
- requires careful planning by facilitator to guide discussion
- requires question outline

SMALL GROUP DISCUSSIONS

STRENGTHS:
- allows participation of everyone
- People often more comfortable in small groups
- can reach group consensus

LIMITATIONS:
- needs careful thought as to purpose of group
- Groups may get side tracked

PREPARATION:
- needs to prepare specific tasks or questions for group to answer

CASE STUDY

STRENGTHS:
- develops analytic and problem solving skills
- allows for exploration of solutions for complex issues
- allows student to apply new knowledge and skills

LIMITATIONS:
- People may not see relevance to own situation
- Insufficient information can lead to inappropriate results

PREPARATION:
- Case must be clearly defined in some cases
- Case study must be prepared

ROLE PLAYING

STRENGTHS:
- introduces problem situation dramatically
- provides opportunity for people to assume roles of others and thus appreciate another point of view
- allows for exploration of solutions
- provides opportunity to practice skills

LIMITATIONS:

- People may be too self-conscious
- Not appropriate for large groups
- People may feel threatened

PREPARATION:

- Teacher has to define problem situation and roles clearly
- Teacher must give very clear instructions

REPORT BACK SESSIONS

STRENGTHS:

- allows for large group discussion of role plays, case studies, and small group exercise
- gives people a chance to reflect on experience
- Each group takes responsibility for its operation

LIMITATIONS:

- can be repetitive if each small group says the same thing

PREPARATION:

- Teacher has to prepare questions for groups to discuss

WORKSHEET AND SURVEYS

STRENGTHS:

- allows people to thing for themselves without being influences by others
- Individual thoughts can then be shared in large group

LIMITATIONS:

- can be used only for short period of time

PREPARATION:

- Teacher has to prepare handouts

INDEX CARD EXERCISE

STRENGTHS:

- Opportunity to explore difficult and complex issues

LIMITATIONS:

- People may not do exercise

PREPARATION:

- Facilitator must prepare questions

-

GUEST SPEAKER

STRENGTHS:
- personalizes topic
- breaks down audience's stereotypes

LIMITATIONS:
- may not be a good speaker

PREPARATION:
- contact speakers and coordinate
- introduce speaker appropriately

VALUES AND CLARIFICATION EXERCISE

STRENGTHS:
- Opportunity to explore values and beliefs
- allows people to discuss values in a safe environment
- gives structure to discussion

LIMITATION:
- People may not be honest
- People may be too self-conscious

PREPARATION:
- Teacher must carefully prepare exercise
- must give clear instructions
- Teacher must prepare discussion questions

EVALUATE YOUR OWN TEACHING

Each year faculty members in institutions of higher education take on the task of teaching others. For most of these people, this is a recurring task. In fact, for the majority, this is the central task of a life-long career.

Assuming that no one is perfect and therefore everyone has room for improvement, evaluation is the means by which we try to identify which aspects of our teaching are good and which need to be changed. The question then arises as to who should take responsibility for doing this evaluation. It is believe that evaluation is an inherent part of good teaching.

Therefore it is the teacher himself or herself who should take primary responsibility for doing the evaluation.

In this class section, we will discuss definition of evaluation, state a few reasons why one should invest time and effort into evaluation, describe five techniques for evaluation, and identify resources for helping us evaluate and improve our teaching.

A Definition of "Evaluation": assessment of value: the act of considering or examining something in order to judge its value, quality, importance, extent or condition.

Doing good evaluation is like doing good research. In both cases, you are trying to answer some important questions about an important topic. The key to doing both activities well is (a) identifying the right questions to ask and (b) figuring out how to answer them.

What are the key questions in the evaluation of teaching? Basically they are: "How well am I teaching? Which aspects of my teaching are good and which need to be improved?" The first question attempts to provide a global assessment, while the second is analytical and diagnostic in character.

Before moving to the task of figuring out how to answer these questions, we should look at the reasons for taking time to evaluate.

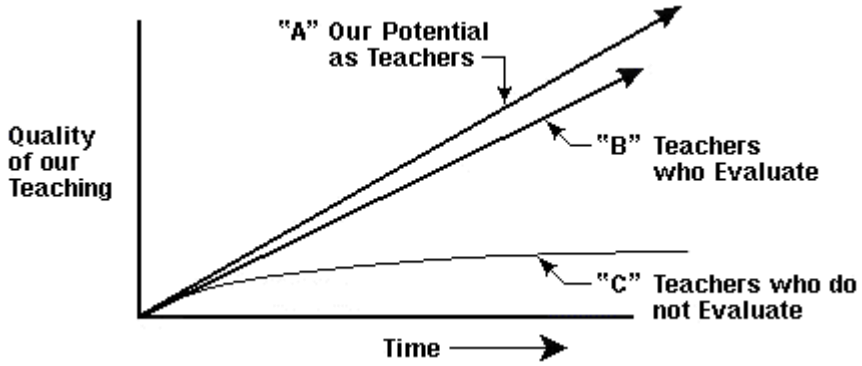
WHY IS EVALUATION IMPORTANT

It takes a certain amount of time and effort to effectively evaluate our own teaching. Is this a wise use of time? Yes, there are three reasons:

1. First, consider the following diagram:

Figure 1

The Effect of Evaluation on Our Teaching



Regardless of how good or how poor we are as teachers, we all have the potential to get better over time, yet some teachers continually improve and approach their potential (see arrow) while others experience a modest improvement early in their career and then seem to level off in quality or sometimes even decline (see arrow). Why? because the primary difference between those who do and those who do not improve, is that only the former gather information about their teaching and make an effort to improve some aspect of it -- every time they teach.

2. A second reason to evaluate is to document the quality of one's teaching for others. All career professionals have other people who need to know about the quality of their teaching. It may be the person's current department or institution head, or it may be a potential employer. But once people teach, they have a track record, and others need and want to know how well they taught. The only way a teacher can provide them with that information is to gather it, and that means evaluation. Teaching portfolios are becoming a common way of communicating this information to others. As it turns out, putting a portfolio together also helps the teacher understand his or her own teaching better.
3. Third, there is a very personal and human need to evaluate. This is for our own mental and psychological satisfaction. It is one thing to do a good job and think that it went well; it is quite another and a far more enjoyable experience, to have solid information and thereby know we did a good job. That knowledge, that certainty, is possible only if we do a thorough job of evaluation.

If evaluation is worth doing then, how do we do it?

1. **Self-monitoring**

Self-monitoring is what people do semi-automatically and semi-consciously whenever they teach. Most of their mental activity is concerned with making the presentation or leading the discussion. But one portion of their mental attention is concerned with "How is it going?" "Are they with me?" "Am I losing them?" "Are they interested or bored?"

Unique Value. The first value of this is that it is immediate and constant. You do not have to wait a week or a day or even an hour to get the results. It happens right away. Hence adjustments are possible right away.

The second value is that this information is automatically created in terms that are meaningful to the teacher because it is the teacher who creates the information. It is the teacher, not someone else, who looks at the situation and says "This is what is happening." This does not mean that we always know why it is happening, or what to do about it if it is something we do not like. But we do have our own sense of what is happening.

Frequency. This does and should happen all the time. We may only take a mental pause every few minutes to size up the situation. But by comparison with the other sources of information discussed below, this takes place continuously.

Limitation. The very strength of this source is also its weakness. Because this information is created by us for us, it is also subject to our own biases and misinterpretations. I thought they understood the material. I thought they looked interested --when in fact they weren't. We all have our own blind spots and lack complete objectivity. This means that, at times, we are going to misread the responses of students to our teaching.

Appropriate Response. What can be done about the subjectivity of self-monitoring? Turn to an objective source of information, one without subjective bias.

2. Audiotape and Videotape Recordings

Modern technology has given us relatively inexpensive and easy access to audio and video recordings of what we do as teachers. We can put a small audio recorder on the teacher's desk or put a video recorder on the side of the classroom and let it run during a class session. Then later we can listen to or view it.

Special value. The value of this kind of information is that it gives us totally objective information. It tells us exactly what we really said, what we really did, not what we thought we said or did. How much time did I spend on this topic? How many times did I ask questions? How often did I move around? These are questions the audio and video recordings can answer with complete accuracy and objectivity.

Frequency the experience of giving a workshop that is recorded, Listening to the recording later, you may discovered to your surprise that some disruptive speech patterns of which you are completely unaware. The lesson from this was that, no matter how good we are at monitoring others, we can only devote a certain amount of our mental attention to monitoring our own teaching; hence we miss things.

Video recordings are probably useful once every year or two. What do we look like to others? As we grow older, we change, and we need to know what the continuously anew me looks like to others.

Limitation. What could be more valuable than the objective truth of audio and video recordings? Unfortunately the unavoidable problem with this information is that it is true but meaningless -- by itself. The recordings can tell you if you spoke at the rate of 20 words per minute, or 60 words, but it can't tell me whether that was too slow or too fast for the students. It can tell me whether I moved and gestured and smiled, but it can't tell me if those movements and facial expressions helped or hindered student learning.

Appropriate response. To determine the effect of one's teaching behavior, rather than the behavior itself, I need to find another source of information.

3. **Information from Students**

As the intended beneficiaries of all teaching, students are in a unique position to help their teachers in the evaluation process.

Special value. If we want to know whether students find our explanations of a topic clear, or whether students find our teaching exciting or dull, who else could possibly answer these kinds of questions better than the students themselves? Of the five sources of information described here, students are the best source for understanding the immediate effects of our teaching, i.e., the process of teaching and learning.

This information can be obtained in two distinct ways: questionnaires and interviews, each with its own relative values.

a. **Questionnaires.** The most common method of obtaining student reactions to our teaching is to use a questionnaire. Lots of different questionnaires exist but most in fact ask similar kinds of questions: student characteristics (e.g., major, GPA, reasons for taking the course), the student's characterization of the teaching (e.g., clear, organized, interesting), amount learned, overall assessment of the course and/or the teacher (e.g., compared to other courses or other teachers, this one is ...), and sometimes, anticipated grade.

   The special value of questionnaires, compared to interviews, is that they obtain responses from the whole class and they allow for an anonymous (and therefore probably more candid) response. The limitation of questionnaires is that they can only ask a question once, i.e., that cannot probe for further clarification, and they can only ask questions that the writer anticipates as possibly important.

   Questionnaires can be given at three different times: the beginning, middle and end of a course. Some teachers use questionnaires at the beginning of a course to get information about the students, e.g., prior course work or experience with the subject, preferred modes of teaching and learning, and

special problems a student might have (e.g., dyslexia). Many use mid-term questionnaires to get an early warning of any existing problems so that changes can be made in time to benefit this set of students. The advantage of end-of-term questionnaires is that all the learning activities have been completed. Consequently, students can respond meaningfully to questions about the overall effectiveness of the course.

b. **Interviews.** The other well-established way of finding out about student reactions is to talk to them. Either the teacher (if sufficient trust and rapport exist) or an outside person (if more anonymity and objectivity are desired) can talk with students for 15-30 minutes about the course and the teacher. As an instructional consultant, you can do this for other teachers; this can be done in some of your own courses. Try to get 6-8 students, preferably a random sample, and visit with them in a focused interview format immediately after class. I have some general topics I want to discuss, such as the quality of the learning thus far, reactions to the lectures, labs, tests, and so forth. But within these topics, I will probe for clarification and examples of perceived strength and weakness. You can also note when there is divergence of reactions and when most students seem to agree.

   The special value of interviews is that students often identify unanticipated strengths and weaknesses, and the interviewer can probe and follow-up on topics that need clarification. The limitation of course is that a teacher can usually only interview a sub-set of the class, not the whole class. This leaves some uncertainty as to whether their reactions represent the whole class or not.

   As for the frequency of interviews, I would probably only use a formal interview once or at most twice during a term. Of course, a teacher can informally visit with students about the course many times, and directly or indirectly obtain a sense of their reaction to the course.

General limitation: Returning to the general issue of information from students, regardless of how such information is collected, one needs to remember that this is information from students. Although they know better than anyone what their own reactions are, they can also be biased and limited in their own perspectives. They occasionally have negative feelings, often unconsciously, about women, people who are ethnically different from themselves, and international teachers. Perhaps more significantly, students usually do not have a full understanding of how a course might be taught, either in terms of teaching or content. Hence they can effectively address what is, but not what might be.

Appropriate response:As with the other limitations, the appropriate response here is to seek another kind of information. In this case, we need information from someone with a professional understanding of the possibilities of good teaching.

4. **Students' test results.**

Teachers almost always give students some form of graded exercise, whether it is an in-class test or an out-of-class project. Usually, though, the intent of the test is to assess the quality of student learning. We can also use this same information to assess the quality of our teaching.

Special value: The whole reason for teaching is to help someone else learn. Assuming we can devise a test or graded exercise that effectively measures whether or not students are learning what we want them to learn, the test results basically tell us whether or not we are succeeding in our whole teaching effort. This is critical information for all teachers. Although the other sources of information identified here can partially address this question (I think they are learning, the students think they are learning.), none address it so directly as test results: I know they are learning because they responded with a high level of sophisticated knowledge and thinking to a challenging test.

Frequency: How often should we give tests? Many teachers follow the tradition of two mid-terms and a final. This is inadequate feedback,

both for the students and for the teacher. Weekly or even daily feedback is much more effective in letting students and the teacher know whether they are learning what they need to learn as the course goes along. If the teacher's goal is to help the students learn this is important information for both parties. And remember, not all tests need to be graded and recorded!

Limitation: It might be hard to imagine that this information has a limitation. After all, this is what it's all about, right? Did they learn it or not?

The problem with this information is its lack of a causal connection: we don't know why they did or did not learn. Did they learn because of, or in spite of, our teaching? Some students work very hard in a course, not because the teacher inspires or motivates them but because their major requires a good grade in the course and the teacher is NOT effective. Therefore they work hard to learn it on their own.

Appropriate response: If we need to know whether one's actions as a teacher are helpful or useless in promoting student learning, we need a different source of information, such as the students themselves.

5. **Outside observer**

In addition to the two parties directly involved in a course, the teacher and the students, valuable information can be obtained from the observations of a third party, someone who brings both an outsider's perspective and professional expertise to the task.

Special value. Part of the value of an outside observer is that they do not have a personal stake in the particular course; hence they are free to reach positive and negative conclusions without any cost to themselves. Also, as a professional, they can bring an expertise either in content and/or in teaching that is likely to supplement that of both the teacher and the students.

A variety of kinds of observers exist: a peer colleague, a senior colleague, or an instructional specialist.

a. Peer colleagues, or other teachers, can visit each others classes and share observations. Here the political risk is low and each one can empathize with the situation and challenges facing the other. Interestingly, the person doing the observing in these exchanges often finds that they learn as much as the person who gets the feedback.
b. teachers can be of value because of their accumulated experience. Although one has to be selective and choose someone who is respected and with whom the political risk is low, experienced colleagues can offer ideas on alternative ways of dealing with particular topics, additional examples to illustrate the material, etc.
c. A third kind of outside observer, an instructional consultant, is available on many campuses. They may or may not be able to give feedback on the clarity and significance of the content material, but their expertise in teaching allows them to comment on presentation techniques, discussion procedures, and ideas for more active learning.

Frequency: Beginning TA's and beginning faculty members should consider inviting one or more outside observers to their classes at least once a semester for two or three years. They need to get as many new perspectives on teaching as soon as possible. After that, more experienced teachers would probably benefit from such feedback at least once every year or two. We change as teachers; as we do, we need all the feedback and fresh ideas we can find.

Limitations: Again, the strength of being an outsider is also its weakness. Outside observers can usually only visit one or two class sessions and therefore do not know what happens in the rest of the course.

Apart from this general problem, each kind of observer has its own limitation. The peer colleague may also have limited experience and perspectives; the senior colleague may be someone who makes departmental decisions about annual evaluations and tenure; and the instructional consultant may have limited knowledge of the subject matter.

Appropriate response: As with the other sources, the response to these limitations is to use a different source, either a different kind of outside observer or one of the other sources described above.

TEACHING TECHNIQUES-SECTION 1

TEACHING TECHNIQUES (8 HOURS)

COURSE OUTLINE

SECTION 1:

- INSTRUCTIONAL METHODS
- HOW STUDENTS LEARN
- PERCEPTUAL MODALITY: THE FIVE SENSES
- INFORMATION PROCESSING STYLES

SECTION 2:

- AUDITORY LEARNING STYLE PREFERENCES
- KINESTHETIC LEARNING STYLE PREFERENCES
- CHOOSING EFFECTIVE TEACHING METHODS
- EVALUATING AND GRADING
- PREPARING AND GIVING EXAMINATIONS
- PERFORMANCE TESTING

SECTION 3:

- PERFORMANCE TESTING CONTINUED
- TYPES OF ASSESSMENT
- QUESTIONNAIRE EXAMPLES

SECTION 4:

- TEST ANALYSIS
- SHORT ANSWER AND ESSAY
- DEMONSTRATION/ PERFORMANCE TESTING
- UTILIZING A STUDY GUIDE
- EXPECTATION OF COMMUNICATION PERFORMANCE

SECTION 5:

- ASSESSMENT TOOLS
- CREATING RUBRICS
- DEVELOPING COURSE CURRICULUMS
- ASSESSING PERFORMANCE
- COURSE OUTLINE EXAMPLES

SECTION 6:

- COURSE OUTLINE EXAMPLES CONTINUED
- DOMAIN TARGET FOCUS

- LESSON PLAN DEVELOPMENT
- CATEGORY OR LEVEL DEFINITION
- SUMMARY

SECTION 7:

- EVALUATING STUDENTS
- PREPARING CLASS PRESENTATION
- SELECTING INSTRUCTIONAL MATERIALS
- CRITERIA FOR PRINTED MATERIALS
- WORK BOOKS
- WORKSHEETS AND HANDOUTS
- AUDIOVISUAL MATERIAL
- TWO AND THREE-DIMENSIONAL EXHIBITS
- FLIP CHARTS
- PROJECTED INSTRUCTIONAL MATERIALS

SECTION 8:

- TRANSPARENCIES AND OPAQUE PROJECTORS
- POWER POINT PRESENTATIONS
- VIDEO, TELEVISION, AND FILMS
- COMPUTER GENERATED MATERIALS
- COSMETOLOGY, ESTHETICIAN, AND MANICURIST TOOLS AND EQUIPMENT
- CLASS LECTURES
- INTERACTIVE LECTURES
- CLASS DISCUSSIONS
- PANEL DISCUSSIONS AND SYMPOSIA
- COOPERATIVE LEARNING
- PRACTICAL DEMONSTRATIONS
- RETURN DEMONSTRATION
- LABORATORY (LAB)
- ROLE PLAYING
- FIELD TRIPS

SECTION 9:

- NORTH CAROLINA STATE BOARD OF COSMETIC ARTS RULES AND REGULATIONS

LESSON OBJECTIVES:

Upon the completion of this class the student will be able to:

1. Explain the benefits of problem base learning.
2. Relate effective teaching strategies.

3. Formulate a theory on information processing styles.
4. Classify the Perceptual Modality of learning based on the Five Senses.
5. Identify auditory and kinesthetic learning style preferences.
6. Apply evaluating and grading techniques in the teaching environment.
7. Generalize methods for performance testing.
8. Create test analysis using short answer and essay methods.
9. Demonstrate the use of study guides.
10. Utilize assessment tools in student evaluation.
11. Develop a course outline and curriculum.
12. Organize the development of a lesson plan.
13. Prepare class presentations.
14. Employ effective methods for selecting instructional materials.
15. Outline the use of audio, projectors, and video materials for class lectures.
16. Arrange practical and return demonstrations in the class setting.
17. Analyze laboratory, role playing, and field trip methods of instructing.
18. Compare panel and symposia discussions in the class setting.
19. Identify cosmetology, esthetician, and manicurist teaching tools.
20. Locate the Rules and Regulations of the North Carolina State Board of Cosmetic Arts to remain in compliance.

TEACHING TECHNIQUES

INSTRUCTIONAL METHODS

The benefits of problem-based learning include skill development in areas such as problem-solving, critical thinking, creative insight, decision-making, conflict-resolution, and higher reasoning, as well as in written and oral

communication. By working through various challenges instructor will acquire their student's knowledge of problems and concepts through their own initiative, and gain greater respect for themselves and their fellow students. Instructors will allow the Students to also engage in problem-based learning through a cooperative-learning approach, in which students work in groups that determine different solutions to the same problem. This adds the further benefits arising from cooperative effort, including interpersonal and communication skills. And students come to recognize that a problem may inspire more than one reasonable solution.

After completing this course, the instructor should be able to:
• Compare and contrast several methods of teaching and explain their advantages and disadvantages.
• Discuss the use and importance of the senses relating to instructional materials for classroom teaching
• List Gardner's original seven categories of multiple intelligence
• Describe common characteristics of effective teaching methods and instructional materials.
• Explain how instructional materials can be used both appropriately and inappropriately

Teaching strategies are the methods by which instructors impart information and skills to their students.
Instructional aids are accessories, such as books or images, which facilitate student's learning abilities.
Many factors influence how students learn and how they will benefit from specific types of teaching methods or instructional materials. Students naturally vary, for example, in their interest toward a subject, their reasons or need to learn it, their ability to attend to or maintain interest in a lesson, the way they absorb information, and the duration to which they retain that absorbed information.

Consider how students at different levels of ability or interest will respond to a variety of different learning methods and instructional materials. Some students will easily identify essential items from the information you present; some will not. More highly motivated students will learn at an accelerated pace. Students with poor reading comprehension may need non-print images such as photos or diagrams to support the text. Similarly, you

may encounter students with poor English-language skills, physical, or emotional disabilities that make certain instructional methods or aids a poor choice.

This course will introduce you to a number of different ways to think about intelligence and learning styles and how different students learn best. Remember that all students have the ability to learn, but different learners require different teaching methods and instructional aids. Recognizing your students' needs is a critical part of lesson development. This course will help you provide effective, varied resources that address students' abilities and disabilities and fulfill learning potential.

HOW STUDENTS LEARN

There is currently no one, overall, inclusive theory of learning styles (sometimes called "cognitive styles" or "personality"); instead there are a variety of theories. Most agree that multiple factors working together produce varying characteristics of learning abilities in different individuals. The following section discuss some of the factors that have been determined to shape a student's learning style, focusing primarily on three influential models of learning and intelligence: brain hemisphere dominance and theory of multiple intelligences.

The research data comes from three main ideological viewpoints or schools of thought:

- Personality Models.
- Perceptual Modality
- Information Processing

Personality models: nature and nurture

Personality models suggest that the way we perceive, organize, and retain information is primarily the result of our environment (nurture) and our genes (nature). "Nature-only" would mean that a person is only what he/she was genetically born with; that the environment had no role in determining or shaping intelligence.

"Nurture-only" would attribute nothing to genes, and everything to life experience.

While the "nature versus nurture" debate has been framed as a classic controversy of "either-or," it is a safe conclusion that both play a considerable role. Most experts accept the following three facts about the transmission of intelligence:

• Both heredity and environment contribute something to what we refer to as "intelligence"
• Heredity and environment interact with one another
• Environmental factors can interfere with the realization of the full potential of a person's intelligence, regardless of the person's heredity
So, what we consider intelligence appears to be the unique and complex interplay between our biological being (genetics) and the environment.

Perceptual Modality: the five senses
Perceptual Modality describes the individual's biological mechanisms or reactions to the world around him. It is the most basic way we interact with the world around us, taking in information through our sensory organs. In making decisions related to the selection of materials and teaching methods, consider these facts:
A student's capacity to learn relies on his or her ability to absorb information through the five senses, which include smell (olfactory), sight (visual), hearing (auditory), touch (tactile), and taste
(gustatory).
Good teaching methods and instructional aids take advantage of
The way the senses work and may do any or all of the following:
- Bring about deeper understanding
- Improve memory retention
- Emphasize important ideas
- Hold the student and instructor's attention
- Imprint a picture in the mind
- Increase rate of learning
- Clarify complex ideas

Research data suggests that students naturally emphasize what they learn from visual cues over those absorbed through hearing alone. In fact, a picture is estimated to increase retention by three times over words alone. Pictures and words, used together, cement ideas into consciousness more solidly than either alone. That means students hearing a lecture will tend to remember more about it if they see visual cues periodically throughout the lesson, and even more if they take notes.

Problem-based learning is an instructional method that develops the problem-solving skills needed to accomplish tasks both in the professions as well as in everyday life. In problem-based learning, students encounter a

problem or issue and perform research in an attempt to reach a solution. As in everyday experiences, the process may begin with insufficient information. Students develop hypotheses in response to the problem. They gather and evaluate data from a variety of print, multimedia or Internet sources, and then revise their hypotheses in response to the data they encounter. A problem may have one or more solutions, and students' perception of the problem may change through synthesis, evaluation and communication with others.

Information processing: brain hemisphere dominance
Another important factor in understanding learning styles is the theory of brain function, which characterizes the way an individual's brain processes information, solves problems, and creates memories. Each side of the brain reasons and functions according to different strategies, with one side typically dominating.

Dominance refers to a preference for using one hemisphere of the brain over the other hemisphere. You may have heard people referred to as "right brain" or "left brain" dominant individuals, referring to the way that part of the brain organizes and processes information.
Listed below is information processing styles that are characteristically used by your right or left brain hemisphere.

Information Processing Style

The Left Hemisphere (LH) of the brain is rational, analytical, and verbal. It is most adept at language, math, logical analysis, and the processing of serial sequences of information. The Right Hemisphere (RH) is the intuitive, creative, mostly non-verbal part of our brain that uses symbols and images. The Right Hemisphere is holistic and intuitive, and responsive to visual imagery.

Individuals with left-brain dominance are described as successive processors. They prefer to learn in a sequential step-by-step manner, and are considered analytical in learning style. They are good at "connecting the dots." Individuals with right brain dominance are referred to as simultaneous processors, and are considered holistic or global learners. They typically see "the big picture" before details. The hemispheres can be further subdivided,

into Forebrain (FB) and Hindbrain (HB) sections, with specific characteristics associated with each sub-section.

Strengths and weaknesses relating to brain hemisphere dominance

You can see from this description that left-brain strategies tend traditionally to be emphasized in the classroom, and right brain students may have felt left out or unable to compete academically.
The left-brain, for example, is responsible for the linear and sequential processing of math, so the left-brained person tends to be comfortable with linguistic and mathematical endeavors. Left brained students will easily memorize vocabulary words or math formulas, and they tend to be good spellers, as the left brain pays attention to sequencing, spelling, agreement, and punctuation in writing. Left-brain learners have little trouble expressing themselves in words. They are punctual and deadline-conscious.

You can see that much of the educational system seems to favor or reward a left-brain style of information processing, except for actions related to creativity, which is governed by the right brain. When you process on the left side, you use information, piece-by piece, to solve a math problem or work out a science experiment. When you read and listen, you look for pieces, so that you can draw logical conclusions. Right brain people, in contrast, are "big picture" people; rather than working from pieces to the whole, they work from the whole to the pieces. They may know the right answer to a math problem by intuition, but not be sure how to calculate it. They may work "backwards;" for example, writing papers first and outlining them later, if it is required. Right brain learners may not be punctual or conscious of deadlines.
The best way to reach both kinds of learners is to combine left brain and right-brain activities. For example, assign projects that have both creative and analytical elements, and accompany text with images. The table summarizes some aspects of right and left brain dominant learning:

Left/Successive/Analytic verses Right/Simultaneous/Global Information Processing Style

Left/Successive/Analytic	Verses	**Right/Simultaneous/Global**
Linear	VS	**Holistic**

-From parts to whole -Sees details first -Arranges pieces logically, then draws conclusions		-From whole to parts -Sees big picture first
Sequential -Linear, sequential, logical -processing	VS	**Random** -Random processing; May jump from one topic to another; will get things done, but not in a particular order
Symbolic -Processes symbols in language and mathematics. -Memorizes formulas easily	VS	**Concrete** -Difficulty reading using phonics; prefer to see words in context. -Need visual images and hands-on activities.
Logical -Linear, sequential, logical processing	VS	**Intuitive** -Uses instinctual or intuitive reasoning
Verbal -Express themselves easily with words	VS	**Nonverbal** -Thinks in images, may have problems finding the right words
Reality-based -Individual adjusts to reality;rule -conscious	VS	**Fantasy-oriented** -May be unaware of rules;creative problem Solver

LEFT (Analytic)	**RIGHT (Global)**
Successive (Left) Hemispheric Style	**Simultaneous (Right) Hemispheric Style**

Learning style emphasizes: -VerbalMeaning of Words -Sequential -Thinks in linear fashion -Logical -Planner -Remembers names -Prefers quiet while studyingRational	**Learning style emphasizes:** -Visual -Tone of Voice -Random -Thinks in varied order -Emotional -Impulsive/spontaneous -Remembers faces -Intuitive -Prefers background music whilestudying

Be aware that right-brain students may have trouble reading, especially if they learned to read using a system of phonics rather than seeing words in context. Because right brain students may be poor spellers, they may take more time to write a paper and have more difficulty with proofreading. Advise right-brain students to reinforce their memory of information through the use of visual images, writing new information down, and/or illustrating it-making mental images of things they hear or read to help them remember. Right-brain learners will tend to learn well anything with which they become emotionally involved because emotion is processed on the right side of the brain.

To balance your presentation to right-brain learners:

• Create opportunities for hands-on activities, using some thing real whenever possible.

• Have students visit with you routinely, to assess progress and provide feedback.

• Present an overview (the big picture) before you begin a lecture.

• Recommend that all students (especially those with a dominant random nature) make lists and schedules

• Recommend that students always read instructions or directions before beginning a task

• Remind students to refer to the dictionary, and use the spell checker on the computer. Right-brain learners may lose points by not proofreading an assignment for spelling.
• Because the right side of the brain is color-sensitive, you might try using colors to emphasize points or a set of steps in sequence,
• Emphasize pictures and diagrams, charts and graphs, video, film, discussion, and music.

Visual-Auditory-Kinesthetic (VAK) learning model
"Learning styles" have been defined as "the way in which an individual experiences the world, and how that individual processes and integrates new information. Much of our learning style is dependent on the way we receive sensory information about our environment, our preferences in absorbing it, and making sense of the information.

According to the VAK learning model, from the field of accelerated learning, these preferences can be **visual, auditory or kinesthetic:**

Visual: Involving the transfer of information through observation; pictures, photos, diagrams, demonstrations, handouts, flip chart

Auditory: the transfer of information through listening; lectures, discussion

Kinesthetic: involving the physical; hands-on; practical (from the Greek "kineo" meaning "move," and "aesthesis"(meaning "sensation"); action.

A preference for a visual learning style means a need to see the information in a written or visual format. An auditory learner would prefer having new information explained by the instructor, and then discussed by the class. While learners use all three dimensions to absorb information, one or more is typically dominant, although the individual may prefer one sensory filter or learning style for one type of task, another for learning a different type of task.

According to this model, the majority of people have a dominant or preferred way of learning, but most individuals use all three or a blend of the styles. That means most students are able to take in information from more than one channel or sensory dimension. For example, in a class of 30 people,

the majority will be able to take in information a number of ways, and can learn with the presentation of visual, auditory, or kinesthetic methods. A few, however, (estimated at 20%) will be visual-only, audio-only or kinesthetic-only learners, requiring that one type of presentation to learn effectively.

Not surprisingly, schools systems have historically tended to favor auditory or visual learners, and neglect or punish kinesthetic learners, who tend to drop out of the system at a higher rate than any other group. Instructors should be able to present information in all three ways so that each type of learner sees something of their preferred style of learning, and has the information reinforced by the two other types of learning styles. Remember that a preference for one style does not mean that the other two information channels are useless.

The following table is a simplified learning style indicator showing typical preferences for each type of learner:

VAK Learners table:

	VISUAL	AUDITORY	TACTILE
	Show me	Tell me	Let me try
Selecting a car	Read reviews	Ask friends	Test-drive
Cooking a meal	Use a recipe	Ask your mom	Trial and error
Choosing an outfit	Look at catalogs	Ask sales staff	Try things on
Learning to use new equipment	See instructions and a diagram	Hear verbal explanations	Try it out
Gift choice	A book	A CD	Tennis racquet
Explaining something	Watch this	Listen to this	Do this
Finding your way around	Use a map	Ask directions	Use your intuition and

anew city			**acompass**

Visual-learning style preferences

• Visual learners are associated with either linguistic or spatial dimensions: Visual-linguistic learns best through reading and writing.
• Visual-spatial learners may not read or write well, absorbing information best from visual images, like charts or diagrams, a demonstration, or a video. Visual spatial learners often have a very good spatial sense and rarely get lost. For all visual learners, the act of taking notes (not necessarily the studying of those notes) is useful, as it reinforces the material they are hearing.
• Visual learners tend to remember more of a lecture if they see it, as well as hear it, being delivered.

For these students:

• Use visual aids
• Provide an outline
• Have students take notes
• Ask students questions
• Provide handouts that leave white areas where students can write notes
• Use boards or flip charts to note information
• Tell students what the information objectives of the lecture are

TEACHING TECHNIQUES-SECTION 2

Auditory-learning style preferences

Auditory learners may not read and write well. They may move their lips, or speak out loud, when they read. They may talk to themselves and prefer to hear, rather than read, instructions.

For these students:

• Always preface new information with an introduction of what you are going to present, and end with a round-up of the material covered.

• Use educational tasks that involve hearing, such as lectures, discussions, and brainstorming sessions.

• Question students about the material you are teaching.

AUDITORY LEARNER CHARACTERISTICS

Auditory learners are those who learn best through hearing things. They typically notice and remember sounds. They are good at remembering things that they hear. They are also good with words and language. They often read to themselves as they study. They are also often distracted by noise and sounds. Look over these traits to see if they sound familiar to you. You may be an auditory learner if you are someone who:

- Likes to read to self out loud.
- Is not afraid to speak in class.
- Likes oral reports.
- Is good at explaining.
- Remembers names.
- Notices sound effects in movies.
- Enjoys music.
- Is good at grammar and foreign language.
- Reads slowly.
- Follows spoken directions well.
- Can't keep quiet for long periods.
- Enjoys acting, being on stage.
- Is good in study groups.

Auditory Learners Can Benefit from:

- Using word association to remember facts and lines.
- Recording lectures.

- Watching videos.
- Repeating facts with eyes closed.
- Participating in group discussions.
- Using audiotapes for language practice.
- Taping notes after writing them.

Visual Learner Characteristics

Visual learners are those who learn through seeing things. Look over the characteristics below to see if they sound familiar. A visual learner:

- Is good at spelling but forgets names.
- Needs quiet study time.
- Has to think awhile before understanding lecture.
- Is good at spelling.
- Likes colors & fashion.
- Dreams in color.
- Understands/likes charts.
- Is good with sign language.

Kinesthetic-learning style preferences

Kinesthetic learners are associated with the dimensions of touching (tactile) or moving (kinesthetic). These students tend to maintain greater concentration of a lecture if they take notes, use visual images such as doodles and diagrams, and may find color highlighters useful.

They tend to be "big picture" people, for example, scanning material initially to get the overall picture, and focusing less on the details.

• Allow breaks where students can do something physical

• Use colored markers or chalk to highlight information on boards and charts

• Use diagrams and visual images to emphasize points

Choosing Effective Teaching Methods

As we have discussed Teaching and learning occur through many different means, with not all instructors at the same levels of ability in all methods of teaching, and not all students able to benefit equally from different teaching methods. Teaching methods and instructional aids must be relevant and appropriate to the type of information and learner. Ideally, the teacher maximizes learning potential for the greatest number of students in the class as possible, by selecting effective teaching styles that the majority of students understand and appreciate, and from which they can benefit.

Instructional methods are strategies used by instructors to communicate lesson objectives. Long before classes begin, the instructor decides what methods are most appropriate to his or her topic, teaching style, and students' needs. The best instructors are those who are skilled in many teaching styles and methods, and can choose those strategies that best suit the topic at hand and the students' learning styles. This course will introduce some important elements of decision-making, planning, and preparation that go into lesson development and classroom presentation.

As an educator, you can respond to different learners with one of the following strategies:

(1) Identify a person's individual learning style and adapt instruction toward that person's strengths and preferences.

(2) Use a variety of different instructional styles, methods, and materials and adapt the course design to reach all kinds of learners.

In choosing a wide variety of materials and methods, do not rely too heavily on any one mode of instruction or type of instructional aide to convey information, but include as many different methods as is possible and practical. This "one size fits all" method assumes that if a learning activity doesn't fit that person's natural style, the person will still be able to achieve a set of pre-defined instructional objectives through the use of multiple educational styles and instructional aids.

TEACHING TECHNIQUES IN EVALUATING AND GRADING

Evaluation is a necessary and important component of education. Without the cosmetology, manicurist or estheticians instructor evaluation, the student

is not able to track what he or she has learned, nor can the instructor be sure of what has been taught. Evaluation serves not only to provide a look back, but to enable the instructor to see that the students have attained the learning objectives set out at the beginning of the course; it also serves as a look forward. Instructors can use their evaluations of student Performances to track if the student is doing well and what is needed to assure the passing of the state board exam.

Evaluating student performance usually involves the awarding of a particular grade. Evaluating the student and assigning a grade greatly benefits the student, as it provides feedback to the student regarding the way he or she is learning, and what expectations the instructor has regarding how the student is supposed to learn, including at what pace or level of ability. Additionally, evaluations point out areas of particular strength or weakness Evaluations also benefit the instructor, helping him or her learn what to grade, how to grade it, and why.

Grading

Identifying the educational progress of the student is one reason for grades and evaluation tools. Measuring skill, knowledge, and other less tangible characteristics, such as attitude, is an important element of grading, as well. The guidelines surrounding grading and performance evaluation must be fair and understandable to everyone participating in the process. When grading and evaluation are arbitrary, students and/or instructors become unhappy and programs suffer. It is for this reason that schools, universities and accredited training programs of all kinds have to establish uniform Criteria for grading and evaluating students.

Grading serves several vital functions in the educational environment.

Grading provides a means of immediate feedback to the student about his or her learning process. In order to be meaningful, however, the grade has to be associated with the educational objectives the instructor has determined for the course. When the objectives are clearly defined, the instructor can begin to determine how to measure the achievement of those objectives. For example, in a cosmetology course, if the objective is to enable Students to pass the state board examination, a consideration of the skills and knowledge needed to pass that examination must go into the development of the

objectives for the course, as well as the determination of how to measure the objectives.

Grading can be a very difficult part of teaching, for many instructors.

Instructors do not want to hurt student's feelings or damage their sense of self-esteem. In some cases, instructors act out of a desire to be liked, believing that awarding poor grades will result in animosity from students. The process of grading can be difficult, but is very important for an instructor to master.

In fact, when grading is implemented in a fair, equitable manner, it can even have a motivating effect, compelling students to attend to a subject and study hard.In cosmetology, manicuring or esthetics, there are three main areas to be assessed or evaluated: theoretical knowledge, practical skill and attitude.

Theoretical knowledge covers information students learn from textbooks, class lectures, and discussions. Practical skills are those skills needed to practice the profession, and are typically learned in labs, practice work, and performance or demonstration. Practical skills in cosmetology manicuring and esthetics include everything from cutting and coloring hair to conducting safe and Hygienic pedicures to practicing sanitary skin care.

The State Board generally establishes the basic requirements for accredited cosmetology, esthetics and manicuring courses, including what Percent of coursework is theory, and what percent is practical Knowledge. Students are evaluated on both theoretical knowledge and practical skills, with each area requiring different testing formats and types of grading or assessment.Grading is the single most contentious topic between student and instructor; it is critically important that instructors are able to clearly articulate their rationale for grading before and throughout the process.

Grading must be impartial, and should encourage students to achieve their goals in their practitioner field. It should also strive to avoid damaging students' self-confidence. In each case, the instructor must establish and maintain high standards of expectation in the classroom and for individual students.

The obligation does not end there, however. The instructor also has to assist students in meeting high expectations through thoughtful course design and careful evaluation. Unfortunately, classrooms are filled with people who are, above all, human, and thus subject to various influences in their grading. These influences, however, must be avoided if the instructor and student are to flourish in the educational environment.

While it is difficult to quantify any further the characteristics that make up a good grading practice, it is much easier to instruct on how not to grade. Instructor must make sure that they use the same grading scheme to grade and not just out of feeling. The grade assessment must be on the student performance.

Another example of how not to grade is consistently giving low or high grades to a particular student based on the instructor's like or dislike of that student. This grading scheme has nothing to do with the student's actual performance and more to do with how the instructor perceives the performance based on their personal feelings about the student again, this grading method is fraught with danger for the instructor and must be avoided at all costs.
A third type of grading to avoid is grading based on the instructor's personal values regarding the importance of a particular skill.

For example, an instructor might be so wrapped up in the proper way a cosmetologist do a roller set that he or she ignores the substance of an individual's examination answer, based on the roller set. A way to avoid getting caught in this grading trap is to be clear about your expectations for students, and inform them regarding the elements you will consider when grading. This will ensure that you and your students remain focused on the objectively laid out criteria, rather than whether the student used the "proper" roller set method.

Grading by assumption is yet another trap an instructor can fall into, putting either a positive or negative spin on the grading, depending on whether the instructor has had good or bad experiences with a particular student in the past for example, if a student routinely gets "A's" on examinations, the instructor may grade the student's work without paying close attention to details, missing the fact that the student actually performed at a "C" level on a particular examination.

When an instructor has a negative experience with a particular student, it can influence the grading of that student as well. On past performances or a negative relationship can validate a grading scheme, creating inconsistencies in grading and evaluation that must be avoided. This type of grading is based on the person feeling then the actual student performances.

Another danger involves grading students for work that the instructor cannot verify, meaning that the instructor grades based on work that is not evident or he or she did not see, an example of this is if the student is working on a practical roller set and the instructor has to sign off on it. In this case, the instructor assigns grades with no real value or meaning because he or she did not actually observe the work that is associated with the grade.

Some instructors do not like to award low grades, giving all students high marks. They may want their students to have high self-esteem, or may want the students to like them. Clearly, giving students a false sense of accomplishment by awarding high grades that are not appropriate serves no one in the long term, nor does it help them pass the state board examination.

The student may graduate from the program without a real understanding of the concepts and skills needed to function as a cosmetologist manicurist or esthetician.

Additionally, students may not have the skills necessary to pass the State Board examination. Therefore, the instructor must at all times keep the objectives of the course and the learning institution in mind. It is not the instructor's responsibility to be liked or make friends. Rather, it is to produce students who can be sent into the field as competent cosmetologist's manicurist and estheticians; individuals who are able to open up shops, follow sanitation rules and policy or work in established salons in a competent and comfortable manner.

Finally, instructors may be afraid to grade altogether. They may not want to disappoint students or make them angry. Ultimately, however, this destroys the educational experience of the student, who needs an objective assessment of his/her learning to ensure that he or she leaves school with the skills needed in a cosmetology career. It is important for the instructor to avoid these traps and ensure that he or she gives students a fair, objective assessment and grade.

A student needs to be able to understand not only what is expected of them at the beginning of the course, their status along the way and at the end of the course. If all students receive "A's", but cannot pass the state board examination, the student, the instructor, and the institution will suffer, and, ultimately, so too will the profession.

Before the instructor can progress to grading, however, he or she has to define a set of skills and abilities to measure. For example In cosmetology, this can include knowledge and skills relating to shampooing, coloring, permanent waves, and hair straightening procedures, and cutting techniques, among others. Thus, the instructor, in addition to considering what learning objectives he or she personally thinks are important, must also keep in mind what their institution considers important criteria and that criteria must be met. Consequently, before an instructor can consider what to grade or how to grade, he or she must consider what educational objectives to measure; create a program to teach those objectives, and, ultimately, a program to test those objectives.

In order to be meaningful, grading has to be fairly implemented and easily understood by the students. It also has to take place at appropriate times during the course of study. Grading during the course of the semester might serve to provide some immediate feedback regarding in what areas the student should concentrate. Grading during the course of study can also serve to motivate the student, particularly in the case of positive marks or grades, or provide constructive feedback.

In addition to the two types of grading, there are also two types of evaluation that take place with grading-outcome or formative evaluation and summative evaluation. Outcome or formative evaluation determines what the student knows before instruction and what they have learned through specific lessons. This is best accomplished by pre-testing the student to determine his or her knowledge base prior to a course of study, and then post-testing the student after completion of the course of study, to determine what he or she has learned. This method provides a ready comparison between the pre- and post-knowledge stages.

Summative evaluation, on the other hand, involves assigning grades after testing is complete. Summative evaluations can take place throughout the course, using quizzes, midterms, and other examinations, both written and

practical. Summative evaluation focuses only on the current learning, not on a comparison between what the student knew at a previous point and what he or she now knows.

So what is the difference between a Summative Evaluation and Learner Assessment?
Although both might look at the same data, a Learner Assessment generally looks at how an individual learner performed on a learning task. It assesses a student's learning -- hence the name Learner Assessment. For example, you might assess an entire class of students, but you are assessing them individually to see how each did.

A Summative Evaluation, on the other hand, looks at more than one learner's performance to see how well a group did on a learning task that utilized specific learning materials and methods. By looking at the group, the instructor can evaluate the learning materials and learning process. For example, here you may find that, as a group, all of the students did well on Section A of some instructional materials, but didn't do so well on Section B. the instructor would indicate that the students should go back and look at the assignment of Section B.

How to grade

In determining a grading scheme, the instructor will have to address several questions. First, to what extent should written tests, quizzes or performance tests be used? In many areas of cosmetology, written tests can have great value in terms of testing memory and recall, as well as providing experience for a state or other licensing examination. Second, how should performance on a project be evaluated? Is speed of completion going to be a factor, or is accurate completion the primary goal, or some measure of both?

Third, should the quality of homework and other assignments influence a student's grade, and to what degree? The instructor may decide to assign regular homework assignments to ensure that students are progressing in the subject area. Timely and regular completion of these assignments may be a factor in deciding what grade to assign. Finally, should students be evaluated solely on current performance or on their degree of improvement?

PREPARING AND GIVING EXAMINATIONS

Emphasize what students are expected to learn as described in the state content standards and curriculum. The test should reflect this content. By concentrating on the state standards, you will be less likely to feel that you have to "stop everything" to drill students on test prep.
By teaching to the standards, not only are you preparing students for the test, you also are ensuring that they're exposed to the content and skills they need to progress and advanced.

Developing A Test Plan

A test plan is a list of the content areas that will be covered by a test, and the weighting or value associated with each area or objective. "Weighting," means: attributing a level of importance to each content area by associating it with a "weight." Different subject areas are weighted differently to reflect differences in difficulty or complexity of information and time required to learn the subject. It also often includes the format of questions.

An instructor may be able to use the same criteria across many activities, or may require a different scale of criteria for each unique performance. When rating a performance on a number of dimensions or factors, consider the following: will you be adding up all relevant scores? Will they be weighted equally? If you want to weight all scores equally for a final score, rating systems should share the same scales.

Test plan objectives must conform to course objectives, and the amount of time or questions associated with each subject on the test plan should reflect the amount of class time spent teaching that particular content area. A test plan benefits both the student and teacher by clarifying what information is important, and how knowledge or skills must be demonstrated on the exam. It can be distributed to students and used by them as a study guide.

The test plan, in its broadest sense, is an outline of the course and the substantive areas to be covered. Each of these areas is association with the relative weight, or importance, accorded those subject areas, the type of questions that will be used to test each subject area, and the total number of given questions. Designing appropriate tests is a matter of careful planning. The instructor must outline the content to be included in the examination, and attribute the weight attached to each element. The Examination should also be balanced, focusing more questions on the course elements that are

weighted more heavily and fewer questions on those subject areas that are considered less important.

The layout should ensure that learning over the span of the course is tested proportionally according to the test plan.

Proper weighing of examination topics and questions requires careful consideration of the amount of class and study time spent on particular topics in addition to what the instructor, personally, thinks is important. The worst thing for an instructor to hear from a student is "you tested us on something we never learned in class," or "we spent a day on that and three quarters of the test was on that topic."

A carefully drafted test plan is essential to ensure the objectives are tied to the examination format and questions, and that all these areas, together, actually track what the student learned during the course of study. Because the ultimate objective of the cosmetology course is to pass a state board examination, course design and testing should ensure that students learn the elements related to licensing. Other considerations include the duration or length of time the exam takes, how many questions to include, and what types of questions should be included, i.e., multiple choice, short answer, essay, or true/false.

PERFORMANCE TEST

Performance tests measure actual levels of skill and abilities required in performing the day-to-day tasks of a cosmetologist manicurist or esthetician. Performance tests, like other test lay out, must be fair, designed so that all students have a chance to succeed, and are evaluated according to objective criteria.

When designing a performance examination, the instructor should consider the following:

• Identify the techniques necessary for salon work.

• Identify the knowledge these techniques require.

• Consider which areas of performance to evaluate

• Select appropriate test objectives

• Assign a time limit for completion of each objective

• Prepare necessary equipment for the examination

• Organize the equipment

• Design score sheets or checklists and evaluation tools

Before an instructor can design a test or evaluation, it is important he or she defines exactly what will be measured; in other words, what educational objectives need to be met, and how to assess whether or not they have been met. As stated earlier, these objectives are typically driven by the particular institution of learning; however, the instructor may have great latitude in determining the objectives for a course.

In order to design an effective test, the instructor needs to identify what the student is expected to know. The instructor should first identify what skills, abilities and knowledge the cosmetology manicurist and esthetician student should expect to gain from the course. Once the instructor has identified what they expect the student to attain through the course, he or she must determine which of these skills and abilities are most important, and how students can be tested on them. Finally, the instructor designs test questions to evaluate the students' learning.

TEACHING TECHNIQUES-SECTION 3

Domain and the Psychomotor Domain.

These domains also have subcategories in them arranged from the most simple to the most Complex, reflecting Bloom's belief in how learning progresses.

The cognitive domain includes memory, recognition and understanding, along with the subcategories of knowledge, comprehension, application, analysis, synthesis and evaluation. Testing at the knowledge level is based

on simple recall of facts, methods or procedures. Testing at the comprehension level requires a deeper understanding of the subject matter. An application level test question requires the student to take what they have learned, apply it to a specific situation, and arrive at an answer. While it is not necessary for an instructor to follow that format, specifically, a well-written examination will have a variety of questions testing different types of knowledge.

To illustrate the difference between knowledge, comprehension and application level questions, consider the following:

On a Knowledge Level:

The concept of porosity refers to:

A. How fine or coarse hair is

B. The speed with which hair absorbs a solution

C. The flexibility of the hair

D. Hairs per square inch

Knowledge level questions involve the recall of simple facts or information from memory. There is little if any analytical or critical thinking involved.

On A Comprehension Level:
When straightening a client's hair, the stylist applies ammonium thioglycolate, which breaks down the _____ and _____ in the hair, enabling the stylist to relax the hair.

Comprehension level questions are more difficult to answer than knowledge level questions. The comprehension level question requires that the student demonstrate a certain understanding of the course materials and how they relate to one another in order.

Application Level

A client comes in with hair bright red color in her hair. She tells you that it was supposed to be a honey blond color. The hair is dry and brittle, and she tells you the color was just done two days before. She wants you to fix it. What are the factors you have to consider, and how do you advise her?

Application level questions are the most difficult of all the question types to include on an examination. The application level question requires the student to bring up information from memory, understand the concepts and theories, and then apply that knowledge to a problem, situation, or set of facts.

Application level questions require a significant degree of comprehension and understanding.

Types of assessment

Testing or assessment may be diagnostic, formative or summative. Diagnostic assessments attempt to measure students' abilities and deficiencies before instruction begins, and then adjust the curriculum to meet each student's specific needs. Diagnostic assessment is typically un-graded, so as not to penalize students for their academic weaknesses before the curriculum is taught. Outcome evaluations are a particular kind of diagnostic test used to assess the effectiveness of instruction. Instructors develop a pre-test to assess the level of knowledge or awareness of an issue or topic, teach the information, and then post-test to see if the instruction was effective.

Formative testing includes any type of pre-testing or assessment "along the way." Formative tests are often diagnostic, and typically not graded, but used to understand the extent of students' knowledge and gaps in theoretical knowledge or skill sets. (Some theorists consider diagnostic assessment a part of formative assessment, while others consider it a qualitatively different form of testing.) Like diagnostic testing, formative testing is typically not graded, and is used as a diagnostic tool.

Formative testing considers assessment an integral part of instruction, rather than just an end product at the close of a course. Testing is not

something done to students, but equally, for students benefit. In formative testing, test data becomes part of a feedback loop that is used to change curriculum and enable students to learn more effectively. Formative testing often helps instructors pinpoint areas where students need to show improvement, and can help instructors make decisions regarding students' education.

Summative assessment usually takes the form of a test given at the end of a unit of instruction, to assess students' progress toward an overall goal. It is a comprehensive examination of the students' areas of accomplishment and deficiencies.

Summative testing involves assignment of grades after the examination. The most effective summative testing shares the following characteristics:

• Relevance: also referred to as "authenticity." Test items reflect objectives related to the theoretical world of the classroom as well as practical applications or knowledge and skills.

• Variety: It is best to use a variety of testing methods as students may naturally excel in one area or another, or be deficient in a specific skill or theoretical area.

Some students have specific anxiety or phobia regarding one method of testing. Assessment should be in each of the three learning domains, and should reflect higher-level analysis or thought processes, as well as rote recall.

• Quantity: assessment techniques are repeated frequently enough to assure validity and reliability in results.

• Testing: should produce a representative sample of students' work.

• Quality: assessment techniques are valid and accurate and reflect course objectives

• Reliability: assessment techniques ensure consistency of that result. This means that other instructors viewing the same performance would produce the same grade according to the given standards and criteria. Quality and reliability need not go together; tests can be accurate but not reliable; reliable but not accurate.

Examples of Types of test questions

Students are typically evaluated through written or practical testing of the following kinds:

True/False

True/false testing presents a statement, asking if the item is correct or incorrect. Some advantages to true-false testing are that it takes little time to write tests in this format, and also minimal time to grade. Guessing is a disadvantageous aspect of true-false testing, as students who do not know the answer have a 50-50 chance of getting the answer right. To make questions more difficult, students may also be asked to correct false statements presented to them.

Statements, or "stems" of questions, should be similar lengths.
Avoid unnecessarily confusing wording or giving the answer away to students by avoiding words such as "never" or "always" and "not" in the stem of the question. Some instructors prefer to begin writing a test using all true statements, and then revise about one-half of them, making them false. Avoid "trick" questions that grade interpretation of the question more than factual information. Use clear, simple language and avoid vocabulary words with which students may not be familiar.

Make sure items are unambiguously true or false, and ask students to write the entire word ["true" or "false"] or circle the correct item, rather than writing just "T" or "F," which may appear similar depending on students' handwriting. You may also choose an elaboration of instructions to clarify statements, such as:
"Mark true those statements you think are true, and mark false those which are partially or completely false."

Matching

Matching tests examine students' ability to recall information and associate concepts with one another. Use clear, careful wording in matching instructions. For example, it is useful to identify each set of concepts with a title, for example "List 1": and "List 2"
"Choose the item in List 1 that is most closely associated with the item in List 2."

List 1 List 2
1. Red a. The color of a stop sign.
2. Green b. The color of the sky.
3. Blue c. The color of grass.

Key points in matching tests:

- Keep items in the same format and list all sets of questions and answers on one page.
- Include a greater number of answers than the number of questions to increase the degree of difficulty.
- Keep exams relatively short, no more than 20 questions, and make each individual item or set question and correct answer brief.

Completion

Completion (or fill in the blank) testing requires students to supply from memory words or phrases suggested by a description or statement with missing terms. Completion tests may be time consuming to write, but take little time to grade.

Key points in completion tests:

• Keep sentences and paragraphs short and to the point

• Provide clues but avoid giving the answer away

• Ensure that the correct answer is the only correct, or most correct, answer

- Use appropriate vocabulary words and degree of complexity

- Do not divide a question, or question and answer, between two pages

Multiple choices

Multiple choices consist of a phrase or statement, called the "stem," and more than one possible response, of which one is correct (or most correct) and a number of incorrect (or less correct) responses. Multiple choice tests can vary considerably in degree of difficulty according to the amount of similarity among responses.

Depending on the way it is written, a multiple choice exam can be an efficient test of knowledge, or a reasonably easy guessing game.

In writing multiple choice questions, the stem of the questions should be emphasized over the responses, and it should be written in the affirmative, rather than the negative manner. Avoid the use of "always" or "never," which tends to disguise answers.

Answers should be presented in a random order so that the correct answer is not in the same physical location among the foils. Similarly, take care not to hint or provide answers to other test questions within the context of multiple choice questions. Stems, correct answers, and incorrect responses should all be the same length and in similar form. Confirm that the foils and correct answers are of similar length and complexity; don't give away answers by making foils obviously ridiculous.

Essay Questions

Essays question require answers in the form of a short sentence, paragraph or short composition. Essay questions can be particularly useful in measuring student knowledge and comprehension, as well as determining whether the student can apply analytical skills and knowledge learned to practical situations. Further, essay questions can aid the student in developing critical written communication skills, which are essential in virtually any professional practice.

Some instructors look unfavorably upon essay questions, because they do tend to require more work on the part of the instructor. Additionally, essay questions are problematic because what is evaluated, the weight placed on various factors and other subjective factors unique to the individual instructor come into play, resulting in inconsistencies in grading.

Further, because essay questions inherently require more time to answer, only a limited number can appear on a test, resulting in the testing of a smaller than desirable knowledge base related to a given examination. Another point that the opponents of essay question testing make is that cosmetology, esthetician and manicurist is largely concerned with behavioral and cognitive abilities and the performance of certain sets of skills, which essay questions do not adequately measure. While this may be correct, the essay question can be valuable in assessing the student's ability to explain various procedures or apply their knowledge to specific factual scenarios.

Some examples of essay questions reflecting the different levels of question, knowledge, comprehension, and application, are as follows:

Knowledge Level

Describe the difference between a color and color filler?

Comprehension Level

A client comes in with gray hair which has a distinctly blue tint. What is the reason for this? What treatment would the stylist recommend and why?

Application Level

The stylist gives a new client a haircut. The client's hair is shoulder length, medium textured, and straight, after the haircut, the client's hair looks as though it's been cut with a razor. What are the possible causes of this scenario? What can the stylist do, if anything, to correct it? What should the stylist do to avoid this problem in the future?

True/false questions

True/false questions, like essays, have advantages and disadvantages unique to that particular type of question. Because they are typically drafted as a short sentence or two at the most, a large number of true/false questions can be included in a test. Additionally, the instructor can probably draft a test of true/false questions relatively quickly, allowing for a shorter period of time required to write the test. Additionally, the time required to answer true/false questions is probably the shortest of any test question format. Because a large number of questions can be used, a broader cross-section of the curriculum can be tested using this method.

If the instructor decides to include true/false questions on an examination, there are some suggestions to increasing their usefulness as a testing tool:

• write all the statements as true statements initially

• keep all the content statements short

• avoid using "always" or "never" in the statement

• use clear, concise and direct wording

Matching questions

Another type of question that an instructor might use in drafting a cosmetology, esthetician or manicurist examination is matching. Instructor in favor cite the advantages, which include that the matching question can test recall and associations; that students learn and store information in the memory together for later recall and use. The disadvantages include the fact that one incorrect match typically guarantees that there will be an additional wrong answers for every mismatched pair. Another disadvantage to matching questions is that matching results in fewer remaining choices, resulting in more guesswork regarding the right answer.

Some considerations to keep in mind when drafting matching questions are:

• Make sure that the items in a set are common to each other

• Make sure sets have no more than fifteen or twenty items

• Keep sets short so completion time remains short

• Ensure the numbers of possible matches are greater than the number of problems

• Keep all items and matches on one page

Completion Questions

Completion, or fill in the blank questions, are those in which the instructor writes a statement with missing information and the student is required to complete the statement. Proponents of this type of question believe they are a good measure of recall learning. Additionally, a large amount of material can be covered in a short period of time using completion questions, making the completion question a particular favorite with many instructors.

Opponents of completion questions, on the other hand, believe they provide too many clues to the right answer, and therefore are not an accurate measure of true learning. Further, these examinations require a significant amount of time to draft and score, increasing the total amount of time needed by the instructor to create and evaluate the exam.

Some important considerations for drafting completion questions are:

• Draft the question to ensure only one correct answer
• Ensure appropriate language and reading levels
• Keep questions short
• Ensure that the language used is clear and concise
• Include enough clues in the statement without giving away the answer
• Avoid writing styles that hint at the answer
• Keep paragraphs clear and concise
• Ensure the completion question begins and ends on the same page

Examples:

Knowledge Level

1. The action of a neutralizer is to _____.

2. Overuse of bleach can lead to _____.

The knowledge level question, as a completion question, produces simple recall from memory, allowing the student to correctly fill in the blank with relative ease.

Comprehension Level

1. Acid balanced rinses are formulated to prevent color fading. Two things the rinse does to the hair which aid in prevention of fading are: _____ and_____.

   Comprehension level completion questions utilize more advanced processing and understanding of concepts to answer the question.

Comprehension level completions typically require filling in more than one blank.

Application Level

2. A client of yours is home bound due to accident. The accident has left her weak and her flexibility and ability to bend are limited. You are going to work on the client's hair in their home. In this case, you would choose to do a _____ shampoo, because _____.

Application level completion questions require the most advanced knowledge of key concepts and principles as well as an analytical process in which the student engages that enables him or her to successfully answer the question.

TEACHING TECHNIQUES-SECTION 4

Multiple Choice Questions

Multiple choice questions are probably the most popular question type for examinations, for a variety of reasons. First, their scoring is completely objective, making them a beneficial and useful measure of student learning. Second, a large amount of material can be covered in a short time. Third, student guessing is controlled by the number of "foils" or wrong answers inserted in the question. Finally, the difficulty of each question can be controlled by the degree of similarity between the right answer and the foils.

Multiple choice proponents like that the knowledge and learning tested goes beyond mere recall; questions can be drafted to test not only simple recall, but knowledge, comprehension, and application as well. Multiple choice questions are typically drafted with a choice of three or four possible answers.

When drafting multiple choice questions, some tips to make them more effective are:

• Ensure the stem is the largest part of the question
• Keep questions equal in length to one-another
• Ensure that the questions are not completely mindless, to increase the level of difficulty
• Do not write questions that provide the students with answers to other test questions (students who read the exam through first may use this technique to find the answers to other questions)
• Draft the question in the affirmative
• Do not use "always" or "never" in either the stem or the foils of the question.

Test analysis

An analysis of the examination can help the instructor determine, in retrospect, whether the questions drafted were easy, moderately difficult, or very difficult for the students to answer. In some cases, an instructor may

find a question he or she considered "easy" was rarely chosen as the right answer, proving the question was actually difficult, in the instructor's post-examination analysis.

Easy questions are drafted with the expectation that most students will get the correct answer. These questions motivate the student to continue with the test more than separating out those who know the curriculum from those who do not. A certain amount of test questions should be of the easy variety. The easy questions are identified in the post examination analysis by the proportion or number of students who got them right. If most students got the correct answer, the question can properly be categorized as "easy." Easy test questions function primarily to test recall. They are typically located among the first questions in an exam.

The medium difficulty question makes up the bulk of a well drafted examination. These types of questions are identified, again, by how many students get them correct. The best students in a class will get almost all the medium questions correct. The average student will get many of the medium difficulty questions correct, and the below average student will get only a few correct. In sum, the medium difficulty question serves as a barometer to differentiate or sift out the knowledge levels of students in the course. Medium level questions test recall and comprehension.

The difficult questions, while not making up a significant portion of an examination, should appear near the end of an examination. Only the best students will get many of the more difficult questions correct. Average students are likely to get a small number correct, and below average students are less likely to get the more difficult questions correct.

Analyzing the examination in this fashion will, in addition to helping the instructor categorize the questions as easy, medium or difficult, help the instructor determine if the test, as a whole, was fair, and assess its actual level of difficulty.

Foil Analysis

In addition to analyzing the test questions overall, the instructor will want to analyze the multiple choice questions, In the same way that a side-by-side comparison of students' performances on a particular examination question

can help the instructor determine if the exam or questions were easy or difficult, a comparison of the foils will achieve this goal, as well.

Easy questions will have foils that are clearly wrong; with even below average students likely to get the correct answer. Moderately difficult questions typically have two foils, which are clearly wrong, but the remaining foil and right answer will be quite similar. Finally, difficult questions will have four partially correct choices, but only one of which is the best answer. Only the best students in the class are likely to get these difficult questions correct.

In addition to evaluating students according to these measures, there are other ways to assess cosmetology, manicurist or esthetician student performance. Because written tests may have little to do with what cosmetology students actually do on a day-to-day basis in the field, other, more descriptive evaluations can have great value in assessing the knowledge and abilities of cosmetology students.

Short Answer and Essay

Essay questions do not provide any part of student responses.
Instead students write answers of varying lengths, anywhere from a short sentence or phrase to a paragraph or number of pages, providing basic information and explaining their understanding of specific concepts. Essay questions can be particularly useful in assessing abilities that require a series of specific steps within a general context, or combining a test of both theoretical and practical skills.

Tests may be objective or subjective. Some examples of objective tests are true-false, multiple choice, and fill-in-the-blank. Objective tests typically require students to recall information learned and apply it to test situations, while subjective tests are more often used to evaluate working vocabulary, as well as cognitive processes, and explanatory or reasoning abilities, which go beyond simple recall. Some examples of subjective texts are short answer, essay and oral exams.

Essay questions may be used less frequently than the other types of testing discussed above due to its difficulty and subjectivity in grading. While some teachers are inclined to grade "harder" than others in any kind of testing

situation, objective tests like multiple choice or fill in the blank (where there is one unequivocally right answer and the rest are wrong) are not open to interpretation in grading to the same degree as essay tests, where answers are not absolutely correct or incorrect.

Students rely on instructors to grade tests consistently, without reference to the individual being tested, but this is not always the case. Teachers may be subconsciously influenced by positive or negative factors associated with the student. Ideally, essay tests should be graded without knowledge of the student's name, but know that unhappy students may legitimately question your grading criteria. To keep students anonymous, you may want to request that students put their name on a page of the test that you avoid or fold over.

Essay questions take more time for students to answer than matching, multiple choice, or fill in the blank. Questions should be selected carefully, as students can only cover a limited number of topics. Instructors may want to limit the amount of writing in each essay question from a number of paragraphs to pages. This will force students to prioritize the importance of information overall. Each essay question should be a composite of many pieces of correct information. In grading a question, it is useful to plot a "plus" or "minus" for each significant phrase or statement that makes up the question.

Demonstration/Performance Testing

Yet another type of assessment is performance testing. Performance tests combine cognitive (intellectual) and behavioral learning or skills through the use of demonstration or performance of the abilities. Performance tests are a common requirement in cosmetology, manicurist and esthetician as the skills they test are central to these fields of practitioner study and training. Effective demonstration or performance testing pinpoints critical tasks or knowledge and appropriately tests students in those specific areas.

Demonstrations or performance examinations that test practical skills can and should be given repeatedly, so students are able to show improvement over the length of the course and learn in what areas they are accomplished or deficient. Demonstration or performance testing should mimic as closely as possible the actual ability required, providing a similar environment, with all the necessary tools, and equipment, and a reasonable time frame.

Performance or "demo" testing provides:

- Complete instructions
- Consistent surroundings
- Student identification of tasks and theoretical knowledge
- Appropriate equipment and tools
- Adequate time period
- Limited further directions or assistance, if required
- Points of observation and assignment of assessment score

Demonstrations can be graded according to many variables, including level of skill, degree of accuracy, quality of the presentation and result, attention to detail, safety, and timeliness.

STUDY GUIDE

The purpose of a study guide is to help you synthesize and summarize the information. The student might think of a study guide as a mini outline. It is especially useful for difficult or complex concepts or subject areas. The primary advantage of a study guide is that it reduces the amount of information to be learned. Also, memory is improved by putting the information in your own words and organizing it in ways that are meaningful to you. The study guide is best used for the student and the instructor as well.

These are typically formatted much like the outlines student themselves develop in preparation or study of a course. In the study guide, the instructor focuses on what information he or she believes is important, which will provide the student with guidance regarding the subject matter and where to direct their attention. The instructor test plan and study guide should include content and objectives of each subject area the number to test questions and question type.

GRADING ON: PRACTICAL SKILLS

Cosmetology, manicurist and esthetician is a hands-on profession; one in which a licensed practitioner will work with a variety of clients, on a variety of different concerns each day. In order to ensure that their practical skills are adequate, these skills must be evaluated by the instructor. In addition to

learning proper techniques for various procedures, the student's communication skills, ability to interact with others, and ability to handle the stress and difficulties associated with a specific work environment will need to be evaluated as well.

Therefore, to evaluate practical skills, instructor-centered evaluation forms, involving a description of student behaviors and activities, in addition to written examinations, can prove useful in evaluating students' theoretical knowledge and performance. There are many types of evaluative techniques that can be used to examine performance-based skills. They are commonly referred to as "descriptive scales." The most commonly used descriptive scales in the field of cosmetology; esthetician and manicurist are the following methods: the Likert scale which is a rating scale measuring the strength of agreement with a clear statement. It is often administered in the form of a questionnaire used to gauge attitudes or reactions.

The Likert scale encourages the instructor to observe the student's behavior in the natural environment, such as a clinical setting, using a very systematic approach. The Likert scale is a five-point scale, with options ranging from "strongly agree" to "strongly disagree," alternatively, from "poor" to "excellent".

Cosmetology performance skills that might be evaluated on the Likert scale include the following:

There are many other descriptive rating scales, similar to the Likert scale, but with fewer categories. Other rating scales may incorporate the ability to compare student behavior or performances against those of other students. These attributes may, then, be rated "exceptional," "above average," "average" and "below average," or, the instructor may choose to use a scale of "never" and "always" to measure the particular performance associated with this scale.

The instructor can use the rating scale to determine how the student performs:

	Exceptional	Above Average	Average	Below Average

Prompt attendance				
Positive attitude				
Professional Appearance				
Accepts constructive criticism				
Cooperative				
Shows initiative				
Engages in problem solving				
Sets high standards				
Achieves quality results				
Attention to detail				
Good communication skills				
Appropriate interactions with customers, coworkers and supervisors				
Follows all prescribed rules and regulations				
Cares for equipment and implements				
Works				

independently				

A third descriptive scale that can be used to evaluate performance-based skills is a "checklist." This is another variation of the rating scale, but uses only two categories, which may be defined as "adequate" and "inadequate," or "satisfactory" and "unsatisfactory." The checklist is probably the most commonly used descriptive scale.

	Adequate	**Inadequate**
Properly drapes client		
Washes hands before and after client services		
Disinfects work station		
Sweeps and cleans work station		
Disinfects shampoo bowl and chair before use		
Washed implements thoroughly		
Rinses implements		
Properly stores implements in sanitizer		

Another commonly used descriptive scale used to evaluate student performance on practical skills is the performance checklist. This measure is widely accepted as the most objective type of descriptive scale. While it is time-consuming to prepare, its degree of consistency among a variety of graders makes the performance checklist a very reliable indicator. Because the performance checklist removes opinion-based, or subjective, evaluation from the testing instrument, it is useful in assessing whether a particular level of competence has been reached by the student.

Many cosmetology, manicurist and esthetician professionals view the performance checklist as a valuable tool in preparing students to take the state board examination. Ideally, a performance checklist will contain from

one to seven skill or behavior subsets, to be evaluated according to specific standards and criteria, to determine competency at a particular skill level. There are a number of different ways the performance checklist can be utilized. For example, the instructor can rate the student in a "yes" or "no" fashion; asking whether or not a specific criterion has been met. If the instructor finds that evaluation level too limiting, he or she can expand the performance checklist to include a number scale, in which the lowest number signifies an inadequate performance and the highest number a perfect performance.

Individual differences in an instructor's background and experience, and factors related to age, ability, skills, attitude, personality and perception tend to be minimized using the performance checklist. The instructor merely records whether or not the particular skill was demonstrated as required. An example of practical skills for a manicurist that could be evaluated by using the performance checklist might look like this:

There are five steps required of a nail technician, in conducting proper table preparation.

Table Preparation
____ Sprayed table with disinfectant and wiped
____ Placed clean towel over cushion
____ Placed bowl of warm, soapy water by client
____ Placed implements on clean towel
____Arranged items to be used in order from left to right

In assessing student performance, an instructor might award a "3," to each step completed by the student perfectly. If cuing or minor additional direction was needed by the student to complete the step, score that step a "2." If the student attempted the step but was not able to perform the step correctly, score the performance of that step a "1." If the student missed or did not attempt the step, score that step a "0." Assessments of each student are important, not only for the student, but for the instructor as well. Evaluating the student's understanding, skill and ability also provides the instructor with feedback on their ability to teach different topic areas and subject matter involved in the course.

When developing an assessment plan, the instructor should:

1. Choose content
2. Develop standards and expectations related to content
3. Decide how those expectations will be communicated to students
4. Develop assessments to measure performance expectations:
5. Use the assessment as feedback to aid student performance and your own teaching

STANDARDS

Standards address the following issues:
• Student knowledge: required concepts and information
• Student skills: what students should know how to do at the end of the course?
• Student communication: how well a student can articulate what he/she has learned?
• Student knowledge and skill transfer: applying information and skills in new and different ways.
Standards need to be clearly articulated so that all affected by them understand what they are, and how they will be applied.

This can be accomplished by developing and providing clear performance descriptions, as well as offering samples of work that do and do not meet specific standards. By these means, students can more fully understand and appreciate the standard, and how to meet it.

EXPECTATION OF COMMUNICATION PERFORMANCE

The only way for a student to know what kind of performance is desired by the instructor is for the instructor to share his or her expectations about that performance. It is crucial on the instructor to communicate to the students his or her goals for the class, and how those goals will be evaluated.

There are a variety of ways the instructor can share his/her expectations with the student. A course syllabus, for example, can clearly illustrate the objectives of the course, and how those objectives can be met. Another very simple method is to begin each lesson with an explanation regarding the purpose of the day's lesson. In cosmetology, such a statement might be: Such a statement clearly communicates what the student will be expected to know and to do after that particular lesson.

A syllabus or course guide should include a complete listing of all the standards a student is expected to meet by the end of the course. In addition to the basic categories, however, the syllabus or course guide should include each of the steps that a student must master as part of the overall skill set. In addition to identifying the particular items on which a student will be evaluated, however, the instructor should also ensure that the student is informed on how to meet the standard, what level of skill or mastery is expected. Once the method of communicating performance expectations to the students is decided, the instructor must develop the assessment.

Develop assessments to measure performance

There are several categories of evaluation that can be used assess student learning. These are:

- Selected response assessment
- Constructed response assessment
- Performance assessment

Selected response assessments include a few different types of question formats, including multiple choices, true/false, and matching. These assessment types allow the performance levels to be set rather easily, as well as allowing the instructor to gauge the students' degree of learning relatively effectively. The problem with selected response assessment tools is the potential for students to arrive at the right answer by guessing (especially with true/false questions), and the question of whether or not the student will be able to transfer that theoretical knowledge, by applying in to real-life situations.

Constructed response assessments include question formats such as completion or fill in the blank, short answers, and visual depiction. These types of questions allow for a more in-depth assessment of a student's understanding. Performance assessments measure the practical skills a student learns. In cosmetology, manicuring and esthetician performance assessments may be conducted for a range of skills, including cutting and coloring hair, permanent waves, straightening hair, manicuring nails and skin care.

There is a wealth of information on assessment tools and instruments that

can be utilized in cosmetology instruction. In these cases, the instructor might need to adapt the assessment tool to his or her specific course or particular use, but this is much less time-consuming and involved than trying to create a brand new assessment tool or model.

If an instructor can find no appropriate assessment scheme for measuring a specific set of skills or knowledge, he or she may develop his or her own assessment scheme. In doing so, the instructor must confirm that the assessment scheme is appropriate to course standards and learning objectives. Additionally, the assessment must delineate what specific learning and skills the student should have achieves upon completion of the course.
Assessments must be fair and equitable for everyone, regardless of culture, race, and gender, and should be easily understood by both student and instructor. The assessment should distinguish between levels of performance, measure what it is supposed to measure, and provide useful feedback, for students to gauge and improve their performances. If an assessment meets these criteria, chances are good it will be a useful tool for the class and instructor.

In sum, to develop a valid and effective assessment tool, the instructor will need to decide on the format, determine what standards the assessment will measure, specify performance indicators, and articulate the task to be measured.

TEACHING TECHNIQUES-SECTION 5

Different types of assessment tools

In order for an assessment tool to be truly useful to both the student and instructor, it must convey certain information. A good assessment tool identifies which areas of student learning have been mastered, and which areas require improvement. It should identify and distinguish between performance skills that have been achieved, and those that need further practice. Additionally, assessment tools can help the instructor identify whether the teaching methods employed had the desired effect. Did the

lessons provide results in the areas expected? If not, the instructor may need to reevaluate the lesson or objectives. This is particularly important if students fail to demonstrate the acquisition of specific knowledge or achieve the level of performance-based skills that were anticipated.

There are many different types of assessment tools and methods available to the instructor. It is up to the individual to examine them, and determine what method would be most effective for their classroom and learning environment.

Some examples of effective assessment tools are:

Demonstrations: this assessment form can include many different audio/visual forms. In the cosmetology, manicuring and esthetics this text, demonstrations can be quite valuable, providing an opportunity for the student to show how to perform various procedures in the salon.

Goal setting: this assessment form can involve the student and instructor in a planning session at the beginning of the course, where the student, with the instructor's guidance, sets various performance and information goals for the semester.

Feed- back: these are an organized opportunity for the student to give immediate feedback at the end of a class session regarding what they learned that particular day.

KWL: this technique involves the student identifying what he or she knows (K) about a given topic at the beginning of the lesson, as well as what they wish (W) to know about the topic. After the lesson, the student identifies what he or she has actually learned (L).

Peer evaluations: students evaluate each other according to a set of specified criteria. In order for this method to be effective, it must be carefully structured. Peer evaluations can be very useful in cosmetology, manicuring and esthetics as a means for students to watch and learn from each other.

The students can be asked, "What were the steps in this procedure?" "Did student 'A' complete all the steps?"

"What did student 'A' do well?" "What could student 'A' have done differently or better?" "What steps did student 'A' forget?" etc....

Problem-solving activities: a problem is presented and the students must come up with a solution. This method could be well utilized in a cosmetology, esthetics and manicuring course, with the instructor presenting a particular client problem, and the students either individually or in small groups having to assess the problem and come up with an answer or solution.

Self-evaluation: this assessment tool can also be useful in the cosmetology esthetics or a manicuring setting, particularly if there are a set of objective standards for the student to meet. That list can serve as the springboard for self-assessment and discussion with the instructor regarding ways to improve learning or performance of practical skills.

Creating Rubrics

Rubrics can be used in many ways. Once created, an established rubric can be used or slightly modified and applied to many activities. Reviewing, re-conceptualizing, and revisiting the same concepts from different angles improves understanding of the lesson for students. Think of a writing rubric, good writing does not change with the project. Because the essentials remain constant, it is not necessary to create a completely new rubric for every activity.

Tools used by instructors to score performance tasks are also known as rubrics. They enable the student to obtain feedback on their performance, telling them what is expected of them in order to improve. A rubric, in order to be effective, should articulate the knowledge and skill to be assessed, explain the points that can be assigned, and provide indicators for levels of performance.

Two types of rubrics can be used to assist with assessment activities: analytic and holistic. Analytic rubrics deal with each segment of a work separately. Holistic rubrics, as the name suggests, deal with the whole work, and do not analyze the component parts. The analytic rubric identifies and evaluates the component pieces of a whole. This rubric can be effective for

evaluating things that are easily separated into parts or steps. Recipes, for example, are ideally suited for analytic rubrics. So are storyboards.

In cosmetology, manicuring and esthetics an analytic rubric can be created for a variety of skill sets perm, coloring, cutting, pedicure, microdermabrasion etc. The holistic rubric, on the other hand, identifies and evaluates student work as a whole. In this example, an entire story would be evaluated, rather than individual components of the story, such as plot, character, narration, theme, etc. In cosmetology, manicuring and esthetics the holistic rubric could be used to evaluate competence in an entire skill area, rather than individual skill subsets.
As with other assessment tools, once the criteria are drafted and plugged in, the instructor has to decide how much weight to give each factor. In a weighted rubric, certain elements are assigned a higher point value than others, based on what the instructor determines are the most crucial skills or knowledge areas for the student.

Rubrics can be an extremely valuable tool for assessing student performance and learning, evaluating student performance over a range of criteria rather than on a single component or score.

Information related to the rubric can be distributed to the student in advance, so he or she is prepared for the evaluation, according to appropriate criteria. Information about rubrics enables students to understand very clearly what skills they are supposed to master and what knowledge they are to learn. Additionally, understanding the different levels of learning reflected in the different dimensions of the rubric will help clarify to the student areas in which they are deficient.

The advantages of using the rubric include that they keep both the teacher and student focused on what activities are to be taught and assessed; and that they can be reused for a variety of activities.

DEVELOPING COURSE CURRICULUMS

The course outline can be considered the strategic plan for the course. It is an agreement between the instructor, students, and institution that states course objectives. A course outline should be well organized and clear, providing the basic information and requirements for the course. It should

also include a description of the course, its format, order of presentation (instructional sequence), and the amount of time dedicated to each unit of the Curriculum. Course description, including outline of course content, and areas covered.

At its most basic, the course outline may take this format:

Course:

Time:(in credit hours)

Description:

Objectives: The student will....

Activities:

Resources:

Criteria for Evaluation: [tests, etc.]

More often, the course outline is a fairly detailed syllabus of course information with a comprehensive description of the overall course, including major topic areas covered. It typically also lists the schedule for class sessions, showing the amount of time allotted to each topic, over the length of the course. While course outlines are typically written by instructors, they are in reality a collaboration between the teaching institution and the instructor, as courses must meet the objectives set out by the school and the state board.

The course outline is reviewed to determine whether the course meets the institution's mission objectives, and the academic standards and requirements set by the school.

More detailed course outlines also tell students:

• What is going to be taught, when, and how?

• Dates and times of class sessions

• Time dedicated to each area of study or competency: (typically, the amount of time specified at the state level or by the educational institution.

• Instructional methods/course format and presentation

• Strategy for the integration of theory and practice

• Instructor's office hours and contact information

• Prerequisites for taking the course (information and skills, i.e., previous coursework).

• A list of all subject areas covered in the course; listed in the order they will be presented

• Types and dates of graded assignments and course requirements for success

• Required and supplemental course materials, including books, videos, and reference materials

• Tools, equipment, lab facilities, and related instructional materials or supplies required

• Implements/equipment - function, proper use, and maintenance

• Processes:

• Professional ethics, health and safety requirements (state and federal laws), skill areas

• Goals associated with specific topic areas, as well as practical requirements or competencies in key areas

• Statement of course objectives

Assessing performance

Your course outline should show the standards and criteria by which you assess and track the progress of students. (Assessing performance is an important element of class design.

Course outline checklist:

a. _____The subject matter is arranged in a logical order
b. _____The course is associated with learning objectives
c. _____Appropriate time is allotted for each area
d. _____Teaching methods or format are specified
e. _____Subject matter is divided into theoretical versus practical training
f. _____Grading procedures (or other methods by which students' progress can be tracked and evaluated)
g. _____Materials, equipment, tools, and/or lab facilities are listed
h. _____Prerequisites are listed
i. _____References, texts, and/or multi-media resources are listed

The following is an example of a type of course outline:

Theory of Cosmetology I

2008-2009

Course Information:

Organization:

Division:

Course Number: COS 101

Title Theory of Cosmetology I

Credits:

Developed by:

Lecture/Lab Ratio:

CIP Code:

Assessment Mode:

Semester Taught:

GE Category:

Separate Lab:

Intensive Writing Course:

Prerequisites None

Educational Value

This course provides beginning knowledge of cosmetology for those preparing to become a licensed cosmetologist.*Description*Introduction to the basic manipulative skills in manicuring, professional image and conduct and personal hygiene. Includes basic sciences in bacteriology, sanitation and physiology pertaining to the head, face, hands and arms. Theory and use of electricity and light as applied to cosmetology. The course also includes laws and rules governing cosmetology.

Textbooks
Milady's Standard Cosmetology. Publisher: Milady. Year: 2002. Required
Beauty College - 2 - Theory of Cosmetology I
Equal Opportunity Employer and Educator

Competencies and Performance Standards

1. Identify laws, rules and regulations of North Carolina State board of

Cosmetology

Learning Objectives

What you will learn as you master the competency:

a. List regulations for cosmetologists.
b. Demonstrate proper safety habits when working with chemicals that relate to hair
c. Describe laws and rules governing cosmetology.
d. Comply with laws and rules governing cosmetology.

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• In completion of Phase I Exam.

Criteria - *Performance will be satisfactory when:*

• Learner lists regulations for cosmetologists.
• Learner demonstrates proper safety habits when working with chemicals that relate to nails.
• Learner describes laws and rules governing cosmetology.
• Learner complies with laws and rules governing cosmetology.

2. Analyze basic sciences of bacteriology, sterilization, and Sanitation related to cosmetology.

Learning objectives
What you will learn as you master the competency:

• Describe the relationship of bacteria to the spread of disease
• Describe the difference between sanitation, disinfection and sterilization

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• In completion of Phase I Exam.

Criteria - *Performance will be satisfactory when:*

• Learner describes the relationship of bacteria to the spread of disease
• Learner describes the difference between sanitation, disinfection and sterilization

3. Demonstrate basic manipulative skills in hair coloring and various hair treatments.

Learning objectives
What you will learn as you master the competency:

• Demonstrate basic manipulative skills in color filler.
• Demonstrate basic manipulative skills in bleaching.
• Demonstrate basic manipulative skills in cream oil bleach.
• Demonstrate basic manipulative skills in protein conditioner.
• Demonstrate basic manipulative skills in contribution of color.

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• On completion of Phase I Exam.

Criteria - Performance will be satisfactory when:

- Learner demonstrates basic manipulative skills in color filler.
- Learner demonstrates basic manipulative skills in bleaching.
- Learner demonstrates basic manipulative skills in cream oil bleach.
- Learner demonstrates basic manipulative skills in protein conditioner.
- Learner demonstrates basic manipulative skills in contribution of color.

4. Demonstrate theory and use of electricity and light as applied to cosmetology:

Learning objectives
What you will learn as you master the competency:

• Analyze hair and scalp conditions.
• Apply basic scalp treatments.
• Demonstrate basic scalp manipulations.
• Demonstrate basic hair and scalp corrective treatments.

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• In completion of Phase I Exam.

Criteria - Performance will be satisfactory when:

• Learner analyzes hair and scalp conditions.
• Learner applies basic scalp treatments.
• Learner demonstrates basic scalp manipulations.
• Learner demonstrates hair and scalp corrective treatments.

5. Display a professional image.

Learning objectives
What you will learn as you master the competency:

• Maintain good personal hygiene.
• Interact professionally with clients.
• Dress appropriately for the salon field.

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• In completion of Phase I Exam.

Criteria - Performance will be satisfactory when:

• Learner maintains good personal hygiene.
• Learner interacts professionally with clients.
• Learner dresses appropriately for the salon field.

6. Demonstrate effective business administration skills.

Learning objectives
What you will learn as you master the competency:

• Demonstrate effective reception desk procedures.
• Perform inventory of supplies and equipment.
• Practice effective telephone techniques.

Performance Standards
Competence will be demonstrated:

• During supervised practical.
• During mock board exam.
• In completion of Phase I Exam.

Criteria - Performance will be satisfactory when:

• Learner demonstrates effective reception desk procedures.
• Learner performs inventory of supplies and equipment.
• Learner practices effective telephone techniques.

Types of Instruction

• Classroom Instruction
• Demonstration
• Supervised Practical
• Theory Group Work

Grading Information:

Grading Scale

A 91% - 100%

B 81% - 90%

C 75% - 80%

D Below 75%

TEACHING TECHNIQUES-SECTION 6

Developing Learning Outcomes for the Course of Study

Course development is typically structured around learning objectives, succinct statements telling what behaviors learners should be able to accomplish at the end of a course or instructional unit.
Learning objectives identify what information and abilities students should achieve as a result of this course, naming the most significant and relevant goals and objectives that are the framework for course content.

Learning objectives drive curriculum development. They communicate to students the expectations of the course, identifying the types of achievement or areas of accomplishment students must demonstrate to show competence or understanding. Clear learning objectives make students accountable for their progress or lack of progress toward a goal, providing both a standard and criteria for the assessment and evaluation of students.

There are three levels of learning outcomes or objectives, distinguished primarily by their degree of specificity in regard to students' abilities or areas of knowledge, ranging from the general to specific, and reflected in the verbs that are used to describe particular areas of knowledge or abilities:

• Course objectives or outcomes: the highest and most general level, indicating what the student will do at the end of the course of study.
• Unit objectives or outcomes: what the learner will achieve after a series of lessons on a specific subject or subjects
• Lesson or instructional objectives: the most specific type of outcome, directed at the daily lesson plan level.

The development of a course outline and course content is closely integrated with the use and clarification of learning objectives, which are also referred to as learning outcomes, behavioral objectives, competencies, or performance objectives. In each case, learning objectives are expectations of student learning that provide a context and framework for student performance, and standards and criteria for determining if those objectives have been realized.

Learning objectives are three-part statements describing scholastic expectations for each student. They consist of a student behavior or "action statement," which describes what the learner will be doing, and at what level of mastery; a condition statement, which describes under what circumstances the learner will complete the measurable, observable behavior or action statement; and the performance criteria or criterion statement, which describes the quality or quantity required for successful or passing performance, and may mention a time-frame or standard of quality or quantity.

Learning Objectives

Learning objectives explain the reasons the course is important. They are typically drawn from mission statements and express the purpose for the course, as well as the means of measuring performance or success in the course and competency of students in the subject matter. Learning objectives are stated in terms of student achievement, and state exactly what students must do to show expertise in skills and theoretical knowledge.

Action Statement

Learning objectives typically state what the student should be able to do after completing the course. They are action statements about student behavior that should closely approximate actual tasks required of cosmetologists. Learning objectives should be detailed and focused, and be written in terms of a specific observable product or outcome. Performance objectives can be written many different ways, but are often written in the following form:

The student will...

The action statement is one of the most significant parts of the performance objective because it states what the student will be able to do as a result of the instructional unit or course. The verbs used in writing learning objectives are extremely important.

Choose verbs that are highly descriptive and clearly and concisely identify a quantifiable behavior. Use specific rather than ambiguous verbs. For example, use, "identify," "locate," or "compute," and avoid, "know," "understand," or "comprehend.

Condition Statement

Performance conditions or condition statements express the terms or conditions of testing or assessment under which the student will be asked to demonstrate ability or expertise in theoretical knowledge and/or the performance of skills. Performance conditions describe the resources, tools, and equipment the learner will need to complete the quantifiable behavior, as well as the conditions or context under which the student must perform.

The condition statement should include these details:

• Context or situation

• Equipment, tools, facility or implements required

• Reference materials or texts used

• Equipment or instructional aids provided to assist the student

• Student behavior/ action statement

• Performance condition/ condition statement

• Performance criteria/ criterion statement

• Knowledge or skill to be gained

• Under what conditions or in what context

• Evaluation based on standard criteria; often in the form of a percent or grade

A condition is usually specified by the term "provided" or "given," for example:

• Given a set of questions or series of problems...

• Given a list of conditions...

• Provided a choice between...In some cases, objectives are written without conditions of performance.
In such a case, the condition is considered implied.

Criterion Statement

Criterion statements are also referred to as competencies, levels of expertise, or levels of mastery. They specify the specific criteria for successful or acceptable performance; i.e., the standards, in quality or quantity, by which the achievement may be assessed, and define the qualifications for success or failure, with specifications relating to time periods, levels of efficiency, accuracy, speed, or quality of performance or work. They also may include the formula for quantifying success or passing achievement.
Criteria statements should be quantifiable, making clear at what level a student must perform an activity to be considered successful or pass the course.

The following steps summarize the process for developing clear, well-defined learner outcomes:

• For each instructional objective, distinguish each individual task or activity that can be completed or achieved by the student.

• Identify the desired learning or performance objective in behavioral terms.

• For each objective, identify the context and conditions under which the student must perform.

• Identify the student's required level of expertise or mastery.

• Identify the criteria and assessment methods for evaluating that specific objective.

Common problems or mistakes in learning objectives include the following:

• Lists subject areas or topics but not learning objectives

• Outcomes are phrased in vague or unmeasurable terms

• Quantity or quality of outcomes is unreasonable or not feasible within the specific time- frame, environment, etc.

The outcome is actually a combination or cluster of outcomes, which must be disentangled from one another Learning objectives serve no purpose if they are not measurable or student achievement is not assessed. Remember that learning objectives should be quantifiable, so avoid using verbs that are ambiguous or difficult to quantify; verbs like "know," "comprehend," "study," "understand," "appreciate," "acquaint," "realize," and "learn," for example. Learning objectives must do more than just describe learning activities. Good learning objectives are those that can be evaluated to determine student mastery of course content.

One rule of thumb for learning objectives is to be smart, specific, measurable, acceptable to the instructor and institution, realistic in goals, and timely.

Use this list to confirm the course effective learning objectives:

• Is the learning objective quantifiable or measurable?

• Are learning objectives associated with course objectives?

• Is the learning objective written in observable outcomes?

• Is the learning objective stated using an accurate, relevant, and active verb that describes the desired level of performance?

• Do learning objectives measure a set if behavioral out comes?

• Do learning objectives corresponds with instructional activities and evaluation?

• Do learning objectives specify the conditions and context for successful performance?

Behavioral objectives are often written in terms of instructional domains (cognitive, affective, or psychomotor). The following section on Bloom's taxonomy will introduce you to these concepts.

Domain/Target/Focus Chart

Domain	Target	Focus
Cognitive	**Knowledge, intellectual skills**	**Mind**
Affective	**Attitudes, feelings, values**	**Spirit**
Psychomotor	**Motor skills and manipulation**	**Body**

Cognitive domain

The cognitive domain is associated with mental skills or knowledge.

It is related to performance requiring specific knowledge or information, theoretical principles, established concepts, and problem-solving abilities or practices. Within the cognitive domain are six levels of performance, listed from simple to increasingly complex.

Level	Defined by	Key Verbs	Ty
Knowledge	Testing recall of data and recognition of factual statements ;remembering of previously learned material; recall of accurate, appropriate information	Define Label Select List State Know	Na De Wh Ho Ho Ye
Comprehension	Understand the meaning and be able to explain it in your own words; translation, restatement, interpretation, extra polation; the ability to understand the meaning of information	Classify Indicate Explain Summarize Interpret Infer	Pr Ca Di Co Su
Application	Application of original information to novel situation; use of learned material in new environments or situations; may involve the applications of principles,	Use Predict Apply Solve Modify Compute	So Ap Pu Co

	concepts, laws, or theories		
Analysis	Breaking concepts or information into elemental components to understand its structure and relationship among parts; distinguishing between fact and suggestion or deduction;	Distinguish Identify Compare Analyze Contrast Outline	Wh for the Wh tha
Synthesis	Combining elements or components in novel way; creating a new pattern or structure; learning outcomes are typically creative.	Design Develop Solve Create Organize Reconstruct	Wr mo De Co De Cr
Evaluation	Application or assessment based on specific criteria or rationale; judgments regarding value and relevance of concepts or materials; ability to judge value of material for specific purpose based on specific criteria.	Determine Evaluate Defend Judge Appraise Conclude Interpret	Pro aga use

Note that the same verbs can be used at different levels of cognitive complexity. While many students will be able to function at the more simple cognitive domains, it is important to produce graduates who are critical thinkers and decision makers, operating at the more complex cognitive levels. Graduates who function at higher cognitive levels operate beyond the basic transmission of facts, or ability to recall what is taught, the most qualified professionals in cosmetology manicuring and esthetician are those who are able to analyze and synthesize information, drawing accurate and relevant conclusions based on their observations and the information provided them.

Affective Domain

The affective domain relates to the development of attitudes and values that are associated with success, but affective objectives are more difficult to assess or measure, as they relate to the demonstration of attitudes or feelings toward other people, concepts, and things. In so many cases, professional success is based on more than specific knowledge and skills; much of job performance is associated with affective factors, which are hard to quantify, such as the following attitudes and values desired in students and professionals:

- Positive attitude
- Getting along with others
- Having a good work ethic
- Enjoying their job

The affective domain can be broken down into categories as well. These are listed in order from the most simple to the most complex:

- Receiving
- Responding
- Valuing
- Organization
- Characterization

Affective Domain Chart

Category or Level	***Definition***	***Key words***
Receiving (phenomena): awareness, perception, attention to and reception of (nonverbal) and verbal information Responding (to phenomena)	Awareness or attention to something in the environment Showing new behavior as a result of specific experiences;related to motivation	Asks Chooses Describes Follows Selects Answers Assists Performs Practices Reports
Valuing; assessment of worth or value	Showing commitment or personal involvement	Completes Demonstrates Differentiates

		Justifies Proposes
Organization	Integrating a new value into one's own personal values or priorities	Arranges Combines Compares Modifies Prepares
Characterization or internalizing	Acting consistently according to a new value	Acts Discriminates Qualifies Verifies Questions

Any time you include standards for performances or actions such as these, you are considered elements of the affective domain:

• Good work ethic: appropriate habits and attitudes, pride in good work
• Appropriate appearance and grooming
• Appropriate relationships with employers
• Appropriate relationships with fellow employees
• Personal and business standards related to ethics
• Appropriate relationships with clients - customer relations
• Communication skills

Psychomotor domain

The psychomotor domain is associated with the development of manual or physical skills. Objectives relating to it include the performance of specific abilities, and development of competencies and skills associated with the use of tools, supplies, equipment, and materials.

Manipulative skill training in the psychomotor domain is central to success and comfort in cosmetology, manicuring and esthetician. It is of paramount importance that objectives in practitioner programs allow students to achieve competency and mastery over psychomotor tasks.

Students will need to practice under instructor supervision to gain confidence and competency, and require sufficient time to practice and develop their skills.

Category or Level	**Definition**
Imitate	Observe and repeat a skill or procedure
Manipulate	Perform a skill or produce the action in a recognizable way by following instructions instead of observation
Precision	Perform the skill or produce the action, accurately and exactly, in an expert manner
Articulation	Modify the skill or action to adapt to novel situations, may include the combination of more than one act skillfully practiced in sequence
Naturalization	Completion of one or more skills or actions with comfortand ease; skill becomes automatic with little physical oremotional energy expended
Category or Level	**Type of Action**
Reflex or involuntary action	Reaction
Fundamental movements	Applicable to young children (crawling, reaching)
Perception	Response to stimuli (catch, write)
Physical abilities	Actions that can be developed and (stop, react)
Skilled movements	Advanced learned movements(hit, dive)
Non-discursive communication	Effective body language(interpret, express)

LESSON PLAN DEVELOPMENT

In the same way that a course outline indicates the content and objectives of the course, the daily lesson plan describes the content and objectives of the

lesson. A lesson plan is a clear blueprint, often developed by and for the instructor that is the guide for teaching the lesson. In many cases, instructors are provided only very general guidelines regarding course and unit requirements, which the instructor or a committee must translate into meaningful lessons objectives, content, and activities. The lesson plan is the most detailed aspect of the planning process. Class time is limited, so instructors should make the best use of it.

Striking the delicate balance between too much and not enough information is difficult. You must have time to complete all essential activities or topics, and still provide time to take questions from students. If you feel rushed, you may be trying to squeeze too many objectives or activities into the lesson. Introducing too many ideas in a short time is counter-productive, so limit lesson subject matter to a reasonable number of topics. If the lesson is too long for one session, divide the topic into multiple lessons rather than trying to put everything into one class session.

Lesson should always review prior information and introduce new elements or activities. Make sure each lesson is logical and builds on information in previous lessons. The most effective instructors use a variety of exercises, activities, teaching formats, and strategies to maintain interest during each daily lesson and over the entire course. Also limit the amount of entirely new information you introduce in a lesson. Lectures may be useful and effective in meeting certain learning objectives, but limit them to the length of time students are able to maintain interest in that type of presentation. Provide information for more motivated learners to review on their own if they have an interest.Lesson plans vary enormously; some instructors include highly detailed information; others do not. The lesson plan typically includes the course, unit, and lesson title (which may be referred to as "subject" and "topic"), as well as a description of the theoretical and practical information that will be covered in that session of the course.

Lesson plans usually include an introduction to the material, or another type of preparatory statement providing orientation to the lesson, giving students an idea of what is to come and what will be expected of them. The introduction should include a statement of lesson objectives, stated in the format discussed earlier, and reasons these objectives are important.

Lesson objectives dictate the basic knowledge, skills, and attitudes, or cognitive. Lesson plans establish the objectives for the lesson, and bridge the transition between prior and new subject matter, but their main goal is to require the instructor to organize the lesson subject matter and materials and help the instructor prepare for the class. There are many benefits to formal lesson plan development; the lesson plan helps instructors prepare for the day, know their subject matter and how to present it. Doing without one is a disservice to the instructor and his or her students.

Remember that lesson plans should always be based on and revolve around students' needs and interests, and that they should be flexible. For example, if many students do not understand a concept after an initial explanation, it must be repeated in a more effective way. Instructors must be willing to change the lesson plan if students are not meeting learning objectives. Change in lesson planning should be student-focused. That means evaluating the value of what is taught according to the extent to which it affects student performance in one or more learning areas.

The lesson plan should also be flexible enough to reflect changes in the industry; ideally the lesson plan should be updated each time the lesson is taught. Try to keep lesson plans in a legible format so they can be followed without a great deal of effort, but also be easy to update, for example by leaving white space on the page, in margins, or adding lines for written notes that can be used to revise outdated information and keep the lesson topical for the next group of students. While lesson plans vary according to the teacher's experience and expertise, they are often written as a series of tasks or steps for achieving specific objectives. Lesson plans commonly include information regarding teacher and student preparation, a description and objectives of the lesson, format or style of presentation, safety precautions and sanitary guidelines, as well as some kind of summary, assignment, and feedback mechanism to check students' understanding. Lesson plans benefit students, letting them know what is expected of them, and where and how to seek help if they have any questions or difficulty with the material, both in and out of the classroom.

Lesson plans may also include or involve the following:

Locations and **schedule** for class meetings or labs.

Presentation notes discussing the instructional format and lesson strategy lecture followed by class discussion and practice quiz, and can include detailed lesson subject matter and instructional aids.

Instructional aids and course materials that will be used to emphasize points in the lesson. Also note books or articles related to the topic that students may find interesting or useful.

Time frame: the amount of time or duration of each subject area of the lesson, including a schedule with approximate times of subject matter and activities. The plan may also note activities or information that takes less or more time to present than anticipated.

New concepts, topics, or skills that will be covered in the lesson,

Prepared items for the teacher and student, including material, instructional aids, and equipment required by teachers and students during the course of the lesson. It may also include safety precautions related to the use of particular implements or equipment. Note any books or equipment that is the responsibility of students to bring to class. Include any listing of items required for demonstrations.

Resources or reference materials. Lesson plans should have detailed information regarding assignments, and note workbook or text book chapters or pages of significance that should be referred to as homework or pointed out in class.

Activities associated with the subject area: Instructional activities are the processes and experiences through which students learn lesson objectives. Most activities are attempts to approximate the experiences students will encounter. This may entail learning the actual acts themselves (learning to cut or style hair, for example) or reading about these acts, taking a field trip to learn about them, watching a movie about them, or doing homework related to the act of cutting or styling hair. The most effective instructional activities stimulate student interest and provide variety in the daily schedule.

In planning learning activities, consider the prior knowledge or skill level required to perform the task successfully. Activities should build on prior knowledge and the steady development of skills. Also be certain that the

activity, behavior, or performance gives students adequate time to practice the behavior and provides students with feedback regarding their performance, particularly regarding issues or subject areas that require further improvement and practice.

A summary of the information presented in the lesson:
In the summary of the lesson, which is presented near the close of the class session, instructors should summarize the main points of the lesson and why they were significant.
May be followed by evaluation procedures such as an oral or written practice test.

Review questions for the students at the close of a topic, assessing to what extent lesson objectives were achieved. This is also used to stimulate discussion.

Required homework or practical assignments: Students should be assigned meaningful practical and theoretical tasks to complete in their own time or during practical sessions. Homework may include any learning activities or processes that students are able to complete on their own, in their own time. Instructions should be written in clear terms, so there is no confusion regarding the assignment.

Standards and criteria to evaluate the students: Any grading or evaluation standards, and how they are calculated, including quizzes, tests, projects, or other critical feedback should be given to students.

TEACHING TECHNIQUES-SECTION 7

Evaluating Students

Student coursework is typically assessed using a range of grading systems appropriate to each type of knowledge:

- Theoretical knowledge
- Practical abilities
- Manner or attitude

A grading system requires the development of measuring instruments, such as exams, or quizzes, as well as evaluations related to project performance, homework, attendance, and/or degree of improvement, to assess the student's progress. It is a 3-step process that involves:

- Identifying significant skills and necessary knowledge.

- Writing questions for those skilled, knowledgeable students with good recall of information can decipher and "guessing".

- Assessing each student's level of mastery and assigning a Grade or score.

Identifying Significant Skills and Necessary Knowledge

Choosing what to test is an important consideration. Instructors should be sure to test the most substantive or significant information and necessary tasks and reasoning skills, and be able to assess performance on a consistent scale for all students. You should have a very specific idea of what you're evaluating, and the learning objectives associated with target skills and knowledge. In some cases, simple recall of memorized information may be appropriate. In other cases, a specific sequence of steps, method, or procedure must be recreated, and/or reasoning skills and higher level cognitive tasks are called for.

The overarching purposes of testing are to identify educational development and measure knowledge or ability achieved. Testing or assessment is a way of determining to what extent students have met lesson, unit, or class goals. Fair testing treats all students equally, meaning that the same level of knowledge will be rewarded consistently. While accrediting institutions typically set, standards and criteria, there must be general agreement and common interpretation of testing instruments and student responses.

In sum, testing or assessment, according to Kellough and Kellough, must serve one or more of the following purposes:

• Assist student learning

• Identify students' strengths and weaknesses

• Provide decision-making information

• Assesses effectiveness of an instructional plan or program
(Used to improve plan or program)

• Assesses teaching effectiveness (used to improve teaching
Effectiveness)

PREPARING CLASS PRESENTATION (SPEECH COURSES)

Presentation Style: Each individual identifies specific attributes that they want to convey-such as confidence, trust, or passion-and learns to exhibit those qualities every time they communicate. You can use student response system to poll students on a series of questions in order to gauge their comprehension of presented material. Some systems include the ability to get feedback from students while the lecture is in progress, which allows you to quickly identify topics that need more explanation.

Using presentation software, such as PowerPoint or Keynote, you can create a class presentation with an organized outline. The outline can serve as a touchstone for class discussion and allows students to spend less time taking notes and more time responding to the lecture. Some instructors make presentations available to students before class; this allows students to print out a copy, or download a copy onto a laptop, for note taking during the lecture. Some technologies also allow you to record audio of your class lectures that can be synchronized with your lecture notes; in some cases, students can add their own notes in class by using laptops that are synchronized to your presentation.

Instructional materials and equipment, known as teaching aids, are physical items used as teaching resources that facilitate a student's ability to learn.

Vital tools in cosmetology instruction, instructional aids include a vast variety of materials, media, and equipment that, carefully chosen, can contribute significantly to the classroom experience.

Great care and attention should go into the selection and/or creation of instructional materials, as thoughtfully developed and presented "props" can be of considerable value, with the potential to powerfully enhance the learning process. While good instructional materials and equipment support the learning experience, poor use of materials or inappropriate aids can confuse students about lesson objectives.

Instructional aids may be drawn from a variety of sources, including printed information or images from cosmetology textbooks, pamphlets, brochures, or materials related to other fields, businesses and industries. In choosing materials, consider what instructional aids used in the lesson will best illustrate subject matters and impress itself upon your student. Good visual aids tend to be highly visible, often brightly colored or outlined. They should be durable, well-constructed, and easy to move (portable) and use. Ultimately, they must be understandable to the student, avoiding concepts or terminology with which he/she is unfamiliar.

Instructional materials should add variety to the educational program and maintain student's interest. In a repetitive lesson, for example, you might use two different instructional aids to emphasize or teach the same point, rather than one. Use of repetition can be very effective, but can also engender listlessness in the class.

Given the mind-boggling variety of teaching materials available to the instructor, it is quite feasible for an instructor to utilize instructional aids from each of these three categories:

- Printed materials
- Audio and/or visual materials
- Cosmetology, manicuring and esthetician tools and equipment

Selecting Instructional Materials:

Sources for instructional materials are everywhere, but word-of mouth is perhaps the best way to learn about effective instructional aids. You may discover useful tools in a casual discussion with coworkers, paging through professional journals, in advertising, at regional or national conventions, or perusing educational aid catalogues available in the consumer or specialty education market. The greater variety and number of resources you encounter, the better your ability to choose excellent resources for your students. Keep an eye open for all kinds of cosmetology materials, teaching aids, and hardware, from commercial as well as noncommercial sources.

It is understood that cosmetology, esthetician and manicurist instructors do not always have the latitude to choose their own instructional materials and equipment. The decision-making process is often collaboration among a variety of key players. It is generally a good idea for all individuals involved to review the instructional materials individually, and ideally, rate them on the same rating scale, then meet to review all responses. The decision should be made after sufficient discussion and exchange or ideas and opinions, but in a timely manner, to provide enough time for instructors to get comfortable with new materials or develop courses that utilize those materials.

Cosmetology instruction materials can be commercially produced or original, developed by instructors themselves. Typically, textbooks and workbooks are commercial products, rather than individually developed resources. Many cosmetology, esthetician and manicurist materials are readily available at reasonable prices. If needed materials or resources are not available, for example, because it is a new subject area that is not yet associated with instructional aids, the instructor can make an effort to bridge these gaps through the development of materials like worksheets that include text and images that will impress themselves on students in a memorable or easy to understand way.

Criteria for Printed Materials

The primary assessment criteria for printed materials are the credibility and reputation of the material and its source, meaning the author, publishing agency, and manufacturer of the printed materials.

While word-of-mouth can also be very useful, the accuracy and validity of written information should be confirmed by a knowledgeable independent source, like, for example, material that is discussed or published in trade journals, which typically undergoes a professional review process. New materials, like just published textbooks, have no record, but are usually test-marketed, with some written review, assessment, or rating according to specific criteria.

Incorporate the material into the course if you think it will be a good addition to the lesson plan; make sure it goes along with the State board requirements, Enhancing the course and facilitating learning objectives. Judge the suitability of the subject to determine its compatibility with the existing content of the course, the mode of learning, method of instruction, and the students' capabilities. You may need to secure permission, if necessary, to use the materials for instruction purposes. Other criteria to consider include:

• Aesthetic qualities: print and visual attractiveness

• Quality of writing

• Expense: is there a fee for use of the text? (Include any potential, hidden, or less obvious costs)

• Contemporary: outmoded information is of little use in cosmetology instruction

• Memorability

Types of Printed Materials/ Reference and Textbooks

Reference books and textbooks are common resources in cosmetology manicurist and estheticians instruction. Textbooks are compilations of printed materials and images developed into an organized curriculum, or set of lessons, to facilitate learning. Reference books, like encyclopedias, are authoritative compilations of detailed information about a specific

subject or subjects that students are likely to consult as needed, and are less frequently than a textbook.

Textbooks are typically a primary source for cosmetology, estheticians and manicurist students, so it is useful for each student to have his/her own copy, and provide extra copies in case a student forgets his/her text (although this should not become a habit). The selection of a textbook, and in many cases, its accompanying workbook, is one of the most critical decisions made in lesson development. In many cases, the textbook is a core around which lesson plans are based. The textbook should never be the sole resource of a course, however, but should be supplemented with a variety of other materials.

Textbooks are chosen based on subject matter, organization, and "readability," which refer to the level of comprehension expected from print materials, as calculated by a formula, and usually expressed as a grade. In choosing printed materials, assess reading comprehension ability in students and the degree of difficulty in content. Consider and note difficult vocabulary words, unnecessarily long sentences, or too much complexity in the ideas presented.

Readability can include:

• Aesthetic appeal: are the materials attractive and easy to read? Is the print large enough to read comfortably?

• Order: Is the sequence, or chronological way items are presented, logical and clear?

• Depth: What is the level of complexity or philosophical weight of the items presented?

Written resources are useless unless students are reasonably good readers, able to comprehend the ideas presented in the lesson and meet lesson objectives. Textbooks that do not match students' reading levels are inappropriate. Teachers should also review textbooks in light of changing technology and recent innovations that may make otherwise useful

textbooks or reference books outdated. In this case, instructors should be prepared to note outdated information in class and substitute accurate up-to-date facts.

Because reference books may be expensive and used only infrequently, they typically need not be purchased by each student, but all students should be able to consult and use reference materials as an informational resource. Reference materials should be made readily available to all students through a library or resource center, where relevant reference books and related materials should be put "on hold" for students' use. Mini-libraries or resource centers can be easily installed by designating a "study area" in a specific location, and making common reference materials and textbooks available so students can visit the area and use materials at their own convenience. Students may want to clarify concepts or lessons learned in class or have an opportunity to study a topic on their own in greater depth.

Teachers should prepare a list of reference books and related materials that will be used over the course of the class so students can acquaint themselves with these resources and learn where they can be found. Instructors should teach and/or review how to use textbooks and reference books effectively, including sections like a glossary or index, as well as how to research a subject using library resources. Knowing how to use a library system and reference materials are among the most useful tools a student can learn.

Workbooks

Workbooks tend to discuss established objectives of a lesson, typically emphasizing basic facts and figures regarding a topic. Workbooks can be very useful because they combine a substantial amount of information, assignments, directions, news, notes, and exercises regarding a topic into one easy-to-use resource. Workbooks are usually written to accompany a specific textbook.

Many provide a teachers' edition with additional information for the instructor to use in preparing or teaching a lesson.

Workbooks may contain useful definitions, written exercises and activities, practice problems, assignments, and questions, and even quizzes and tests. They commonly provide lesson review or testing at the end of a section. Most workbooks have a place for students to write answers and notes within the workbook, itself.
If students write their answers in a notebook, instead, workbooks can be reused economically.

Good workbooks can be used to facilitate learning in students with a wide range of abilities and interests. They allow students to work at their own pace, with extra credit or advanced skills training in optional sections, and offer flexibility for slower learners who can take extra time to complete exercises or review a section.

Workbooks can be useful "filling in the gaps" when a student is absent. Exercises and problems can be studied and completed at home, or be assigned as a supplement to catch up with missed work.

Worksheets and Handouts

Worksheets and handouts are information sheets designed, in many cases, by the instructor, when he or she wants to fill a specific information need or clarify a point and cannot find readymade materials. Developing handouts allows an instructor the freedom to directly tailor a lesson to his/her students' needs.

Worksheets or instruction sheets can provide procedures or practices related to a lesson in an efficient way that saves time and ensures that students have the correct information in front of them. (Some note takers tend to perform poorly in class because they cannot dependably rely on their notes as informational and study guides.)

A written outline of the day's lecture is a good record of the lesson that students can study and use for review. Project sheets are a specific kind of handout that provides information regarding new techniques, including an outline of the necessary steps and procedures for completing it safely.

Articles in Newspapers, Magazines, Journals, and Other Publications

Articles in a variety of publications, including newspapers and periodicals, are categorized and indexed in ways that allow one to search for pertinent, timely, up-to-date information regarding cosmetology, manicuring and esthetician or related career opportunities. These publications can be used to supplement outdated information in textbook, or give up-to-the-minute topicality to a classroom subject. Trade journals and industry publications review cosmetology products and tools and provide accompanying information regarding their use. They also highlight new developments or technological innovations in the field.

In assigning sections of textbooks, workbooks, or other printed materials, be clear about the project, specifying page numbers and sections to be covered. Give students the rationale or purpose for each assignment, and discuss the desired objectives. Students expected to discuss a topic about which they have read may find it useful to take notes or outline the material as they read it.

Always review the lesson beforehand to determine areas of difficulty that might need special emphasis or explanation.

Audiovisual Materials

Audio Aides

Audio materials include cassette tapes, CD's, and DVD's.
Information can be presented through audiotapes or disks, together, in the classroom, or individually, as homework. Students may choose to listen to taped or digital information on their own, to clarify a difficult lesson; as a learning supplement, for students absent from class; or as a review, the night before a test.

Visual Aides

Because educational research findings suggest that most learning is a product of visual stimulation, instructional aids that appeal to the sense of vision make practical sense. In many cases, images can be presented with

more clarity than spoken or written material, making an impression more efficiently than verbal cues. Visual images are often the best way to clarify an idea or process. Using visual aids to emphasize certain lessons or topics may make them more interesting or memorable to the student.

Audiovisual and visual materials can be classified in a number of different ways. For the purposes of this discussion, they will be presented in two main categories: those that are projected and those that are not. In the first category are photographs and posters, flip charts, chalk and multi-purpose boards, and three dimensional models. In the second category are films, slides, videotapes, computer software, overhead transparencies, and other projected media.

Non-Projected Visual Aides

Some very useful visual aids, like chalkboards and multipurpose or dry-erase boards, are also very simple. Chalkboards are the backbone of classroom instruction and are readily available in many classrooms. While they may not have the same impact as transparencies or multipurpose boards, they are still, nonetheless, a useful tool in classroom instruction.

Multipurpose or dry-erase boards are white magnetized boards that are used with special pens and ink that erases with a cloth or paper towel. The surface of a multipurpose board can also be used to project films, slides, or videos, as well as display magnetic or cut-out figures or letters.

Working most effectively with basic displayed visual aids like dry erase boards and flip charts requires some preparation and imagination.

Simple strategies, such as varying the size, color, and style of writing can have a substantial impact on a student's ability to remember written information.

Some of the most common uses for chalk and multipurpose boards are:

• Outline points in the lecture

• Write assignments for the lesson

• List or review lesson objectives

• Draw pictures or diagrams

• List new terminology or vocabulary words

• Announce the date of a test or quiz

• Demonstrate how to work through a problem

• Write key points of a video presentationUsing chalk and multipurpose boards effectively usually requires an instructor to start with a blank board. Wash the board between each lesson and have spare markers or chalk and erasers available.

Use appropriate chalks and/or markers, as the wrong type of writing utensil may write permanently on an un-compatible board. Grease or wax-based chalk, for example, may not come easily off some boards. All erasable markers are not interchangeable, but must be used with appropriate board material.

If you are planning to write a great deal on one board, develop a layout beforehand and practice using the space properly. Make sure all students copy necessary material off the board before you erase. Write clearly and preferably in print rather than script (or whichever is more legible). If a great deal of writing is required, you may prefer to do this work beforehand and review it as you speak, to save time writing. If so, use a pointer to refer to your written outline, and emphasize words by underlining them as you review their meaning.

Keep your body turned toward the class, except when you are writing. Do not speak "into the board," but turn your face toward students and speak clearly and loudly. Write in letters large enough for words to be seen clearly from the back rows of the class. It may be necessary to avoid using the bottom third of the board, as lower lines may not be visible to students in the back of the classroom. Confirm that all writing is visible to the whole class.

Finally, on a point of courtesy, avoid making unpleasant squeaks with chalk or markers and do not expect information on the board to be saved from one class to the next. If you intend to save written material, do not use forms of media that are transient by nature, like chalk and erasable boards. Instead use a format in which words can be written in a more permanent fashion, such as flip sheets or handouts, especially if you want to refer to the same information a number of times over the course.

Two and Three-Dimensional Exhibits

Students in cosmetology, manicuring and esthetics commonly work with three-dimensional aids, including mannequins, live models, and pictures or models showing three-dimensional views (cut-away). Models or mannequins should be easy to use and as realistic as possible, with lifelike features and proportions, to increase their potential value for demonstrating the lesson. If models are shared, make sure everyone has a turn, and an unobstructed view.

In some cases, instructors may want to assign projects to students or develop their own displays showing a collection of two-dimensional bulletin board or three-dimensional materials (i.e., exhibit) or objects together, to convey a lesson or concept. Exhibits are typically set up on floor space, tables, or desk surfaces.

Both bulletin board and other types of displays can be set up briefly, as temporary exhibits, or for long-term displays. In working with none projected visual aids, like boards and exhibits:

• Keep them topical: Information should be as current and relevant as possible. Do not let information in audiovisual aids get dated.

• Maintain clarity of images: They should be clear and striking, not difficult to decipher.

• Maintain simplicity: Emphasize a few essential points, and do not obscure the topic with unnecessary information.

• Be creative and encourage creativity in your students: Encourage them to develop their own exhibits on topics that interest them.

Flip charts

Flip charts are large reams of paper, bound at one end, usually measuring about three feet in height, filled with white or neutral colored blank sheets. They are conveniently portable and storable, with perforated pages, in some cases, so they can be torn off easily and cleanly. Use of a flip chart typically necessitates an easel or stand for its use. Be sure you have a sturdy compatible stand. Different colored ink is also desirable. Pens can be purchased in many bright, easy-to-see colors.

Like boards, flip charts must be clearly viewed by everyone to be useful. Be sure all students have an unobstructed view of the flip chart. Use letters at least two inches in height, and try not to print on the bottom third of the chart, unless you are presenting information from a platform or have confirmed that all students can see all parts of the chart. After writing on the board, step back from it to avoid blocking students' views.

When using a flip chart, consider beforehand how you will use the board during the class. Prepare any handouts or related supplies for distribution during the class. It can be especially useful using flip chart images to illustrate a series of steps in a procedure, or compare and contrast between two images or diagrams. Important points can be illustrated on each sheet of paper, discussed, and later reviewed by flipping to the appropriate page.

Many different types of non-projected display items can be incorporated into flipchart use, for example, attaching photos, charts, or other images or figures to the page. In selecting materials:

• Write out any new or problematic terms.
• Choose images, such as charts or pictures that illustrate key lesson points.
• Consider the order of images used. Move from simple to more complex ideas and stress relationships among images.
• Always clarify and review the important points of the presentation, in summary, at the end of the session.

You may find it useful to lightly pencil in all the elements of your presentation before you are in front of a class. Then, as you present the material, trace the pre-existing pencil outline with a brightly colored marker to emphasize the material as you discuss it. Unusual colors or underlining helps words and ideas stand out.

Avoid printing in pale tones, like yellow, which may be difficult to read.

If you prepare flip charts in advance, use extra sheets of paper to cover up the information until you are ready to present it in class so pre-written pages do not distract from other points. As you complete each flip chart page, tape it to the wall or a board using masking tape (which is easily removable). This will give slower students time to finish writing notes, and you can refer to it easily when you review the point.

Criteria for Visual and Audiovisual Materials

Visual and audiovisual materials usually support print materials, utilizing an image or visual dimension that is not presented in text alone. Good visual aids present an idea or procedure clearly, using vocabulary that all students understand. Material should be as memorable, interesting, and educational as possible, capturing and holdings a student's interest.

Effective visual aids:

• Are aesthetically pleasing

• Facilitate or explain complex ideas

• Demonstrate a relationship between two or more items

• Outline a process or procedure

• Are easily visible, often using bright or appealing colors

• Are easily understood, using terminology common to all students (new terminology should be defined and explained or discussed before use in the classroom)

• Are easily used in or portable to the classroom or other learning environment

Before viewing visual aids in the classroom, preview them to be sure they meet lesson criteria and objectives:

--Images should be clear and show enough detail to be descriptive. Audio or videotape is only as useful as the sound quality and images are clear and appealing.

--Note any materials that are "dated" or anachronistic due to their content or physical appearance. Timeliness of audiovisual materials can be of significant concern in cosmetology, given rapidly changing technology and styles.

--Be sure you have the appropriate audiovisual equipment you need, meaning the hardware that goes with the visual aid. Does your institution have the appropriate projector, screen, or other devices required for the material?

Tell students what to expect, what to look for, and what they are expected to learn. Take extra time to explain difficult sections or aspects of the lesson. In reviewing the lesson, clarify confusing ideas or topics, ask for questions, and encourage discussion to assess whether the learning objectives have been reached.

Projected Instructional Materials

Slides and Filmstrips

Old-fashioned filmstrips and slides can still play a useful role in the classroom. Slides are easy to use and store, but projection methods typically require a well-darkened room, which encourages sleepiness in some students. If at all possible, try to leave some light on to assist students taking notes. New presentation technologies like PowerPoint have made it even easier to create slides from publishing and word-processing programs, which can be viewed using computer software or a slide projector.

In your preparation for class, estimate the amount of time you will spend on each slide and its explanation or discussion. Each slide should have a description or explanation accompanying it.

Some slides may take much longer to review or discuss than others. Test the projector beforehand, and confirm that the slides are in proper order and right side up. During the lesson, darken the room sufficiently for viewing, but not to obscure student's taking of written notes. Ask for questions regarding each slide, summarize, and discuss before moving on.

TEACHING TECHNIQUES-SECTION 8

Transparencies and Opaque Projectors

Overhead projectors are a staple of classroom presentations as they are inexpensive, do not require a great deal of space, and provide flexibility and ease of presentation. In using transparencies, images such as photos or diagrams and written information are copied onto transparencies, which are then placed on an overhead projector, allowing light to pass through the transparent material, and projecting an image onto a screen or wall. Overhead projectors are sometimes also equipped with a roll of clear film on which to write.

Opaque projectors can be used to projects pages from books, magazines, or journals, as well as other solid materials (drawings, charts) onto a screen. Unlike traditional transparencies, which are best kept simple, opaque projectors are well adapted for more detailed or complicated images. Both types of projectors can also be used to project images on to a screen, wall, or flip chart, for tracing or viewing. You can also present information as you would with a chalkboard or flip chart, using overlapping transparencies to show a series of points.

Transparencies can be used in a light room, making it easier for students to take notes or discuss points presented in the lesson. Use of multiple layers and highlighting can embellish a basic image or picture, and using brightly

colored markers, it is possible to create memorable permanent transparencies that can be used year after year. Additionally, temporary wet or dry erase pens can be used with the same transparency.

Naturally creative or artistic instructors may choose to prepare their own transparencies, as transparency kits are generally inexpensive and flexible. Using word processing or desktop publishing software, it is possible to generate hard copy that can be copied onto a transparency using a duplicating or copy machine. Be sure to use the transparency material that is compatible for this purpose (some transparent film will melt in a hot copier). Commercially prepared transparencies are also available for purchase.

In Making and Using Transparencies:

• Prepare transparencies before class and practice your presentation using the projector and transparencies.

• Test the projector, setting it up in the position you will use it and practice focusing; you may have to refocus slightly with each transparency.

• Mark the location of the projector and screen in the room in advance, and confirm the location before the class session begins, ensure that the light bulb works, and that you have an extra light bulb.

• As in the use of all visual materials, using bold lines and color to enhance the presentation.

• Keep images and information simple and clean.

• Use large bold, easy-to-read fonts, at least 18-point in size (about one-quarter inch in height or greater).

• Limit each line to no more than five or six words, and five or six lines per page.

• Vary font size and boldness to emphasize words or concepts, but limit different font or type styles to two or three at the most per page to avoid cluttering up the presentation.

• Leave space or room of at least one line between letters, words, and lines; do not crowd words or images together vertically or horizontally.

• Use a pointer to emphasize specific parts of the transparency as you present them.

• Write essential points in short phrases or outline form.

• Do not use the outer inch or two of a transparency, as these may be out of viewing range when the transparency is mounted on the projector.

• Use enough color to be interesting, but not so much that it becomes "busy" or cluttered.

• Do not use vertical lettering or italics, as they are much harder to read.

• Focus on one concept or point with each transparency. Then use transparency overlays to present more complicated ideas or concepts using transparency layers.

• In creating your own media transparencies, select copy right-free illustrations or use clip art software packages that provide artistic images free or for a small fee.

• Turn off the projector after use and remove the transparency from the screen, to avoid heat damage to the transparency.

PowerPoint

PowerPoint is a presentation graphics package. It offers word processing, outlining, drawing, graphing, and presentation management tools, and is relatively easy to use and learn.
The following is and overview of what you can do in PowerPoint:

• When you create a presentation using PowerPoint, the presentation is made up of a series of slides. The slides that you create using PowerPoint can also be presented as overhead transparencies or 35mm slides.

• In addition to slides, you can print audience handouts, outlines, and speaker's notes.

• You can format all the slides in a presentation.

• You can keep your entire presentation in a single file, including all your slides, speaker's notes, and audience handouts.

• You can import what you have created in other Microsoft products, such as Word and Excel into any of your slides.

PowerPoint can be used to develop sophisticated multimedia presentations that can be very effective in turning educational concepts into images that motivate learners. Instructors can create interesting slide shows with graphics, animations, and multimedia, and make them easy to present. New programs also offer the ability to use ink annotation tools-including a highlighter, arrows, and two types of pens. You can also add impact with graphics like Clip Art and other on-line media. Use a variety of images, sounds, photos, and animations. It is possible to add notes and illustrations while giving the presentation, and choose colors and "pen types" that help make the information stand out.

Tips for using PowerPoint:

• Use only 2 fonts per presentation
• Keep each slide short and simple: do not use more than 4 bullet points
• Limit yourself to a few minutes per slide
• Use a limited number of colors with good contrast
• Limit slides to about 5 lines of text; limit bullet points to one line, or sentence, per bullet point
• Use large sans serif fonts
• Use high contrast color for text fields so they are easy to read; many people find it easier to read light text on a dark background
• Use vivid 8-bit images
• Do not overcrowd the slide
• Do not include too many points on any slide
• Keep charts simple with a few significant points; don't include everything on one chart
• Students should not have to strain to read anything
• Keep graphs simple, highlighting one trend or concept per graph
• Use different sizes and types of text, for interest, but avoid italics
• Add textures to make visual images interesting

• Use auto correct to check your spelling
• Do not include too many special effects or visual details
• Make images consistent in quality and sizes
• Don't clutter the image with clip art
• Use minimal animation
• Keep sound effects to a bare minimum

Video, Television, and Films

Videotapes have many of the advantages of slides, filmstrips, and movies, but do not require a darkened room, and are inexpensive, durable, and easily stored. Video education in cosmetology is very common and effective for certain subjects many videotapes offer step-by-step instructions for mastering a specific technical skill or learning about different procedures related to cosmetology, manicuring, or esthetics. Videotape is also useful in its ability to provide the student with feedback, by videotaping the student and highlighting his or her strengths or weaknesses, in review.

Videos and films have great practical potential for classroom use and can be instrumental in cosmetology manicuring and esthetics instruction, but not at the cost of a teacher. Educators should always remain in the classroom during the showing of a video or a film and follow the steps outlined below for classroom presentation of videos or film. It is relatively easy to find inexpensive videos covering a broad range of educational subjects and lessons. Always review the film in advance for accuracy and to be certain it meets your subject area needs.

When using a television screen or computer monitor in a classroom, choose one that is large enough to be viewed easily. A rule of thumb suggests calculating one diagonal inch multiplied by the number of students in the class. That means, using a 30-inch monitor (measuring diagonally) for a class of thirty students. If large monitors are not available, use one 19-inch screen for every 12 students. With larger classes, it is usually more effective to use a video projector on a large wall or screen.

Seats should be arranged to provide everyone clear viewing of the film or video. Make sure the projector doesn't block someone's view. Set the volume appropriately and demand quiet during the playing so everyone is able to hear properly.

Introduce the video by stating its title and a brief description, as well as the reason you are showing it (i.e. the learning objective of the lesson). Tell the students how long the film or video will last and the main points on which they should focus. Explain any necessary terminology before the film. It is useful to hand out a vocabulary list, or glossary, defining new terms. Captions can be read out loud, to ensure that everyone has time to absorb the printed information.

In any visual presentation like a film or video, it is useful for students to know what to look for, so many instructors expect students to notice essential points of the lesson; for example announcing when an especially important part of the film is about to be presented. Other instructors, however, prefer not to speak over the film.

Summarizing and discussing the video or film after the showing is an integral part of the viewing experience. After the showing, review important points, writing key terms on a board or chart. Discuss the most important points of the film and lesson. Videos can also be followed with activities that demonstrate the presentation introduced in the video. Time after the film should also be used to evaluate the effectiveness of the film in achieving your lesson's objectives.

It may also make sense to repeat the viewing of the video to emphasize important points; films often have more information in them than can be absorbed with one viewing.

Computer Software and Computer-Generated Materials

The role of the computer in cosmetology, manicuring and esthetics instruction is growing by the day. Visual information can be displayed on a computer monitor, and an increasing number of instructional aids are computer- generated, with greater use of computer monitors at work and study stations. Written materials and images in transparencies, handouts, and worksheets can be prepared easily using common software programs, and quizzes and tests can also be more easily developed.

Computers have revolutionized distance learning, and instructional methods can set up remotely using television, telephone, radio, microwave, satellites,

and cable methods. CD-Rom assisted education is also a great learning resource, providing students with a fulfilling sense of learning on their own, at their own pace. In using any computer-assisted methods, always support computer learning with classroom review and discussion to ensure that students understand essential lesson points. The hands-on nature of cosmetology, manicurist or estheticians suggests that the computer will not replace the teacher entirely in the foreseeable future.

Cosmetology, Esthetician and Manicurist Tools and Equipment

More so than many other subject areas or disciplines, cosmetology, estheticians and manicurist instruction depends on the use of specialized tools and equipment. Students will need to become proficient in a variety of cosmetology, Esthetics and Manicuring practices related to all of which rely heavily on implements used in these fields. Instructors must be familiar with a facility's instructional aids and equipment, such as overhead projectors and computers, as well as commonly used cosmetology, estheticians and manicurist tools and equipments, such as videos, mannequins, and models.

Instructors should be trained in the operation of any equipment, to ensure that they use it safely and appropriately. They should teach students how to make intelligent decisions regarding equipment rental or purchase. Maintenance should be readily available, if necessary, to repair and maintain the item over its lifetime of use. The instructor may or may not make purchasing decisions for the institution.

If you have a role in that choice, give appropriate attention, time, and thought to choosing the equipment with which you work and teach. The tools or equipment should facilitate or enhance a student's ability to learn, and it should require minimum maintenance, care, and repair. Warranty and service issues are also an important consideration, as is the item's durability and safety record. Tools and equipment should always be inspected and tested before classroom use and used according to manufacturer instructions.

Types of Teaching Methods (LECTURES)

Lectures are monologues, or verbal presentations, in which the instructor delivers the subject matter of the course, the content of which is developed well in advance and delivered, often, with the use of written notes. While

lecturing plays a significant role in many classrooms, it may be a highly effective strategy for only a small minority of students. Unless the teacher is a dynamic speaker with interesting information, he or she may not find a receptive audience. Repetition, for example, can be a useful technique for emphasizing information, but can be overused or abused. Pace of delivery can be as important as content: too slow, and students are bored; too fast, and the lesson flies over students' heads, discouraging them. Good lecturing strikes a delicate balance, as students will naturally vary in their ability to absorb the content of the lecture, and proceed through course material at unequal rates.

To keep students attending to the lecture, present items in a logical order and emphasize lesson objectives at the beginning and throughout the lecture. Introduce a written statement of purpose, outlining the essential points of the lesson, and explain the purpose of the presentation, telling students what lesson objectives are expected of them. It is also useful to reinforce lecturing with the use of instructional aids, such as worksheets or handouts, which can be handed out at the beginning of the lecture and referred to throughout the class.

Use eye contact throughout the lecture, and learn to keep it short and sweet. The best lectures do not last longer than a student's ability to concentrate or absorb the information. At the end of a lecture, it is useful to provide a summary of the lesson that reinforces its main points; reviewing them in the order they were presented.
Ideally, lectured periods are followed by activities such as group discussion or demonstrations where students can review and discuss the theoretical content of the lecture and its practical applications.

Interactive Lectures

Lectures are best used in combination with class discussion or other presentation methods that allow student participation, as questions or comments keep students interested in the subject matter. Interactive lectures are presentations directed primarily by the teacher, who typically speaks the majority of the time, but interspersed with student participation. Instructors can ask students factual questions about the material, or to share their opinions regarding some aspect of the lesson. This type of interaction keeps

students alert, and their minds active.

Interactive lectures are typically organized along the following lines: the instructor speaks first, then asks questions about the material he or she just presented, and the students respond; but may be presented countless other ways, as well. Instructors may prefer that students call out questions, as they have them, during the presentation, or save them for a specific portion of the lecture time, at the end, for example. If students ask questions as they arise, the instructor learns what points need clarification, but some instructors find that many interruptions during the lecture can ruin the flow of the lecture, making it more difficult to follow.

The instructor should assess, through questions, how much of the lesson objectives students have absorbed and any confusion they may have about the subject matter. The instructor can ask students to explain, in their own words, the concepts just introduced, allowing the students to review and summarize essential points of the lesson, when students expect to be questioned about new material, they are more likely to pay attention. Expecting students to actively listen and participate in the discussion holds them accountable for the information in the lesson.

Class discussion

Class discussions allow students to work through projects verbally, sharing their knowledge, perceptions, and opinions. Like lectures, good discussions require some planning and forethought, but rely more heavily on student involvement than lectures or interactive lectures. In most discussions, the instructor acts as a guide, providing information and correcting misinformation as the conversation progresses, and raising questions that challenge the class to reach the right answer or answers. In some cases, students assist in facilitation by choosing questions and asking them of the group.

The best discussions involve everyone, but it may be a challenge to encourage quiet students to speak. Some students participate easily; other may be heard from rarely. It may encourage less forward students to participate if the class breaks into small groups, randomly, or based on shared opinions. Some useful discussion rules are:

• Avoid interrupting individual speakers or the group.

• Don't allow the conversation to get too off-track on tangential issues or arguments. Comments should not stray off topic, but stay with the objectives of the lesson.

• While it is often useful to learn the range of opinions in the class, opinions should always be supported by factual information. In this way, discussions contribute to the knowledge base rather than spreading ignorance.

• Realize the importance of listening skills in any discussion.

Brainstorming

In 1941, an advertising executive, named Alex Osborn, who thought conventional business meetings were inhibiting the creation of new ideas, proposed a number of strategies to stimulate new ideas in conversation. In general, he was looking for ways to nurture and promote creative ideas. This method came to be known as "brainstorming." The rules guiding this technique follow:

• No criticism of any idea
• Try to generate a large number of ideas
• Build on each other’s ideas
• Encourage extreme or exaggerated ideas

Panel Discussions and Symposia

Panel discussions and symposia are more formal or stylized discussions, with specific guidelines governing their use. Panel discussions may be used to communicate differing points of view on a specific topic, explain a variety of issues, or help students understand a range of opinions relating to a topic or issue. The panel consists of a number of students, and the instructor acts as host/facilitator of the discussion. Typically, each panel member is responsible for a particular topic or topics. He or she will present an idea, perhaps in opposition to the other panel members, then, the class engages panel members with questions, guided by the instructor. In panel discussions, the host or facilitator guides the subject matter, to assure that lesson objectives are met.

In symposia, a number of speakers present information-often competing viewpoints, or a specific aspect of an issue or set of topics. Symposium members, unlike panel members, are usually highly skilled or expert in a specific subject area. In symposia, the presenters tend to guide lesson objectives, with the facilitator or instructor playing a smaller, less influential role. Symposia typically conclude with a discussion in which experts answer audience or students' questions.

Cooperative Learning

Cooperative learning is a method of instruction that requires students to work cooperatively to complete projects. It is based on the philosophy that students learn best what they work through on their own, and from each other, and operates with the assumption that students who share project goals will encourage interest and involvement in the task.

Cooperative learning follows a multi-step model in which the instructor initially prepares the lesson plan and divides students into groups of four or five. Each group of students is assigned particular responsibilities and project objectives, including the criteria for success in the project.

The instructor's role is to listen to group discussions, breaking in, when appropriate, to refocus the conversation, reiterate lesson objectives, or bring up essential points. In the final step, the instructor concludes the session with a summary of the lesson, and evaluates the extent to which students achieved educational goals.

PRACTICAL DEMONSTRATION

Demonstrations refer to instruction methods highlighting the hands-on or technical aspects of cosmetology, esthetics and manicuring education, rather than the purely theoretical. Such methods or activities include step-by-step instruction, usually performed by the instructor or a guest expert. If the instructor is not well versed and comfortable in the technique, he or she should allow a skilled guest to teach that section of the lesson.

Demonstrations require excellent planning. All equipment or materials necessary to the demonstration should be gathered and organized well before

the demonstration, and reviewed with the class at the beginning of the session. Arrange the classroom or facility in such a way that students will have no trouble seeing or hearing the demonstration, and set up the equipment and tools to approximate a professional environment that is a realistic as possible. If it is difficult for everyone to see at once, have a small number of students come up, a few at a time, to look closely at necessary details, for example, the application of solution onto a model's hair.

In developing a demonstration, remember that students learn at different rates. Identify the objectives of the lesson, in the beginning of the session, and discuss any special terminology in advance of the demonstration by explaining it and writing it on the board. The demonstration should focus on a specific fundamental process, analyzing it step-by-step, at an appropriate speed for all students. An explanation of each technique and its objective should accompany the demonstration of each step.

Observe nonverbal cues from students during the presentation to make sure their interest in not waning. Ideally, a demonstration should last no longer than 20 minutes to maintain students high level of concentration and attention to the subject matter. Demonstrate each task slowly, and question students throughout the task to assure they understand each step. Do not distract from the demonstration by passing items around room. Once the instructor has completed the demonstration, he or she can narrate the steps of the demonstration, while students demonstrate a portion of the process, or a student can narrate the step, while other students demonstrate the process. Students will feel more secure about the procedure the more they hear repetition of the explanation and review of the physical steps of the demonstration.

Checklist for Demonstrations:

• List and explain all steps in order.

• Introduce new terminology and write in on the board.

• Introduce all equipment and write on the board.

• Discuss safety protoco.

• Initially introduce only one basic way to do the demonstration, even if competing ways exist. Use the safest method.

• Monitor students for signs of boredom or confusion.

• Ask students questions at the end of the demonstration, and encourage discussion to learn to what extent they understand or do not understand the main concepts of the lesson and the learning objectives.

Return Demonstration

It is especially useful for a demonstration to be followed immediately with students practicing the procedure or technique, when their memory is fresh, using their notes, if necessary, with the instructor reviewing the students' work. This is referred to as a return demonstration. Students demonstrate the specific steps of the procedure or technique, with guidance, after watching the instructor at least once, or one student can narrate the steps while another demonstrates the procedure in front of the class.

As repetition is a basic requirement for learning procedures, multiple practice sessions are ideal. This allows students to proceed at their own rate, correcting and learning from any mistakes made along the way. Near the end of the session, the instructor should assess each student's performance, evaluating each part of the demonstration with a grade or review of the work.

Laboratory (Lab)

Lab work emphasizes hands-on techniques and practical experience, and also requires a great deal of preparation. Discuss the procedure and furnish written instructions, beforehand, with information and images to support the lesson topic so students have a good sense of the job or project they will be undertaking before they launch into use of materials and equipment. To insure project success and safety, students should be guided in their work with complete written instructions and/or handouts that provide useful images along with instructive technical information. Using a combination of approaches can be very useful. For example, the instructor may begin with a verbal explanation supported by handouts that introduce and explain new terminology and step-by-step instructions, including all necessary technical

and safety information.

Encourage students to ask questions, and ask questions of them before, during, and after the lab work is completed, but avoid needless chatter about other topics. Instructors should remain in the lab the entire session. During the lab session, the instructor should make rounds, checking each student's work, and assessing its quality. It is useful to ask students questions as you monitor their progress, for example: What is that procedure you are doing now called? What is your next step? What safety considerations are related to use of that equipment?

Monitor students' work closely, and assist, as needed, with suggestions and corrections. Use minimal guidance, however, allowing the students to work as independently as possible, and avoid "taking over" the project. It is acceptable for students to make mistakes only if they do not risk their or other students' safety or waste expensive materials. In case of error, the instructor should follow up with student/class by reviewing the correct procedure, noting the cause of the error, and ways to avoid or correct it. Instructors should use positive reinforcement methods, praising and complementing good form and improvement, and acknowledging good effort.

Remember that students vary enormously in the way they learn and work, and even their physical dexterity, and should be permitted to learn new concepts or skills at their own speed. A well organized and effectively managed lab can accommodate a range of abilities and all speeds of learners. Instructors will likely spend more time with students who require more assistance, but should visit each workstation at least two or three times per lab.
To address varying needs, provide extra credit or additional tasks for students who finish early. The instructor can also demonstrate necessary techniques a second or third time for students who need it, in a small group or one-on-one.

Role Playing

Role playing is a learning tool meant to help learners understand the perceptions and opinions of others. In role playing, students act out a situation characterized by conflict, assuming another person's role or

character, and attempting to think and act as that individual would in a specific situation. The instructor's role in role playing is to facilitate the process by setting up the scenario and leading the discussion that follows. Class members are either role players or observers, who will take notes, and review the interaction for the discussion portion of the class.

Role-reversal specifically helps students understand opposing viewpoints. In role-reversal, students act out roles in opposition to those they usually play. For example, the student may play the role of a particular person or position, like "the client," a person with whom they have necessary and constant interaction. An example of a scenario that lends itself to role playing or role reversal might be "How to respond to a dis-satisfied client."

Field Trips

Field trips require students to leave the traditional classroom and attend a lesson in another type of environment, such as a professional salon or retail distribution center that provides a real-world context for their training. Common destinations for cosmetology estheticians and manicurist student field trips include trade shows, professional salons, and industry seminars. Trade shows and seminars provide an opportunity for students to learn about the latest trends and techniques, elements of business management, or salon operation, Even a visit to a beauty supply store can be illuminating and useful to students, as a way for practitioner to learn about floor design and equipment options.

Field trips encourage and motivate students, broadening their understanding of the professional world, and giving them the opportunity to see how different aspects of the industry and licensed professionals interact in the real world. This is especially useful when students are close to graduation, or trying to determine what practice niche suits them best. They are also a way to help instructors stay current and learn about innovations in the field.

Field trips add variety to the schedule, but are not meant as a holiday. Prepare a checklist or work sheet to be completed by students, during the field trip, as they view specific areas of the facility or talk with specific people. You might ask:

- How do they greet clients?

- What is this salon's image?
- How would you rate this salon's level of professionalism?
- How is the salon decorated?
- What do licensed professionals wear on the job?
- Where do they advertise their services?
- What product lines do they offer?
- How much do you see management personnel?
- How smoothly run are operations?

Evaluation and discussion of the field trip should occur as soon after the conclusion of the field trip as possible, and ideally the same day. If that is not possible, use the next session of class to follow up on the field trip by having students discuss what they saw. For example, after visiting a retail distribution center, students can discuss the range of product choices available to them and their decision-making process in selecting specific products.

Students on field trips bear a significant amount of responsibility to listen attentively and observe carefully what is around them. Special procedures related to parental permission or the use of "permission slips" may be required, depending on the ages of the students. Please check into your facility or institution's requirements regarding field trips before you plan a venture.

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