Principles of Learning and Teaching

STUDENTS AS LEARNERS – 35%

THEORISTS

LEV VYGOTSKY -
http://facultyweb.cortland.edu/andersmd/VYG/VYG.HTML

- Importance of **CULTURE** - humans use of tools and symbols to learn – culture dictates what we learn and how
- Higher and Lower mental functions – elementary (or lower) functions gradually transform to HMF through culture
- Central **ROLE OF LANGUAGE**: Language is made possible because of our culture (tools and symbols). The learning of language (or signs) is brought about by social processes, and language or signs ultimately make thought possible. Three stages in the development of speech
  a. Social speech – speech to control the behavior of others
  b. Egocentric speech – three to seven year olds – talking to themselves to learn
  c. Inner speech – soundless speech – thinking in our head
- **ZONE OF PROXIMAL DEVELOPMENT**: The discrepancy between a child's mental age [indicated by the static test] and the level he reaches in solving problems with assistance is the zone of his proximal development.

ABRAHAM MASLOW
http://www.ship.edu/~cgboeree/maslow.html

HEIRARCY OF NEEDS

- Physiological needs
- Safety needs
- Belonging needs
- Esteem needs
- Self-actualization

JEROME BRUNER -
http://tip.psychology.org/bruner.html

Principles: learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge – **DISCOVERY and INQUIRY LEARNING**

- Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (readiness).
- Instruction must be structured so that it can be easily grasped by the student (spiral organization).
- Instruction should be designed to facilitate extrapolation and or fill in the gaps (going beyond the information given).

JOHN DEWEY -
http://www.infed.org/thinkers/et-dewey.htm

- Education must engage with and enlarge experience
- Exploration of thinking and reflection - and the associated role of educators
- Concern with interaction and environments for learning
- Passion for democracy, for educating so that all may share in a common life
- **COOPERATIVE LEARNING**

HOWARD GARDNER -
http://www.thomasarmstrong.com/multiple_intelligences.htm

MULTIPLE INTELLIGENCES - traditional notion of intelligence, based on I.Q. testing, is far too limited.

- Linguistic intelligence ("word smart"): - use words in learning
- Logical-mathematical intelligence ("number/reasoning smart") – use numbers or logic in learning
- Spatial intelligence ("picture smart") – use pictures in learning
- Bodily-Kinesthetic intelligence ("body smart") – use movement or physical experience
- Musical intelligence ("music smart") – use music
- Interpersonal intelligence ("people smart") – use of self-reflection
- Intrapersonal intelligence ("self smart") - use a social experience
- Naturalist intelligence ("nature smart") – use an experience in the natural world

- Knowing each theorist's major ideas and being able to compare and contrast one theory with another comprises basic professional knowledge for teachers.
- What are the major differences between Jerome Bruner's and Jean Piaget's theories of cognitive development in young children?
- How might a teacher apply some of Lev Vygotsky's ideas about scaffolding and direct instruction in the classroom? What does Gardner's work on multiple intelligences suggest about planning instruction?
- What does Abraham Maslow's hierarchy of needs suggest about motivation for learning in the classroom?

ALBERT BANDURA

– http://www.ship.edu/~cgboeree/bandura.html

Modeling – "Observation LEARNING" ("Bobo Doll" studies) – (Learning = acquisition of knowledge)

Steps in Modeling process:

- Attention – to learn you must pay attention –the more colorful, dramatic, attractive, prestigious the more people pay attention
- Retention – ability to remember what you have paid attention to.
- Reproduction - translate the images or descriptions into actual behavior
- Motivation. – must be motivated to imitate.

Self-regulation -- controlling our own BEHAVIOR - self-concept (Behavior = performance based on knowledge)

- Self-observation. Know thyself! Make sure you have an accurate picture of your behavior.
- Judgment. We compare what we see with a standard-- make sure your standards aren't set too high.
- Self-response. Use self-rewards, not self-punishments.

B.F. SKINNER - http://www.ship.edu/~cgboeree/skinner.html

OPERANT CONDITIONING –our reaction to the world

- Reinforcing stimulus - a reinforcer - *A behavior followed by a reinforcing stimulus results in an increased probability of that behavior occurring in the future.*
- Operant -- the behavior occurring just before the reinforcer.
- Extinction - *A behavior no longer followed by the reinforcing stimulus results in a decreased probability of that behavior occurring in the future.*
- Schedules of reinforcement –
  a. Continuous reinforcement
  b. fixed interval schedule
  c. Variable schedules.
- Shaping, or "the method of successive approximations" - how we get to more complex sorts of behaviors.
- Aversive stimulus is the opposite of a reinforcing stimulus, something we might find unpleasant or painful.
- Negative reinforcement - remove an already active aversive stimulus - *Behavior followed by the removal of an aversive stimulus results in an increased probability of that behavior occurring in the future*

BEHAVIOR MODIFICATION - Extinguish an undesirable behavior (by removing the reinforcer) and replace it with a desirable behavior by reinforcement

JEAN PIAGET –

http://www.ship.edu/~cgboeree/piaget.html

- Schemas – skills to explore the environment to gain knowledge
- Assimilation - assimilating a new object into an old schema
- Accommodation - accommodating an old schema to a new object.

1. Adaptation - Piaget's term for what most of us would call learning. Includes assimilation and accommodation - biological process

- **STAGES OF COGNITIVE DEVELOPMENT –**
  - The sensorimotor stage - birth to about two years old. – uses senses and motor abilities to understand the world
  - The preoperational stage - two to about seven years old – symbols, creative play, egocentric, center on one aspect of any problem or communication at a time
  - The concrete operations stage – about seven to about 11 - operations refers to logical operations or principles we use when solving problems - Conservation refers to the idea that a quantity remains the same despite changes in appearance; progressing decentering; classification and seriation (putting things in order)
  - The Formal Operations stage: around 12 on - hypothetical thinking (logical operations, and using them in the abstract, rather than the concrete)

IMPORTANT TERMS

CONSTRUCTIVISM

Knowledge is constructed by the individual through his interactions with his environment.

TRANSFER

A phenomenon in which something that was previously learned facilitates (positive transfer) or hinders (negative transfer) current learning; the influence of previously learned information on new situations or tasks.

ZONE OF PROXIMAL DEVELOPMENT

The discrepancy between a child's mental age [indicated by the static test] and the level he reaches in solving problems with assistance is the zone of his proximal development.

METACOGNITION

Consists of three basic elements:

- *Developing* a plan of action
- *Maintaining/monitoring* the plan
- *Evaluating* the plan

"Learning how to learn"

SCAFFOLDING- structure

- Provides clear directions
- Clarifies purpose
- Keeps students on task
- Offers assessment to clarify expectations – (ie: rubrics)
- Identifies the best sources to find information
- Reduces surprise, disappointment, and uncertainty
- Delivers efficiency
- Creates momentum

Temporary learning aid designed to help the student grow in independence as a learner

INTRINSIC AND EXTRINSIC MOTIVATION –

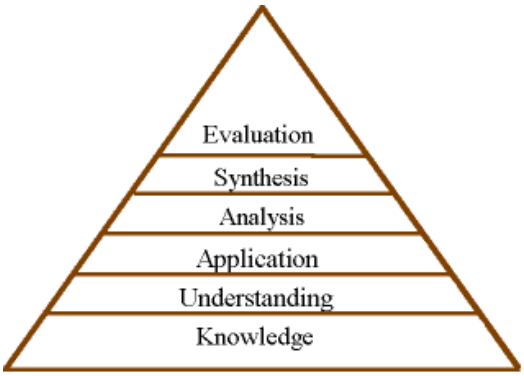
"Intrinsic motivation refers to motivation to engage in an activity for its own sake. People who are intrinsically motivated work on tasks because they find them enjoyable."

"Extrinsic motivation is motivation to engage in an activity as a means to an end. Individuals who are extrinsically motivated work on tasks because they believe that participation will result in desirable outcomes such as a reward, teacher praise, or avoidance of punishment."

READINESS –

Appropriate time for learning

BLOOM'S TAXONOMY



SCHEMATA

- An internal representation of the world; an organization of concepts and actions that can be revised by new information about the world –

In cognitive learning, large, basic units for organizing information. Schemata serve as guides describing what to expect in a given situation, how elements should fit together, the usual relationships among elements, and so on. A schema is like a model or stereotype.

- Go beyond memorization of definitions; try to apply the terms to the theories behind them and think of applications in the classroom.
- What are some specific classroom-based examples of extrinsic and intrinsic motivators for students?
- Make sure you can recognize the differences between lower-order and higher-order thinking in classroom activities, using Bloom's taxonomy as a guide.
- What is an example of schema and what good is it?
- What is scaffolding and why is it important for both teachers and students?

HUMAN DEVELOPMENT

	PHYSICAL	SOCIAL	EMOTIONAL	MORAL	COGNITIVE
Theorists		Erik Erikson Lev Vygotsky Albert Bandura	Abraham Maslow	Lawrence Kohlberg Carol Gilligan	Jean Piaget Jerome Bruner David Ausubel
Definition	Changes in the body	Changes in the way an individual relates to others	Changes in ones personality and ability to control emotions	Selfish, to social or conventional morality, and finally to post conventional or principled morality	Learning is an internal process that cannot be observed directly. The change occurs in a person's ABILITY to respond in a particular situation

UNDERSTAND:

1. The major progressions in each developmental domain and the ranges of individual variation within each domain;
2. The impact of students' physical, social, emotional, moral, and cognitive development on their learning and how to address these factors when making instructional decisions;
3. How development in one domain, such as physical, may affect performance in another domain, such as social .

KOHLBERG'S STAGES OF MORAL DEVELOPMENT

LEVEL	STAGE	SOCIAL ORIENTATION
Pre-conventional	1	Obedience and Punishment - generally found at the elementary school level. In the first stage of this level, people behave according to socially acceptable norms because they are told to do so by some authority figure (e.g., parent or teacher). This obedience is compelled by the threat or application of punishment.
	2	Individualism, Instrumentalism, and Exchange - right behavior means acting in one's own best interests.
Conventional	3	"Good boy/girl"- characterized by an attitude which seeks to do what will gain the approval of others.
	4	Law and Order - oriented to abiding by the law and responding to the obligations of duty.
Post-conventional	5	Social Contract - understanding of social mutuality and a genuine interest in the welfare of others.
	6	Principled Conscience - based on respect for universal principle and the demands of individual conscience.

ERIK ERICSON'S 8 STAGES OF PSYCHOSOCIAL DEVELOPMENT

http://web.cortland.edu/andersmd/ERIK/sum.HTML

Stage	Ages	Basic Conflict	Important Event	Summary
1. Oral-Sensory	Birth to 12 to 18 months	Trust vs. Mistrust	Feeding	The infant must form a first loving, trusting relationship with the caregiver, or develop a sense of mistrust.
2.Muscular-Anal	18 months to 3years	Autonomy vs. Shame/Doubt	Toilet training	The child's energies are directed toward the development of physical skills, including walking, grasping, and rectal sphincter control. The child learns control but may develop shame and doubt if not handled well.
3. Locomotor	3 to 6 years	Initiative vs. Guilt	Independence	The child continues to become more assertive and to take more initiative, but may be too forceful, leading to guilt feelings.
4. Latency	6 to 12 years	Industry vs. Inferiority	School	The child must deal with demands to learn new skills or risk a sense of inferiority, failure and incompetence.
6. Young Adulthood	19 to 40 years	Intimacy vs. Isolation	Love relationships	The young adult must develop intimate relationships or suffer feelings of isolation.

When responding to case studies, you will be asked to perform the following kinds of tasks related to the area of human development and the learning process: (A) identify strengths and weaknesses in the instruction and appropriateness for age of students and (B) propose an instructional strategy.

STUDENTS AS DIVERSE LEARNERS

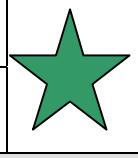
COGNITIVE STYLES	• Cognitive styles refer to the preferred way an individual processes information • Styles describe a person's typical mode of thinking, remembering or problem solving • Denotes a tendency to behave in a certain manner • Usually described as a personality dimension which influences attitudes, values, and social interaction.
LEARNING STYLES	• Specifically deal with characteristic styles of learning - approaches to or ways of learning • Four distinct learning styles - visual, auditory, tactile and kinesthetic. • A child's learning style seems to be inborn and inherited, but it is also influenced by family experiences. • Our natural preference dictates how we learn best - by looking, listening or moving. • KOLB's Theory of Learning styles: **Concrete experiences** (being involved in a new experience), **reflective observation** (watching others or developing observations about their own experience), **abstract conceptualization** (creating theories to explain their observations), and **active experimentation** (using theories to solve problems and make decisions)
VALUE OF UNDERSTANDING SYTLES	• Decide what kind of instructional strategies or methods would be most effective for a given individual and learning task • Useful in terms of creating teacher awareness of individual differences in learning • Employ the prescribed teaching methods, playthings and learning activities best suited to a child's age and preferred learning style.
MULTIPLE INTELLIGENCE	• Verbal/Linguistic intelligence or word smart: learn best by saying, hearing, and seeing words. Motivate with books, talking with them, let them write • Logical-Mathematical intelligence: They are conceptual thinkers who explore relationships, patterns, and experimenting with things in an orderly and controlled manner. • Visual/spatial intelligence or picture smart: Teach with images, pictures, and color – motivate with videos, diagrams, maps, and charts • Bodily-kinesthetic intelligence or body smart: Learn through touching and moving – motivate with role play, dramatic improvisation, creative movement, physical activity • Musical intelligence or music smart: learn through rhythm and melody – motivate with records, tapes, and musical instruments. • Interpersonal intelligence or people smart: Motive with peer-group opportunities and community activities • Intrapersonal or self smart: learn best by themselves – motivate with private space and quiet introspection time. • Naturalist or nature smart: Motivate with opportunities to work outdoors, supply with books on the natural world – binoculars, telescopes, or microscopes.
PERFORMANCE MODES	• Concrete operational thinkers • Visual and aural learners
GENDER DIFFERENCE	• Girls emphasize memorization – boys learn more by elaboration strategies. • Girls perform well in reading, but less in math – opposite for boys • Girls express emotions with words – boys through actions
CULTURAL EXPECTATIONS AND STYLES	• By understanding the differences in thinking about other cultures that students have, the teacher is able to plan appropriate lessons to meet the various students needs. • Issues: self-esteem, types of teaching methods, working with other students, flow and order of the classroom, etc.

- Give a specific example from your own classroom experience of the effects of differences in learning styles on how people understand and express what they know.
- What is an example of the way cultural expectations from a particular geographical region or ethnic group might affect how students learn or express what they know?
- What does the research reveal about gender differences and how they might affect learning?

AREAS OF EXCEPTIONALITY IN STUDENT LEARNING

VISUAL AND PERCEPTUAL DIFFICULTIES	• Visual and hearing disorders: Only those whose senses remain impaired after treatment and correction (eyeglasses, hearing aids) are termed visually or hearing handicapped. • Visually impaired: blind or low vision - must learn through other senses – Students with vision problems may have physical, academic, and social needs. Special materials can be gathered to help these students. • Hearing disorders: deaf or hard-of-hearing – Difficulty in speech and language development is one of the major educational problems associated with hearing loss. Interpreters many accompany some deaf students to class.
SPECIAL PHYSICAL OR SENSORY CHALLENGES	• "Related to physical skills such as hand use, trunk control, mobility….individuals with medical conditions that affect strength and stamina. • DISABILITIES: physical states or conditions that result in impairment of functioning (eg: loss of a leg) • HANDICAPS: disabilities become handicaps when they interfere with the individual's ability to function in specific situations. • Academic needs: Special services may be provided by adapted physical education teachers or other motor specialists…Social acceptance is another possible problem area.
LEARNING DISABILITIES	A disorder in the ability to process information that can result in attention, perception, or memory deficits; despite adequate hearing, vision, and intelligence, learning disabled students experience difficulty in school learning. • Academic needs: struggle with listening, reading, spelling, writing, etc….
ADD / ADHA	• ADHD: Attention Deficit Hyperactivity Disorder: A term used in psychiatric classification systems to describe individuals who show poor attention due to distractibility, hyperactivity, and impulsivity. • ADD: Attention Deficit Disorder
FUNCTIONAL MENTAL RETARDATION	• Significantly sub-average general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period. Characterized by both below-average intellectual ability and deficits in adaptive behavior. A low IQ score alone is not sufficient to determine retardation. • Academic needs: learn at a slower rate, may not be ready to begin formal academic instruction; can acquire basic school skills, but their achievement is below grade-level expectations.

Know the major types of challenges in each category (e.g., dyslexia under "Learning Disabilities",) know the major symptoms and range of severity, and know the major classroom and instructional issues related to each area.



LEGISLATION AND INSTITUTIONAL RESPONSIBILITIES

AMERICANS WITH DISABILITIES ACT (ADA)	Provide that no person shall, by any reason of his or her disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination in any services, programs, or activities of an entity covered by the law.
INDIVIDUALS WITH DISABILITIES EDUCATION ACT (IDEA) -	The *Individuals with Disabilities Education Act* (IDEA), previously the *Education of the Handicapped Act* (EHA), was originally passed by the U.S. Congress in 1975 as Public Law 94-142. Its purpose was to ensure all children and youth with disabilities in the United States access to a free, appropriate public education (FAPE). Reauthorization of the act occurs every 5 years, and although the last reauthorization (IDEA '97) expired in 2002, IDEA will continue in its present form until a new Act passes in Congress and is signed by the President.
INCLUSION, MAINSTREAMING, AND "LEAST RESTRICTIVE ENVIRONMENT"	• Inclusion: • Mainstreaming: the inclusion of special students in the general educational process for any part of the school day. • LRE: The most appropriate educational placement that is closest to the mainstream.
IEP (INDIVIDUAL EDUCATION PLAN) – INCLUDING WHAT, BY LAW, MUST BE INCLUDED IN EACH IEP	• IEP: A written educational plan that specifies a special student's current levels of educational performance, annual goals, and short-term instructional objectives; prepared by a team that includes the students' parent(s), teacher(s), and, if appropriate, the student.

- Know the basic rights or responsibilities that the legislation established.

APPROACHES FOR ACCOMMODATING VARIOUS LEARNING STYLES, INTELLIGENCES, OR EXCEPTIONALITIES

DIFFERENTIATED INSTRUCTION	1. Differentiated Instruction is based on the following beliefs: a. Students differ in their learning profiles b. Classrooms in which students are active learners, decision makers and problem solvers are more natural and effective than those in which students are served a "one-size-fit's-all" curriculum and treated as passive recipients of information. c. "Covering information" takes a backseat to making meaning out of important ideas 2. Curriculum should be differentiated in three areas: a. Content: Multiple options for taking in information b. Process: Multiple options for making sense of the ideas c. Product: Multiple options for expressing what they know
ALTERNATIVE ASSESSMENTS	Alternative assessment is any type of assessment in which students *create* a response to a question or task. (In traditional assessments, students *choose* a response from a given list, such as multiple-choice, true/false, or matching.) Alternative assessments can include short-answer questions, essays, performance assessment, oral presentations, demonstrations, exhibitions, and portfolios.
TESTING MODIFICATIONS	Any special arrangements or modifications must be in accordance with rules and procedures that protect test standardization procedures and the validity of the assessment.[1] **Special arrangements or modifications must never be used for score enhancement.** In determining appropriate testing modifications, a fundamental principle is to follow the type of instructional modifications used in the classroom. Modifications that are not routinely used during the instructional day and during classroom testing are not appropriate during state-mandated testing. A good guideline is to "test the way you teach." For example, students who habitually need extended time for classroom assignments and tests will probably need extended time for state-mandated tests. Students may receive multiple test modifications if these modifications are part of routine instruction and testing for the student. Modifications used during classroom instruction and state-mandated testing should be documented.[2]

THE PROCESS OF SECOND LANGUAGE ACQUISITION, AND STRATEGIES TO SUPPORT THE LEARNING OF STUDENT FOR WHOM ENGLISH IS NOT A FIRST LANGUAGE

http://www.mpls.k12.mn.us/departments/tis/literacy_initiative/pdf_and_words/addendum.pdf - See Addendum

- English immersion instruction is completely in English.
- English as a second language instruction may be the same as immersion but also may have some support for individuals using their native languages.
- Transitional bilingual education instruction is in the students' native language, but there is also instruction each day on developing English skills.
- Two-way bilingual education instruction is given in two languages to the students, the goal is to have students' proficient in both languages.

[1] For example, reading tests may not be read aloud. Calculators may not be used for "calculator-inactive" sections of mathematics tests.

[2] The local school system will designate the manner in which each school should provide documentation for modifications for limited English proficient students.

HOW STUDENTS' LEARNING IS INFLUENCES BY INDIVIDUAL EXPERIENCES, TALENTS, AND PRIOR LEARNING, AS WELL AS LANGUAGE, CULTURE, FAMILY, AND COMMUNITY VALUES

MULTICULTURAL BACKGROUNDS	• Migratory students needs: make connections with previous lesson – create an accepting, comfortable climate in the classroom – use technology to help students learn in active ways • Know the cultural as well as personal sensitivity of the students - use discretion when presenting discussion topics • Provide them with authentic tasks, many opportunities, and may ways to learn and succeed • Remember our cultural values may not be the same as those of our students.
AGE-APPROPRIATE KNOWLEDGE AND BEHAVIOR	• Understanding the age-appropriate knowledge and behavior will help the teacher differentiate instruction.
THE STUDENT CULTURE AT THE SCHOOL	• Understand family background, linguistic patterns and differences, cognitive patterns and differences, social and emotional issues of diverse students.

FAMILY BACKGROUNDS	**LINGUISTIC PATTERNS AND DIFFERENCES**	**COGNITIVE PATTERNS AND DIFFERENCES**	**SOCIAL AND EMOTIONAL ISSUES**

STUDENT MOTIVATION AND THE LEARNING ENVIRONMENT

IMPORTANT TERMS RELATED TO MOTIVATION AND BEHAVIOR

Hierarchy of needs See MASLOW	**Correlation and causal relationships**	**Intrinsic motivation** An internal source of motivation such as curiosity or the desire to learn; motivation associated with activities that are their own reward.	**Extrinsic motivation** Motivation created by external events or rewards outside the learning situation itself.
Learned helplessness A sense that one is doomed to fail, based on past experiences. This sense can stifle motivation and prevent people from attempting new tasks.	**Self-efficacy** An individuals belief about or perception of personal competence in a given situation.	**Operant conditioning** A type of learning in which voluntary behaviors are strengthened or weakened depending upon their consequences or antecedents.	**Reinforcement** Using consequences to strengthen behavior; a reinforcer is ANY consequence that strengthens a behavior – negative or positive.
Positive reinforcement The strengthening of a behavior by the presentation of a desired stimulus or reward after the behavior. Some examples are food, physical contact, and social praise.	**Negative reinforcement** The strengthening of a behavior by the removal of an aversive stimulus. For example, a child is allowed to come out of the corner when he or she is quiet.	**Shaping successive approximations** A behavior management method for developing an appropriate behavior in which the teacher rewards responses that are successively more similar to the ultimate desired response (successive approximations). In order to use this method, teachers must break down the desired complex behavior into a number of small steps.	**Prevention** Anticipating potential problems and creating procedures to help prevent these situations.
Extinction The gradual disappearance of a learned response. In operant conditioning, this occurs when reinforcement is withheld. In classical conditioning, extinction will result when the conditioned stimulus is presented repeatedly without any longer being paired with the unconditioned stimulus.	**Continuous reinforcement** A schedule in which every correct response is reinforced. **Punishment** Anything that weakens or suppresses behavior.		**Intermittent reinforcement** A schedule in which correct responses are reinforced frequently, but not every time. This schedule is most effective in maintaining already acquired responses.

- Go beyond memorization of definitions; try to apply the terms to the theories behind them and think of applications in the teaching situation

PRINCIPLES OF EFFECTIVE CLASSROOM MANAGEMENT AND STRATEGIES TO PROMOTE POSITIVE RELATIONSHIPS, COOPERATION, AND PURPOSEFUL LEARNING, INCLUDING:			
Establishing daily procedures and routines	Giving timely feedback	Communicating with parents and caregivers	Responding to student misbehavior
Establishing classroom rules, punishments, and rewards	Maintaining accurate records	Using objective behavior descriptions	Arranging of classroom space
Pacing and structuring the lesson	NOTES:		

- Why is each of the above a good practice for teachers to cultivate and maintain in terms of its effect on student learning? How can each help you to be a more effective teacher? What are the characteristics of effective implementation of each of these practices? How can you structure your instructional planning to include these?
- What are the choices a teacher has in each of the last three listed above? What are the most important considerations when making decisions about each one?
- Pacing and structure of a lesson is a particularly challenging aspect of instruction. What factors can change the pace and structure of a lesson as it unfolds? How can you prepare IN ADVANCE for adjusting the pace and the structure of a lesson for each of these factors?

INSTRUCTION AND ASSESSMENT – 35%

INSTRUCTIONAL PROCESSES	
CRITICAL THINKING	Critical thinking is a process whereby the learner considers a variety of possibilities, then chooses from those possibilities using unbiased, rational thinking.
CREATIVE THINKING	Teams of students work together to solve assigned problems using text provided by the teacher.
HIGHER-ORDER THINKING	In the simplest sense, higher order thinking is any thinking that goes beyond recall of basic facts. The two key reasons to improve higher order thinking skills are first, to enable students to apply facts to solve real world problems, and second, to improve retention of facts. In addition to the basic meaning of "higher order thinking skills" HOTS is also used to refer to a specific program designed to teach higher order thinking skills through the use of computers and the Socratic Method to teach thinking skills.
INDUCTIVE AND DEDUCTIVE THINKING	INDUCTIVE: Teaching that follows the cycle used in scientific inquiry. Steps usually include: searching the literature, making observations, generating hypotheses, designing and carrying out experiments, then analysis of results and restarting the cycle. DEDUCTIVE: A form of inquiry with four basic components: presentation of a generalization, discussion of core elements of the generalization, student exploration of the elements, student generation of relevant examples of the generalized concept.
PROBLEM-STRUCTURING AND PROBLEM-SOLVING	Inductive teaching method. No direct instruction. Teacher poses authentic (real-world) problem. Students learn particular content and skills as they work cooperatively to solve the problem.
INVENTION	An open-ended problem-solving task. Is the process of creating something to fill a need.
MEMORIZATION AND	Actively organizing and working with concepts or terminology to improve

RECALL	incorporating those concepts into memory.
INSTRUCTIONAL STRATEGIES	
COOPERATIVE LEARNING	Cooperative Learning is a specific type of small group learning which has the following five essential elements: 1. Positive Interdependence 2. Face-to-Face Interaction 3. Individual Accountability (Personal Responsibility) 4. Structured Activitiy 5. Teamwork Skills and Group Processing
DIRECT INSTRUCTION	Teacher-centered instruction which includes lecture, presentation, and recitation.
DISCOVERY LEARNING	A constructivist approach. Students begin learning with an activity designed to lead them to particular concepts or conclusions. Students acquire basic and advanced knowledge in random order.
WHOLE-GROUP DISCUSSION	
INDEPENDENT STUDY	Practice done without intervention by the teacher. This approach includes many activities done with a computer.
INTERDISCIPLINARY INSTRUCTION	Traditional elementary and secondary classrooms divide instruction into categories (disciplines) such as "reading," "math," and "social studies." Interdisciplinary teaching involves any effort on the part of an instructor to design learning activities with products and activities to relate to more than one discipline.
CONCEPT MAPPING	Any of several forms of graphical organizers which allow learners to perceive relationships between concepts through diagramming keywords representing those concepts. Originally developed by Joseph Novak in the 1960's.
INQUIRY METHOD	A system in which students solve problems or answer questions by forming tentative answers (hypotheses), then collecting and analyzing data to provide evidence for or against their hypotheses.
QUESTIONING	Have students apply "who, what, when, where, why, how" to all problems. Or ask students to generate questions.

- What are some specific instructional goals in a particular content area that would be associated with each of these cognitive processes?
- How are these cognitive processes connected with the developmental level of students?
- How are these processes different from each other?
- What are some ways that teachers can stimulate each of these cognitive processes in a lesson?
- What are the primary advantages of each of these strategies? In general terms, describe the kinds of situations or the kinds of goals and objectives for which each of these strategies is appropriate. What kinds of information about students' learning styles and achievement levels does each of these offer? When would you NOT use a particular instructional strategy?

PRINCIPLES, TECHNIQUES, AND METHODS ASSOCIATED WITH VARIOUS INSTRUCTIONAL STRATEGIES, INCLUDING:	
DIRECT INSTRUCTION	
MADALINE HUNTER'S "EFFECTIVE TEACHING MODEL"	Developed the direct instruction model for effective teaching. Her outline of a lesson consists of: the objectives, standards of performance and expectations, anticipatory set or advance organizer, the teaching (input, modeling and demo, direction giving, and checking for understanding), guided practice and monitoring, closure, and independent practice.
DAVID AUSUBEL'S - "ADVANCE ORGANIZERS"	These organizers are introduced before the learning begins and are also presented at a higher level. They act as a bridge between the new concepts

	being taught and what the student already knows.
MASTERY LEARNING	Everyone can learn given the right circumstances. To Instruct for mastery: • Major objectives representing the purposes of the course or unit. • The substance is divided into smaller learning units, each with their own objectives and assessment. • Instructional strategies are identified: teaching, modeling, practice, formative evaluation, re-teaching, reinforcement, and summative evaluation. • Each unit has a diagnostic test at the conclusion. • The diagnostic tests are used to provide supplementary instruction to help students with identified problems. • No student proceeds to new material until basic prerequisite material is mastered.
DEMONSTRATIONS	Provide modeling of what you want students to replicate in a smaller group, or a demonstration can be given to the whole class.
MNEMONICS	Methods, devices, or even mental tricks for improving memory. Mnemonics are based on several memory concepts: o all memory is based on association o anything you wish to remember must first be observed o to remember new pieces of information, associate them with something you already know o we think by using mental pictures
NOTE-TAKING	Students take notes as the teacher instructs. Notes can be done as an entire class with all using the same format or students can select what information they feel is most pertinent.
OUTLINING	A teaching technique where the teacher outlines a lecture thus enabling students to know where the instruction is going.
USE OF VISUAL AIDS	In order to meet all needs of students, visual aids could be implemented to better instruct students who are visual learners. Visual aids could include, photographs, drawings, art work, graphs, charts, slides, videos, etc…
4MAT CURRICULUM DEVELOPMENT MODEL – (BERNICE MCCARTHY) -	1. Propose WHY questions to students 2. Engage in WHAT activities 3. Encourage students to ask HOW 4. Answering the IF question 5. Back to WHY…. Cyclical pattern  Uses all the learning styles and multiple intelligences
STUDENT-CENTERED MODELS	
INQUIRY MODEL	An investigative process of learning in which students are asked to pose questions, analyze data, develop conclusions or generalizations, classify, predict, and experiment.
DISCOVER LEARNING	An inquiry process in which learners pose questions and seek explanations.
COOPERATIVE LEARNING (PAIR-SHARE, JIGSAW, STAD, TEAMS, GAMES, TOURNAMENTS)	Learning based on a small group approach to teaching in which students are held accountable for both individual and group achievement. Activities include pair-share, jigsaw, teams, games, and tournaments)
COLLABORATIVE LEARNING	Students work together collaboratively in solving a problem or examining a situation. The benefits of collaborative learning are that it brings many perspectives to a problem, which in turn develops problem solving and mediation skills.
CONCEPT MODELS (CONCEPT DEVELOPMENT, CONCEPT	Allows an educator to arrange any number of learning components or tasks into a "map" or plan to be accomplished.

ATTAINMENT, CONCEPT MAPPING)	
DISCUSSION MODELS	A cooperative learning grouping in which students meet together for small group discussions among themselves. The elements of a discussion model include: o Small number of students, preferable 6-8 o Recognition of a common problem or topic o Introduction, exchange, and evaluation of ideas and information o Movement toward some objective or goal o Verbal interaction
LABORATORIES	Used particularly in science classes where students test out their hypothesis.
PROJECT-BASED LEARNING	Students self-select a project that they would like to work on and all learning that occurs is centered around their project and ties in with it in some way.
SIMULATIONS	A pretend setting or situation that parallels a real-world setting or situation and allows students to practice problem-solving skills.

- What are some examples of appropriate situations for grouping students heterogeneously? What are some for grouping students homogeneously? Besides grouping by performance level, what are other characteristics that should sometimes be considered when grouping students?
- What is wait time? What does research say about wait time?
- How might a teacher promote critical thinking among students in a discussion?
- How can a teacher encourage student-to-student dialogue in a class discussion?
- What kinds of classroom management procedures and rules would tend to make class discussions more productive?
- How does the developmental level of students affect the way a teacher might handle classroom discussion?
- In what kinds of discussions or situations should a teacher name a specific student before asking a question? When is it best not to name a specific student?
- What should a teacher consider when planning to incorporate various resources into a lesson design?
- What are the advantages of these different resources?

METHODS FOR ENHANCING STUDENT LEARNING THROUGH THE USE OF A VARIETY OF RESOURCES AND MATERIALS

COMPUTERS, INTERNET RESOURCES, WEB PAGES, E-MAIL	**PRIMARY DOCUMENTS AND ARTIFACTS**	**LIBRARIES**	**AUDIO-VISUAL TECHNOLOGIES SUCH AS VIDEOTAPES AND COMPACT DISCS**
LOCAL EXPERTS	**FIELD TRIPS**	**SERVICE LEARNING (SEE CHRIS DYSON for mini-grants to do service-learning in your classroom – 685-4660)**	

- What should a teacher consider when planning to incorporate various resources into a lesson design?
- What are the advantages of these different resources?
  - Bringing closure to a lesson
  - Improving student interaction
  - Addressing a "missed opportunity" during instruction

PLANNING INSTRUCTION

TECHNIQUES FOR PLANNING INSTRUCTION TO MEET CURRICULUM GOALS, INCLUDING THE INCORPORATION OF LEARNING THEORY, SUBJECT MATTER, CURRICULUM DEVELOPMENT, AND STUDENT DEVELOPMENT

National and state learning standards	**State and local curriculum guides**	**Units and lessons**	**Learner objectives and outcomes**
State and local curriculum frameworks	**Scope and sequence in specific disciplines**	**Behavioral objectives; affective, cognitive, psychomotor**	**Backward Design**

TECHNIQUES FOR CREATING EFFECTIVE BRIDGES BETWEEN CURRICULUM GOALS AND STUDENTS' EXPERIENCES

Modeling	**Activating students' prior knowledge**	**Anticipating preconceptions**	**Encouraging exploration and problem-solving**
Guided practice	**Building new skills on those previously acquired**	**Independent practice, including homework**	**Transitions**

- Teachers are responsible for connecting scope and sequence frameworks and curriculum goals into classroom lessons and groups of lessons. How does a teacher translate curriculum goals and discipline-specific scope and sequence frameworks into unit and lesson plans with objectives, activities, and assessments appropriate for the students being taught? Give an example of a curriculum goal and then write a lesson objective, one activity, and an idea for an assessment of student learning that would accomplish that goal.
- How do behavioral objectives and learner objectives and outcomes fit into a teacher's planning for units and lessons?
- What criterion or criteria does a teacher use to decide on when to use each of these techniques?
- Why is it so important for a teacher to plan carefully for transitions? What are the risks if transitions are not thought through and executed with care?

ASSESSMENT STRATEGIES

TYPES OF ASSESSMENTS

STANDARDIZED TESTS, NORM-REFERENCED OR CRITERION-REFERENCED	• Standardized tests: are assessments that are administered and scored in exactly the same manner for all students. Typically mass produced and machine scored. • Norm Referenced tests: indicate that the performance results of the students who take this test are compared with the performance results of other students taking the test. (ex. SAT) • Criterion References tests: compare students' knowledge and achievement in an academic area to those objectives of the curriculum established by state standards. These show a student's mastery of particular content areas. (ex. CRT)
ACHIEVEMENT TESTS	• Designed to measure the current level of learners' performance, also designed to show the depth of one's knowledge and mastery of subject area curricula.
APTITUDE TESTS	• Learning aptitude refers to the student's capacity for altering behavior when presented with new information or experiences. (ex. IQ tests)
STRUCTURED OBSERVATIONS	• A more formal assessment where the teacher is observing if a student has learned a specific task. Can observe how children are working

	and learning, can monitor the progress of competent children at *spaced* intervals, and can monitor and guide the teaching of the less competent children at *frequent* intervals.
ANECDOTAL NOTES	• Anecdotal notes: notes that a teacher makes while they are observing students in various classroom situations. Primarily, you observe those behaviors that you can't assess any other way. Four keys to keeping effective anecdotal records: 1. Don't record too much. 2. Be consistent. 3. Record positive as well as negative indicators. 4. Don't draw inferences from a single incident.
ASSESSMENTS OF PRIOR KNOWLEDGE	• Prior knowledge is what we already know or have experienced, directly or vicariously, that we bring to the act of learning. Examples of assessing prior knowledge include, webbing (Where students make connection with associated terms), brainstorming, organizing a random collection of terms into categories, or a KWL chart.
STUDENT RESPONSES DURING A LESSON	• While teaching ask students questions and assess their understanding by their responses. Re-teach concepts where there is still confusion.
PORTFOLIOS	• A collection of materials that demonstrate how each student is progressing across time in learning content, mastering operations, broadening and/or refining tastes and interests, and progressing in development toward more complex or mature stages. An important part of portfolios is having students self-assess why they are including certain pieces from their learning.
ESSAYS WRITTEN TO PROMPTS	• Opens up the possibility of not being as deliberate in our writing when a formal essay is done. It can help students to bring closure on their thoughts about the topic of study and give the teacher a better connection to the intellectual happenings in the class.
JOURNALS	• Allows students the opportunity to express their thoughts, feelings, and ideas in a non-threatening context. Depending on whether a formal writing prompt has been assigned to students will affect the context in which the teacher will use the journal writing sample.
SELF-EVALUATIONS	• Students evaluate their learning based on who knows them best… themselves. Teachers can utilize the self-evaluation by asking students about their strengths and weaknesses.
PERFORMANCE ASSESSMENT	• Can be used as a standardized assessment if it is administered and scored in the same way for all of the students. These assessments are ranked according to pre-established performance criteria or guidelines that are listed on rubrics.

- What are the characteristics, uses, advantages, and limitations of each of the above formal and informal types of assessments?
- When might you use "holistic scoring?"
- Under what circumstances would "anecdotal notes" give a teacher important assessment information?
- How might a teacher effectively use student self-evaluation?
- What are some examples of informal assessments of prior knowledge that a teacher can easily use when a new topic is introduced?
- What kind of assessment information can a teacher gather from student journals?
- What is a structured observation in a classroom setting?

CHARACTERISTICS OF ASSESSMENTS	
VALIDITY	The degree to which a test measures what it is intended to measure.
RELIABILITY	Refers to the consistency of test results.
NORM-REFERENCED	The norms represent average performances of many students in various age, grade, and demographic groups and are used to compare the performance of individuals or special groups to the performance of those in the norm group. Designed to measure achievement or past learning's.
CRITERION-REFERENCED	Enable the teacher to compare a student's performance to a predetermined goal or outcome. Criterion-referenced tests provide a way of determining whether a student has met instructional goals, or *criteria*.
MEAN, MEDIAN, MODE:	○ Mean: the average. (student scored 88, 45, 67, 81, and 92. The mean is 74.6) ○ Median: is the point on a distribution at which there are equal numbers of scores above and below it. (scores 45, 67, 81, 88, and 92. The median is 81) ○ Mode: represents the most frequently occurring score.
SAMPLING STRATEGY	
SCORING ASSESSMENTS	
Analytical scoring	○ Analytical scoring: the assessment of student performance by means of a rating system.
Holistic scoring	○ Holistic scoring: the assessment of a student's work in its entirely rather than judging specific parts.
Rubrics	• Rubrics: examples of different types, models, illustrations, or levels of possible responses that are used as guidelines for assessing student work.
Reporting assessment results – percentile rank, stanines, mastery levels, raw score, scaled score, grade equivalent score, standard deviation, standard error of measurement	Reporting assessment results: • Percentile rank: percentiles range from 1 to 99, where a score lies within this range indicates relative performance compared with the norm group. (ex. A score in the 98th percentile means that the student did as well as or better than 98 percent of the norm group and that only 1 percent attained higher scores.) Thus, a student who scores in the 50th percentile should correctly be viewed as average. • Stanines: the distribution of possible scores is divided into nine parts. Stanine scores range from 1 to 9, a score of 5 is the mean, and scores from just below 4 to just above 6 are considered average, scores of 1 to 3 being below average and scores of 7 to 9 being above average. • Mastery levels: levels that describe whether a student has met a certain criteria deemed in the curriculum. • Raw scores: shows how many items the student got right on the test or on each subtest. • Scaled score: raw scores from subtests are converted to scaled scores. • Grade equivalent score: they represent a level of achievement that is considered average for a particular grade and month of school within that grade. • Standard deviation: is an index of how scores are spread out around the mean, regardless of the shape of the distribution. • Standard error of measurement: used in judging reliability, it refers to the fact that no score is absolutely precise. A small standard error indicates high reliability.

USES OF ASSESSMENT	
Formative evaluation	On-going throughout the learning process – to discover where students are at in the learning process.
Summative evaluation	A process in which the teacher determines how well students have mastered new concepts and skills and met lesson objectives.
Diagnostic evaluation	Are norm-referenced and standardized but are designed to be administered to students who are showing signs of difficulty in specific subject areas.

COMMUNICATION TECHNIQUES – 15%

EFFECTIVE VERBAL AND NONVERBAL COMMUNICATION	Basic, effective verbal and nonverbal communication techniques: • Important to utilize wait time for students to develop a response to a question that has been asked. • Move around the room • Make eye contact with students • Use "voice" effectively • Clearly explain your expectations for your students
CULTURAL AND GENDER DIFFERENCES IN COMMUNICATION	The effect of cultural and gender differences on communications in the classroom: • Use local representatives of ethnic groups as resources and role models for achievement, demonstration, and explanation. • Be aware of the cultural diversity in the classroom. • Be sensitive to how students react around you as the teacher. For example, some Asian and Native American cultures do not make eye contact with the teacher or ask questions, which is sometimes seen as being disrespectful. • Call on girls as often as you call on boys. • Girls tend to emphasize memorization, they evaluate their own learning during the learning process, girls perform well in reading activities, girls express emotions with words. • Boys learn more by elaboration strategies, boys tend to need more assistance in planning, organizing, and structuring their learning activities, boys perform well in mathematics and science, boys express emotions through actions. ▪ Make positive connections between home life and culture and the school all ensure greater success of each student

STIMULATING DISCUSSION AND RESPONSES IN THE CLASSROOM	
PROBING FOR LEARNER UNDERSTANDING	▪ Ask summarizing questions ▪ Ask questions that have multiple responses ▪ Conduct a review session
HELPING STUDENTS ARTICULATE THEIR IDEAS AND THINKING PROCESSES	• Why do you think that? • What would happen if… • Ask evaluative questions (emphasize the specific criteria that students should base their judgments): o Why something is good or bad o Why something is important o Why one theory explains the facts better than another
PROMOTING RISK-TAKING AND PROBLEM-SOLVING	o What is another way of solving that problem? o How else could this be done?

	○ If you were in this situation…
FACILITATING FACTUAL RECALL	▪ Mnemonic devices ▪ Poetry ▪ Constructivism (build upon what students already know) ▪ Music, set facts to lyrics ▪ Mapping • Concept maps • clustering ▪ Cooperative learning groups
ENCOURAGING CONVERGENT AND DIVERGENT THINKING	▪ Convergent thinking: ask questions that require students to give factual or specific answers. ▪ Divergent thinking: ask questions that encourage students to give complex, creative, and longer answers.
STIMULATING CURIOSITY	• Make a hypothesis • KWL Chart • Answer "What if…" • Brainstorming • Simulation • Role playing
HELPING STUDENTS TO QUESTION	▪ In order to develop students' critical or reflective thinking skills, or thinking in any way, teachers must help students to frame questions. ▪ Play 20 Questions. The teacher thinks of a concept or a problem and students attempt to discover it through questioning. ▪ Have students prepare study or recitation questions ahead of the class.

- What are some of the ways that a teacher's raising his or her voice might be interpreted differently by students with different cultural backgrounds?
- What are specific examples of gestures and other body language that have different meanings in different cultures? (For example, looking someone directly in the eye, disagreeing openly during a discussion, pointing)
- What is an example of a question in a particular content area that probes for understanding?
- What is an example of a comment a teacher might make that would promote risk-taking? Problem –solving?
- How would a teacher encourage divergent thinking on a particular topic?
- How would a teacher encourage students to question each other and the teacher?

PROFESSION AND COMMUNITY – 15%

THE REFLECTIVE PRACTITIONER -
TYPES OF RESOURCES AVAILABLE FOR PROFESSIONAL DEVELOPMENT AND LEARNING

Professional literature	**Colleagues**	**Professional associations**	**Professional development activities**

WHY PERSONAL REFLECTION ON TEACHING PRACTICES IS CRITICAL, AND APPROACHES THAT CAN BE USED TO REFLECT AND EVALUATE

- What types of help or learning can each of these resources offer a new teacher?
- What are the titles of two professional journals of particular interest to you in your chosen field of teaching that you might subscribe to?
- What is/are the professional association[s] that offer professional meetings and publications and opportunities for collaborative conversation with other teachers?
- What might be a professional development plan for the first two years of a teacher's career that would support her/his learning and growth?

TEACHERS AND THE LARGER COMMUNITY		
The role of the school as a resource to the larger community	Factors in the students' environment outside of school (family circumstances, community environments, health and economic conditions) that may influence students' life and learning	Basic strategies for involving parents/guardians and leaders in the community in the educational process

MAJOR LAWS RELATED TO STUDENTS' RIGHTS AND TEACHER RESPONSIBILITIES	
Equal education	
No Child Left Behind (NCLB)	Emphasis on teaching methods that work!
Appropriate education for handicapped students	
Confidentiality and privacy	
Appropriate treatment of students	
Reporting in situations related to possible child abuse	
Brown v. Board of Education (1954)	

SOURCES OF INFORMATION:

http://www.mhhe.com/socscience/education/edpsych/edpsytop.html#learning – Learning Theories and Strategies

http://glossary.plasmalink.com/glossary.html - Glossary of Instructional Strategies