Learning Theories (EDU 201)

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Lesson no 1

INTRODUCTION TO LEARNING

Topic 1: Definition of Learning

Basic principles:

All humans learn

- Infants learn
- Children learn
- Adults learn

Learning is not uniquely human – all living things learn.

Learning is commonly defined as:

A process that brings together.

- **Cognitive** (mental, intellectual, reasoning)
- **Emotional,** and
- **Environmental** influences and experiences

Learning is commonly defined as:

For acquiring, enhancing or making changes in one's

- **Knowledge**
- **Skills**
- **Values, and**
- **Worldwide views**

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Topic 2: Nature of Learning

The depth or nature of the changes involved are likely to be different:

1. Learning as a quantitative increase in knowledge:
   Knowing a lot
2. Learning as memorizing: storing information to reproduce.
3. Learning as acquiring facts, skills and methods to retain and use.
4. Learning as making sense or abstracting meanings.
5. Learning as interpreting and understanding reality in a different ways.

Topic 3: Key Elements of Learning

- Learning is a product.
- Learning is a process.
- Learning as a product focuses on outcome – the end product of some process. It can be recognized or seen.
- This approach highlights a crucial aspect of learning change.
- Learning as a process focuses on what happens when the learning takes place.
- Explanations of what happens constitute learning theories.

Topic 4: Learning as a Product

- Same performance measures applies to all students
- Emphasis is on doing activities – and getting them right, because they are graded.

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- Teacher thus assesses who needs more practice in writing, multiplication or something else.
- But this does not tell when the students acquires the skill, or if he/she is more advanced in it.

Topic 5: Learning as a Process

- Differentiation and individualization occur
- Students are viewed as having diverse needs
- Teacher accommodates every student's needs (learning styles)
- Worksheets, exercises, activities and even home work are individualized.
- Mistakes are considered as part of learning.
- Assessment compares student's current achievement to his/her previous level of proficiency or competency, not against the achievements of the peers.

Topic 6: How do People Learn?

Learning is simple, right?

- It is the process of moving information from out there – from a textbook, a friend's notes, Discovery channel – to in here, inside our heads and making that knowledge our own.
- But it turns out that learning is not so simple and obvious.
- Easy answer: We do not know for sure.
- Difficult answer: we have multiple theories that provide answers from many different perspectives.
- These come from psychologists, philosophers, sociologists, anthropologists, evolutionary biologists, linguists, neuroscientists….

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Lesson no 2

THEORY AND LEARNING THEORIES

Topic 7: Theory and Learning Theory

Definition of Theory

A theory:

- provides a general explanation for observations made over time.
- explains and predicts behavior.
- can never be established beyond all doubt.
- may be modified.

A learning theory:

Describes how people learn.

Topic 8: Importance of Learning Theories

Key Value 1

- Gives language and a conceptual framework for understanding the examples of learning that we observe.

Key value 2

- Suggests where to look for solutions to practical problems.
  Importance of Learning theories.
- Provides better idea of purpose behind teaching and learning.
- Equips the teacher to meet the learning needs of learners effectively.
- Enhances teaching and learning by providing guidelines to different methods of teaching and use of instructional resources including technology.

Topic 9: Broad Domains of Learning Theories

- Behaviorism

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- Constructivism
- Cognitivism

We have many independent, specialized knowledge structures, rather than one cohesive knowledge structure.

Behaviorism

- It focuses on objectively observable behaviors and discounts mental activities.
- Behaviorists define learning as the acquisition of new behavior.

Cognitivism

- How we acquire, store and process information
- It looks beyond the behavior to explain brain-based learning that may have link with memory, problem solving and attention.

Constructivism

- Learning is viewed as process in which the learner actively constructs or builds new ideas or concepts based on experience/interpretation/social interaction.

Topic 10: Evolution of Behaviorism

Behaviorism:

- The development of behaviorism, the first domain psychologists carried out experiments in laboratories under strict conditions and thus observe behavior as never before.
- Behaviorism is a learning theory that concentrates only on behaviors that rae readily observable and disregards mental actions.
- It has a high impact on education, objectives/outcomes in curriculum, such as the importance of feedback, skills development and training, and pre-alignment of content, teaching methods and assessment.

Topic 11: Evolution of Cognitivism

Cognitivism:

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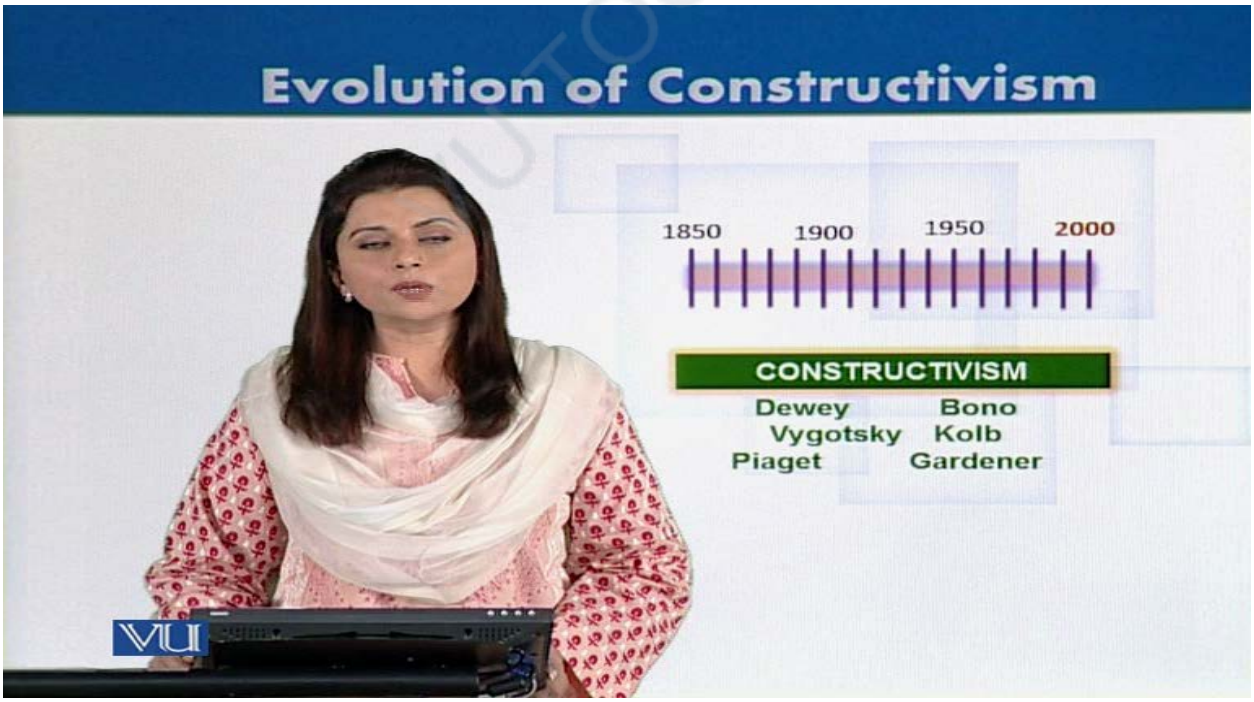
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- How we acquire, store and process information:
- Eventually behaviorism began to falter because aspects of learning such as memory, language and other metal abilities could not be considered within its core logic.
- While behaviorists only look at the observable behaviors, cognitivists conversely consider the mental processes of the learner to be of primary importance. Cognitivism has been referred to as an "information processing" view of learning.
- Curriculum design became more flexible with ideas of continuous assessment, group based learning and applied practice.
- Application of skills rather than rote memorization is a goal in schools today.

Topic 12: Evolution of Constructivism

Constructivism:

- During the later 1980s and the 1990s, these cognitive theories were challenged.
- Emphasis was on the importance of interactions and the sociocultural context of learning.



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- A learning theory that contends that knowledge is not merely transmitted from teacher to student, but it is actively constructed in the mind of the learner out of their experiences in the world.

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Lesson no 3

BEHAVIOURISM I

Topic 13: Concept – Behaviorism

- Behavioral learning theory is the study of external behavior.
- It implies that learner starts with a clean slate.
- And learners from his or her response to the stimulus in his or her environment.
- Thinking does not have to take place for a person to learn.
- Behaviorists assert that the only behaviors worthy of study are those that cab be directly observed.
- Like actions, rather than thoughts or emotions, which are the legitimate object of study.

Topic 14: Basic Assumptions

- Learning is manifested by a change in behavior.
- The environment shapes behavior.
- Principles of contiguity (how close in time two events must be for a bond to be formed)
- Reinforcement (any means of increasing the likelihood that an event will be repeated) are central to exploring the learning process.

Topic 15: The Process

- For behaviorism, learning is the acquisition of new behavior through conditioning.
- Conditioning is a process of behavior modification by which a subject comes to associate a desired behavior with a previously unrelated stimulus.
- And a response becomes more frequent or more predictable in a given environment as a result of reinforcement.

There are two types of possible conditioning

- **Classical**
- **Operant**

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Topic 16: Classical Conditioning

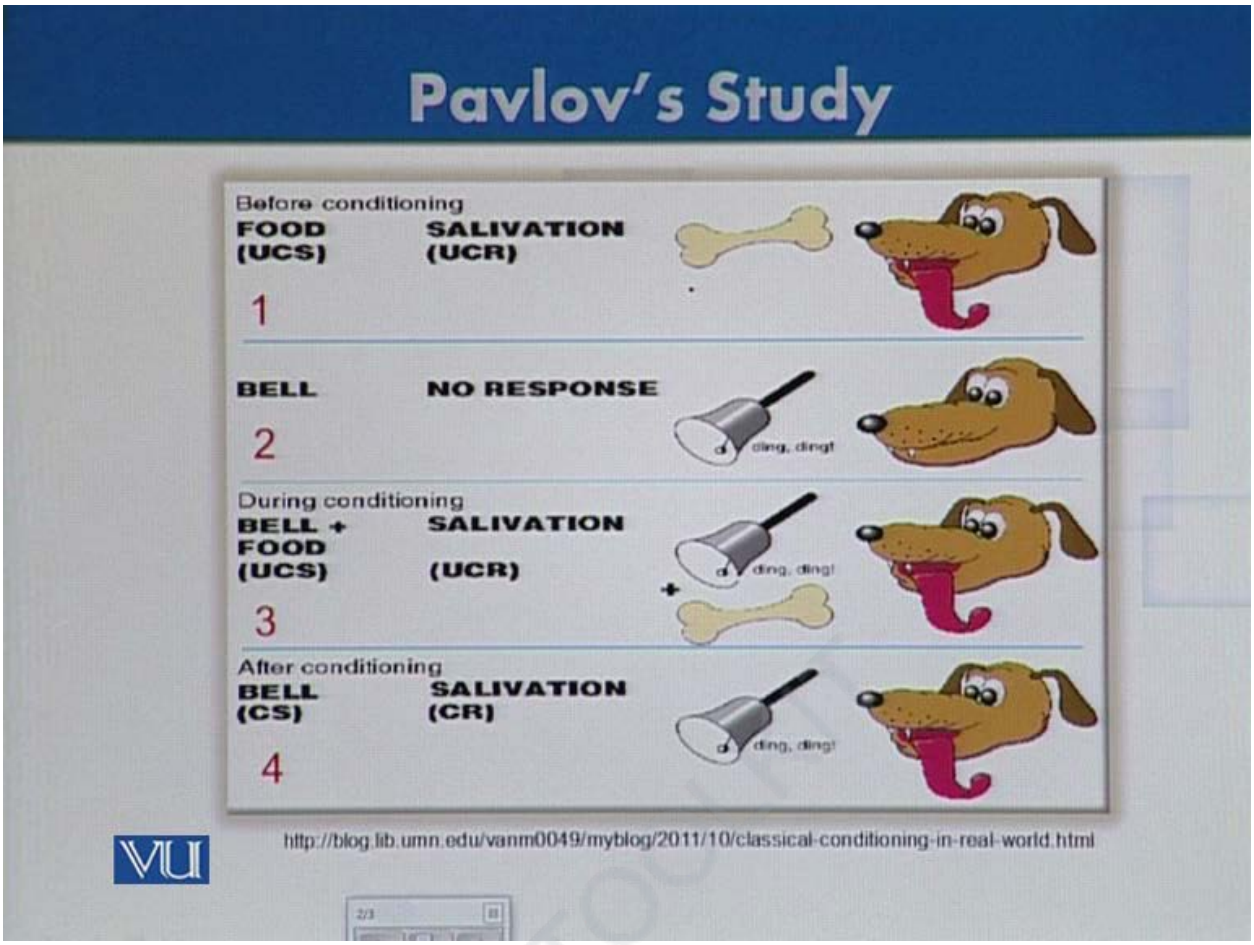
Learning by association

- Natural reflex that occurs in response to a stimulus.
- A naturally occurring stimulus is placed with a neutral stimulus allowing the neutral stimulus to, in time, evoke a natural reflex.
- Our response is involuntary.
- Ivan Pavlov (1849-1936) discovered Classical Conditioning
- In his digestive research, Pavlov noticed that dogs salivated in absence of food and smell.
- This led him to another very important study.

Topic 17: Pavlov Study

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Pavlov (1902) started from the idea that there are some things that a dog does not need to learn. For example, dogs don't learn to salivate whenever they see food. This reflex is 'hard wired' into the dog. In behaviorist terms it is an unconditioned response (i.e. a stimulus-response connection that required no learning). In behaviorist terms, we write:

Unconditioned Stimulus (Food) > **Unconditioned Response** (Salivate)

Pavlov showed the existence of the unconditioned response by presenting a dog with a bowl of food and the measuring its salivary secretions (see image below).

However, when Pavlov discovered that any object or event which the dogs learnt to **associate** with food (such as the lab assistant) would trigger the same response, he realized that he had made an important scientific discovery. Accordlingly, he devoted the rest of his career to studying this type of learning.

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Pavlov knew that somehow, the dogs in his lab had learned to associate food with his lab assistant. This must have been learned, because at one point the dogs did not do it, and there came a point where they started, so their behavior had changed. A change in behavior of this type must be the result of learning.

In behaviorist terms, the lab assistant was originally a neutral stimulus. It is called neutral because it produces no response. What had happened was that the neutral stimulus (the lab assistant) had become associated with an unconditioned stimulus (food).

Topic 18: Watson and Little albert's Case Study

- An American psychologist who promoted a change in psychology of learning.
- Also conducted the controversial "Little Albert" experiment.

Albert

- 9 month's old infant.
- Was first shown a white rat; did not react
- Next shown a white rat, and heard loud noise, simultaneously.
- Done repeatedly
- By the end, whenever he saw the white rat he cried
- The infant learned to associate the rat with a scary noise, and experienced fear whenever he saw it.

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Lesson no 4

BEHAVIOURISM II

Topic 19: Operant Conditioning

Operant conditioning (or **instrumental conditioning**) is a type of learning in which an individual's behavior is modified by its antecedents and consequences.

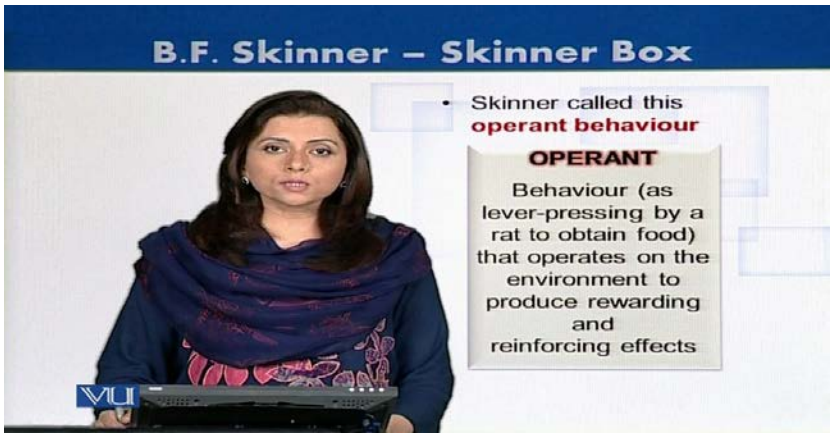
Operant conditioning is distinguished from *classical conditioning* (or *respondent conditioning*) in that operant conditioning deals with the reinforcement and punishment to change behavior. Operant behavior operates on the environment and is maintained by its antecedents and consequences, while classical conditioning is maintained by conditioning of reflexive (reflex) behaviors, which are elicited by antecedent conditions. Behaviors conditioned through a classical conditioning procedure are not maintained by consequences. They both, however, form the core of behavior analysis and have grown into professional practices.

Topic 20: B.F Skinner – Skinner box

- B.F Skinner conceived the term "Operant Conditioning".
- He put a rat in a box and trained it to pull a lever to get its food – by not feeding it until it would pull the lever.
- He found that behavior did not depend on the preceding stimulus as Watson and Pavlov maintained.
- Instead, Skinner found that behaviors were dependent upon what happens after the response.

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Topic 21: Edward Thorndike – Law of Effect

- Thorndike did foundational research on why consequence of behavior, such as rewards or punishments, affects our future choices.
- Devised a wooden puzzle box and put a cat in it – and placed some fish food outside.
- Measured how long cat took to get out, and eat fish – gradually, cat learned to pull correct levers.
- Concluded: All learning involves the formation of connections, which are strengthened as per the law of effect.
- And behavior that is followed by pleasant consequences is likely to be repeated
- Any behavior followed by unpleasant consequences is likely to be stopped,
- **Behavior modification.**

Topic 22: Classical vs Operant Conditioning

Classical: Relies on stimuli to learn.

Operant: Relies more on consequences.

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Classical: Neutral stimulus that naturally and automatically triggers a response.

Operant: Requires the use of reinforcement or punishment.

Classical: Learning does not require punishment.

Operant: Punishment to make learning happen.

Passive: Learning involuntary response – classical.

Active: Learning voluntary response – operant.

Classical: Instantaneous response Dog salivating when a bell rings.

Operant: Reaction is controlled Study hard to get an A instead of F.

Topic 23: Behaviorists Paradigm of Learning

Uses in the classroom

Teacher perspective:

- Reward systems (reinforcement) to promote learning
- Positive reinforcement
- Have consequences for negative behavior
- Teachers models and students imitate

Student perspective:

- Motivated to learn because they can get a reward
- Wants to do well because others are receiving rewards
- Criticism and Strengths
- One – dimensional approach to understanding human behavior.
- Does not account for free will and internal influences such as moods, thoughts and feeling.
- Does not account for other types of learning, especially learning that occurs without the use of reinforcement and punishment.

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- Since behaviorism is based upon observable behaviors.
- It is easier to quantify and collect data and information when conducting research.

Topic 24 : Criticism and Strengths

One - dimensional approach to understanding the human behavior.

Does not account for free will and internal influences such as moods, thoughts and feelings.

Does not account for other types of learning, especially learning that occurs without the use of reinforcement and punishment.

Since behaviorism is based upon observable behaviors.

It is easier to quantify and collect data and information when conducting research,

Final thoughts

Not as dominant as was during the middle of the 20th century – stills remains an influential force.

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Lesson no 5

COGNITIVISM

Topic 25: Foundation of Cognitivism

- A theoretical framework for understanding the mind
- Explores mind from the perspective of process.
- A response to behaviorism- which cognitivists said neglected to explain cognition
- Behaviorists acknowledged the existence of thinking, but identified it as a behaviour.
- Cognitivist argues that the way people think impacts their behaviour and thus cannot be a behavior in and of itself.

Topic 26: Theoretical Approach

- Cognitive theories focus on the conceptualization of students' learning processes:

How information is:

- Received,
- Organized,
- Stored, and
- Retrieved by the mind

Cognitive theories are considered more appropriate for explaining complex forms of learning like reasoning, problem solving, information processing, etc.

- **Goal of Instruction:** to transfer knowledge to the students in the most efficient and effective manner possible.
- **Focus:** The design of environment to optimize that, transfer with efficient processing strategies.

Topic 27: Difference between Cognitivism & Behaviourism

Behaviourism: Observable behavior and the response of humans to environmental stimuli.

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Cognitivism: Human mind and its complex processes; such as thinking, problem solving, and memory (Schunk 2004/2007b)

Cognitivism: concerns with explaining higher mental processes; perception, information processing, language and knowing.

Cognitive Theories: research based more on humans than on animals.

Cognitivist theories are often based on an information processing model.

Cognitive processes: use existing knowledge and generate new knowledge.

Topic 28: Jean Piaget

- Jean Piaget is credited to have most profoundly affected the cognitive paradigm of knowledge.
- He investigated the hidden side of children's minds
- According to Piaget, our thinking processes change radically, though slowly, from birth to maturity because we constantly strive to make sense of the world.
- "How do we do this?"
- The most important influences on the way we make sense of the world is maturation.
- Maturation's main contribution to cognitive development is in neurological growth (and the development of the endocrine system)

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Lesson no 6

PIAGET'S STAGES OF DEVELOPMENT

Topic 29: Piaget's Stages of Development

There are three basic components to Cognitive Theory:

- **Schemas:** building blocks of knowledge
- **Adaptation processes:** enabling the transition from one stage to another
- **Stages of development**

Topic 30: Piaget's 4 Stages of Cognitive Development-1

Sensorimotor: Birth-2years old

- Identifies objective performance: The objective still exists when out of sight.
- Recognition of ability to control objects and acts intentionally.
- Deals with reality in terms of sensation and motor movements.

Topic 31: Piaget's 4 Stages of Cognitive Development-2

Preoperational: 2-7 years old

- Begins to use language
- Egocentric thinking: difficulty seeing things from other viewpoints
- Classifies objects by single features – example, color.
- Develops capability of symbolic thought- however thinking still quite different from adults.

Topic 32: Piaget's 4 Stages of Cognitive Development-3

Concrete Operational: 7-11 years old

- During middle childhood, the child has the ability to reason like an adult in every way…
- … except for reasoning about abstract concepts e.g. justice, infinity, or the meaning of life.
- Recognizes conservation of numbers mass and weight.

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- Classifies objects by several features and can place them in order

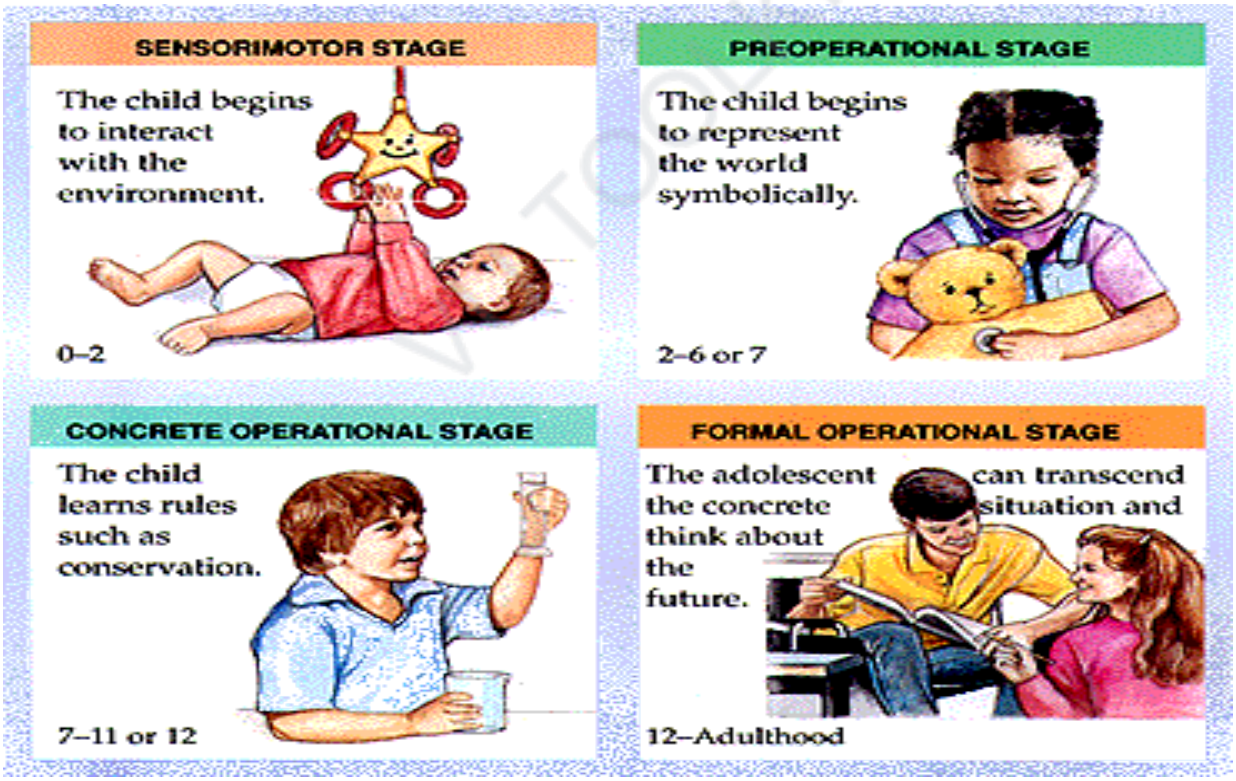
Topic 33: Piaget's 4 Stages of Cognitive Development-4

Formal Operational: 11 years and up

- By the end of childhood, most individuals have progressed to full adult cognition…
- … including the ability to reason using abstract concepts
- Concerned with the hypothetical and the future

Final Thought – Piaget

A child who had not completed certain developmental stages could not learn things from higher developmental stages.



Topic 34: Allan Paivio Dual Coding Theory

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He proposed that presenting information both visually and verbally enhances recognition and recall. We have two keys of processing information:

1. **Visual Channel**
2. **Verbal Channel**

- When both visual and verbal representations are used, people both process and remember the information more effectively.
- Paivio's work has implications in many areas including human factors, interface design as well as the development of educational materials.

Topic 35: Uses in classroom

Teacher's perspective:

- Plan curriculum based on what students already know and what they should learn
- Adjust instruction and assessment based on students' learning styles – use visuals
- Develop knowledge and skill from simple to complex (hierarchical learning)

Topic 36: Criticism of Piaget's Theory

- **Nature of Development:** Piaget's theory does not explain why development from stage to stage occurs.
- **Individual differences:** Theory ignores that some individuals move from stage to stage faster than others.
- **Nature of sages:** The functioning of a person at a given age may be so variable from domain to domain that it is not possible to place the person in a single stage.
- **Underestimating children's abilities:** According to many researches preschool children know much more about the concept of number than Piaget thought.
- **Cognitive development and culture:** One final criticism of Piaget's theory is that it overlooks the important effects of the child's cultural and social group.

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Lesson no 7

CONSTRUCTIVISM I

Topic 37: Introduction

What each person 'sees' depends more on what is already stored in that person's brain. A person constructs his/her own knowledge. That is- individuals construct knowledge for themselves – each learner individually constructs meaning – as he or she learns.

Topic 38: Core Idea

- People construct their own understanding and knowledge of the world, though experiencing things and reflecting on those experiences. Individuals "construct" meaning from the world around them.
- When we come upon something new, we join it with our previous ideas and experience.
- Either we change our old view or belief.
- Or discard the new information

Think about how you learn? When you hear, read, or see something new, does it help to talk about it and reflect on it to better understand the new information?

Topic 39: Evolution of Constructivism

- The concept of constructivism has roots in classical antiquity.
- Goes back to Socrates's dialogue – asked his followers directed questions that led students to realize for themselves the weaknesses in their thinking.
- Socrates claimed that basic conditions for learning exist in the cognition of the individual (Kanuka & Anderson, 1998)
- It was Piaget's theory of intellectual growth that had the primary influence on the development of current positions.
- Specifically, Piaget first emphasized the processes of conceptual change as interactions between existing cognitive structures and new experiences.

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- In recent times, John Dewey and Jean Piaget developed theories of childhood development and education (what we now call progressive education) that led to the evolution of constructivism.

Topic 40: Theoretical Framework – Social Constructivism

Two schools of thought fall within the Constructivist view:

- Social Constructivism
- Cognitive constructivism
- **Lev Vygotsky** discovered how meanings and understandings grow out of social encounters.
- **Zone of Proximal development:** children, working on their own rarely do as well, as when they work in collaboration with an adult.
- The process of engagement with the adult enables them to refine their thinking or their performance (the more knowledgeable other MKO)
- Social interaction precedes development.

Topic 41: Cognitive Constructivism

Jean Piaget discovered how the individual learner understands things, in terms of developmental stages and learning styles. There are two components:

1. **Ages and stages:** predicts what children can and cannot understand at different ages.
2. **Theory of development:** describes how learners develop cognitive abilities.

Theory of Development:

- Humans cannot be given information, which they immediately understand and use.
- Learners must construct their own knowledge, they build their knowledge through experience.
- Experiences enable them to create schemas – metal models of the world.
- These schemas are changed, enlarged, and made more sophisticated through two complementary processes: assimilation and accommodation.

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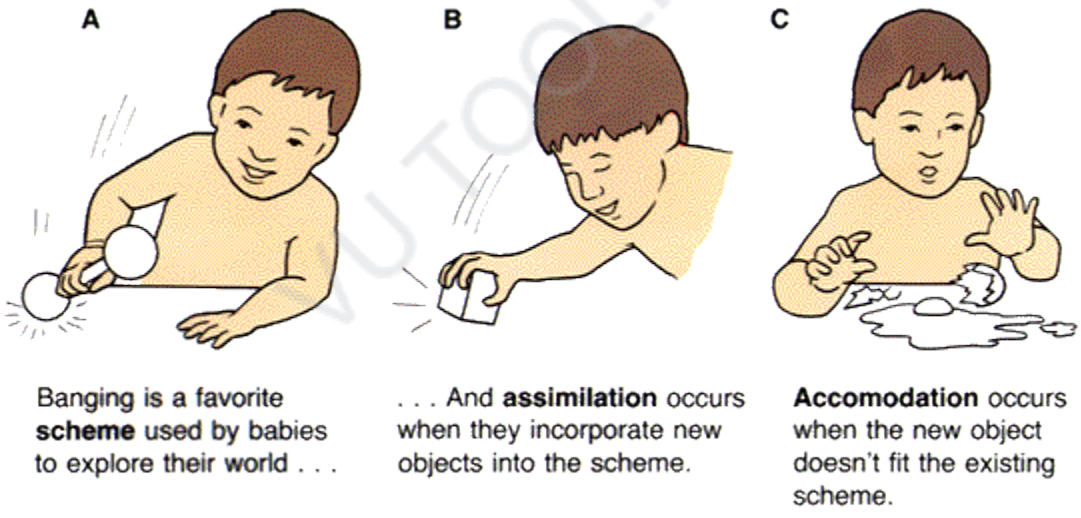
Topic 42: Assimilation and Accommodation

Assimilation:

- The individual cognitively adapts to and organizes information by using current, pre-existing schemas to interpret experiences and the external world.
- Ongoing process

Accommodation:

- Changes in behavior and thinking take place when new information no longer fits into old ways of understanding (the old schemas)
- Existing schemas change to accommodate new information or new schemas are created that contain the new information.
- Intellectual capacities become re-shaped and recognized as the child attempts to adjust.
- Thinking becomes more sophisticated.



Topic 43: John Dewey

John Dewey's Philosophy:

- Education starts with the needs and interests of the child.
- Employs project method or group learning.
- Depends heavily on experiential learning.

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- Ideas are not separate from social conditions.
- Children are active, organic begins… needing both freedom and responsibility.
- Allow the child to participate in planning her course of study.

Dewey's Role for Teacher:

- Not the authoritarian but the facilitator.
- Encourages, offers suggestions, questions and helps plan and implement courses of study.
- Has command of several disciplines.

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Lesson no 8

CONSTRUCTIVISM II

Topic 44: Maria Montessori

Children teach themselves:

This simple but profound truth inspired Montessori's lifelong pursuit of furthering the self-creating process of the child.

Environment:

- Child sized equipment
- Precise organization
- Individual work spaces for each child
- Loosely arranged into centers

Materials:

- Concept development
- Graduated difficulty/Complexity
- Self-correcting
- Sensory exploration

Teacher's role:

- Carefully prepare the environment
- Attitude of humility
- Respect for the child's individuality

Topic 45: Learning how to learn?

Constructivism helps student learn HOW TO LEARN

- Constructivist teachers pose questions and problems
- Then guide students to help them find their own answers.

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They may:

- Prompt students to formulate their own questions (inquiry)
- Allow multiple interpretations and expressions of learning (multiple intelligences)
- Encourage group work (Collaborative learning)

Topic 46: Classroom Implications-1

Learning is constructed:

- Students are not blank slates upon which knowledge is imprinted.
- They come to learning situations with already formulated knowledge, ideas, and constructs – the raw material for new knowledge they will create.

Learning is active:

- Student is the person who creates new understanding for him/herself.
- Teacher facilitates and allows the students room to experiment, ask questions, try things that do not work (fear of failure is not an obstacle)

Learning is reflective:

- Student control their own learning processes, and they lead the way by reflecting on their experiences.
- This process makes them experts of their own learning.

Topic 47: Classroom Implications-2

Learning is collaborative:

- Students learn about learning not only from themselves, but also from their peers.
- When students review and reflect on their learning together, they can pick up strategies from one another.

Learning is inquiry based:

- Main activity in constructivist classroom is solving problems

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- Students use inquiry methods to ask questions, investigate a topic, and use a variety of resources to find solutions and answers.

Learning is evolving:

- Students have ideas that they may later see were invalid, incorrect, or insufficient to explain new experiences.
- These ideas are temporary steps in the integration of knowledge.

Topic 48

Critical Perspective

- Time consuming
- Expensive
- Inefficient

Mix of other theories, no one clear theory too subjective

Learner must have a higher level of self-management/maturity of successful

Unpredictable outcomes

Encourages diversity of thought where conformity is required

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Lesson no 9

SOCIO CULTURAL THEORY

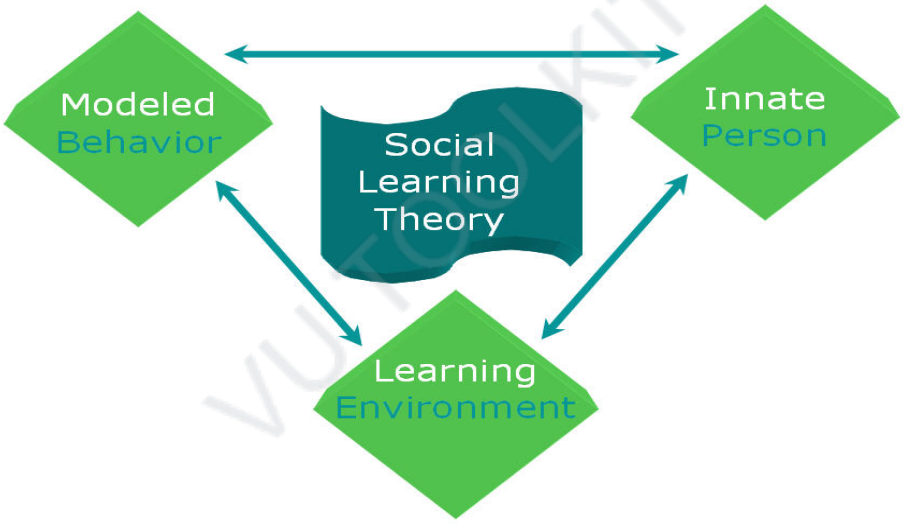
Topic 49: Foundation

- What separates humans from animals?
- What separates advanced societies from primitive societies?
- What separates advanced cognition from basic cognition?
- That is what makes us smart?

Vygotsky opens our eyes to the powerful role of culture and community in learning.

His theory presents the radical idea that our very thought and intelligence is really not our own.

It's the product of history and culture.



Foundation

a) cognitive development is limited to a certain range at any given age

b) full cognitive development requires social interaction

Topic 50: Learning as a Process of Enculturation Activity

Activity

Think about a group you were a part of in high school.

What were some of the defining qualities of this group?

1 What "look" did you need to have?

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2 How did you need to talk?

Individual and social constructivism

Individual

Individual construct meanings out of what they already know and through their interactions with the environment.

Social

Groups or cultures construct meanings together out of what the group or culture already knows and experiences.

Vygotsky's extension

- Individuals construct meaning through their interaction with others
- That is they internalize the meaning constructed by the group or culture as they become encultured.

Topic 51: Basic Concepts

- Cultures create mental tools which transform our mental work just like physical tools transform our physical work
- As we internalize these tools we became smarter
- Language is the mother of all mental tools
- We internalize these tools as we work in our zone of proximal development

Topic 52: Social Interaction for Cognitive Development 1

- Engagement between the teacher and students
- Physical space and arrangement in learning environment
- Meaningful instruction in small or whole groups
- Scaffolding/reciprocal teaching strategies

Lesson contention

- Create lessons that engage students' interest and give them a basis for language when socially interacting
- Use technology or hands on activity to further engage them in learning

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- Teaching in small groups individualized instruction meaningful and prompt feedback and better evaluation of students' feedback
- Whole class discussion allows vetting of ideas and surface misconceptions that can be addressed mid-project.

Topic 53: Social Interaction of Cognitive Development 2

- Teachers provide scaffolds so that the learner can accomplish certain tasks they would otherwise not be able to accomplish on their own
- The goal of the educator is for the student to become an independent learner and problem solver

Topic 54: Sociocultural vs Constructivism

- Both emerged as theories of knowledge in response to behaviorism
- Both are concerned with the activities that children engage in to learn

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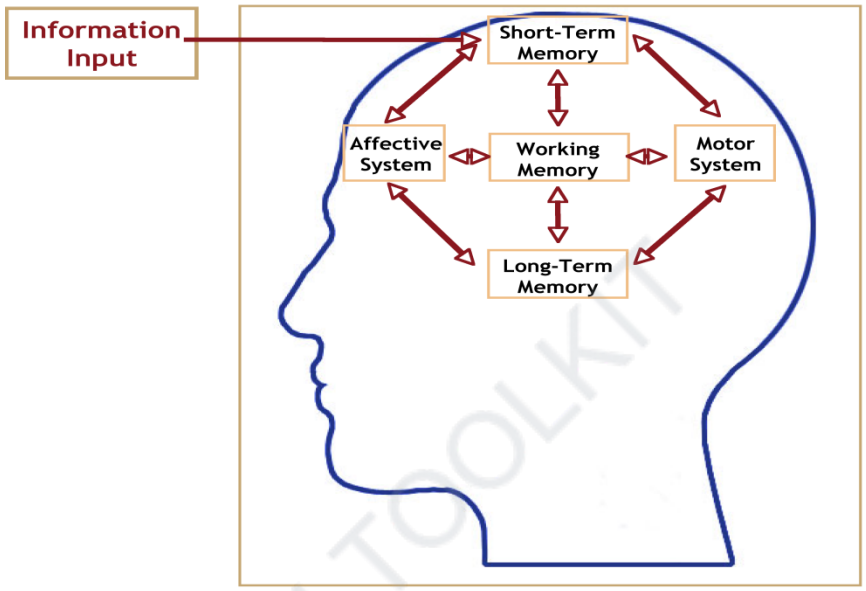
Lesson no 10

SCHEMA THEORY OF LEARNING

Topic 55: What is Schema?

"A cognitive framework or concept that helps organize and interpret information".

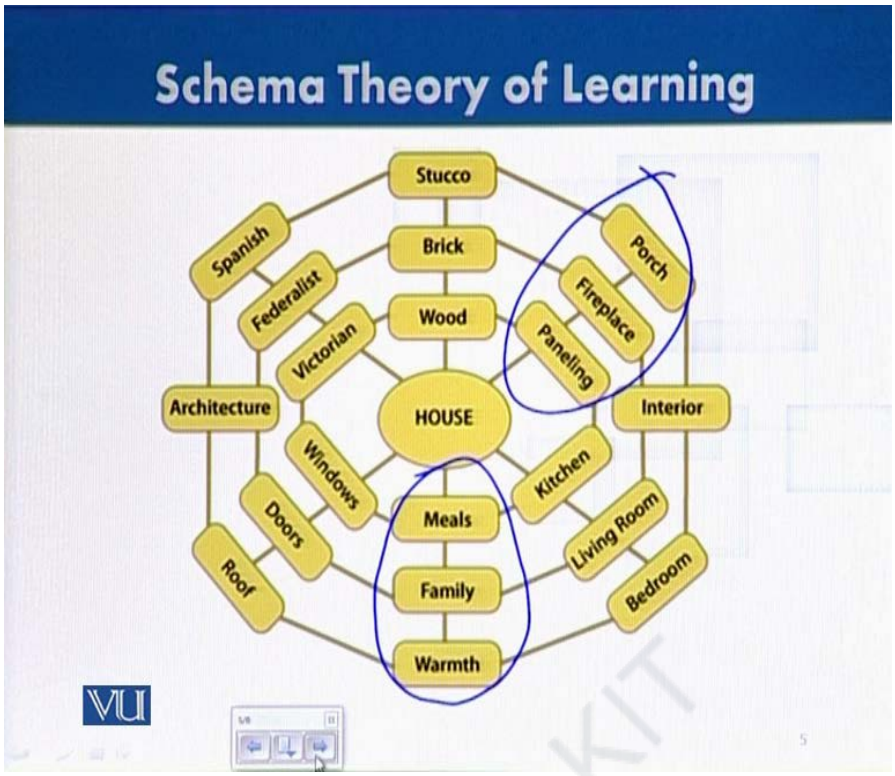
In the psychology of learning, schemas refer to how you develop what you know about a topic or concept and how you integrate new information



Topic 56: Schema Theory of Learning

- The starting assumption of this theory is that " very act of comprehension involves one's knowledge of the world"
- Knowledge is a network of mental frames or cognitive constructs called schema (pl. schemata) stored in the long term memory.
- All of our generic knowledge is embedded in schemata.
- Our schemata are our knowledge.
- The schemata a person already possesses are a principal determine of what new will be learned.

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Topic 57: Practical Meaning of Schema Theory 1

- Schema theory emphasizes importance of generic knowledge and concepts that will help form schemata.
- Due to the importance of prior knowledge, teachers should make sure that students have it before launching new.

Wrong question to ask

"What is it that the student does not know, and how can I get that into his head?

Right question to ask

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"What is it that the student does know, and how can I use that existing knowledge as a foundation to help the child deal with new concepts that he will encounter?

Topic 58: Practical Meaning of Schema Theory 2

Motor learning

Developing a motor schema has resulted in better performance in children when learning a motor task.

- Stuttering
- Fluency-shaping
- Down-syndrome
- Motor control
- Sports

Reading comprehension

- Schema theory is often used to assist second language learning.
- Failure to activate adequate schema when reading a text has resulted in bad comprehension.

Mathematical problem solving

Research showed that students taught to using schemata to solve mathematical problems formulated in words performed better than their peers who were taught to solve them in four steps.

Topic 59: Problems with Schemas

- Schemata also expand and change in time, due to acquisition of new information.
- But deeply installed schemata are inert and slow in changing.
- This could provide an explanation why some people live with incorrect beliefs rather than changing them.
- New information is either assimilated or related schemata will be changed (accommodation).

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Change is resisted.

- As such, sometimes an existing schema can actually hinder the learning of new information.
- **Prejudice** is one example of schema that prevents people from seeing the world as it really is and inhibits them from taking in new information.
- Existing schema may cause people to interpret situations incorrectly.
- When an event happens that challenges these existing beliefs, people may come up with alternative explanations that uphold and support their existing schema instead of adapting or changing their beliefs.

Topic 60: Criticism

- Explanations of structures of knowledge have been criticized for being rather unclear about what exactly can count as a schema and what does a schema include.
- The idea of schemata as more complex constructs of memory has also been questioned.
- Schemata as such are just networks of interacting simple (low-level) units activated at the same time.

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Lesson no 11

INFORMATION PROCESSING THEORY I

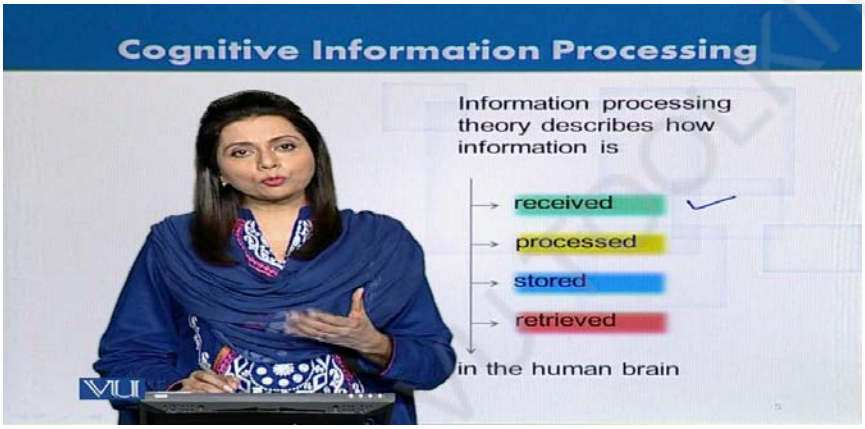
Topic 61: Introduction

Without looking at your watch, try to describe it:

- What color is the face of your watch?
- What marks the hours?
- What color are the hands?

Basic assumption of human information processing:

- Humans process the information they receive, rather than simply responding to stimuli.



Topic 62: Conceptual Framework 1

Thinking

The process of thinking includes the activities of:

- Perception of external stimuli.
- Encoding it, and
- Storing the perceived and encoded data in one's brain.

Analysis of stimuli

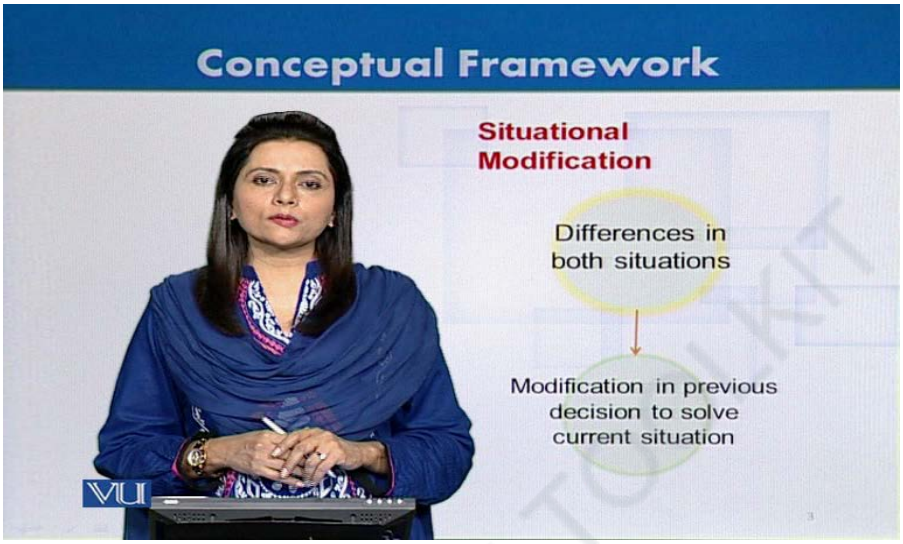
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- This is the process wherein the encoded stimuli are altered to suit the brain's cognition and interpretation process for decision making.

Topic 63: Conceptual Framework 2

Situational modification

This is the process by which an individual uses his experience, (stored memories) to handle a similar situation existing now.



Obstacle evaluation

While evaluating the subject's intellectual, problem solving and cognitive level:

- Individual's development level.
- Nature of obstacle or problem.

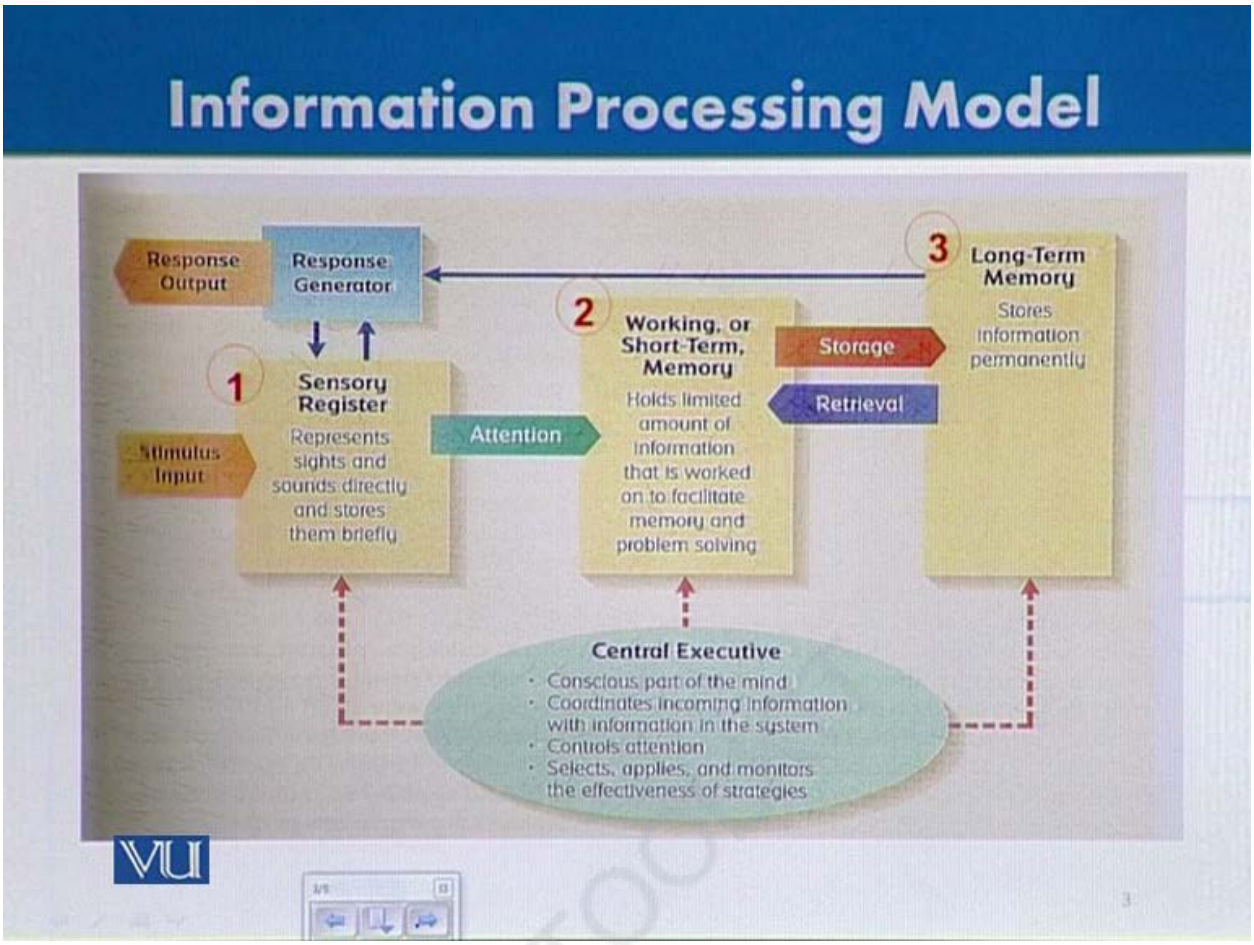
Topic 64: Information Processing Model

Structure:

Major components

1) Sensory register
2) Short-term memory (working memory)
3) Long term memory

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1. **Sensory Register**

- Each sensory system has its own sensory store, or sensory register, which receives and briefly holds all of the external and internal stimuli that it receives.
- The sensory register stores sensory information long enough for unconscious processes to analyze it to determine whether the input should be brought into working memory, or discarded.

Topic 65

2. **Short term/Working memory**

- It is the center of conscious thought (like the central processing unit CPU of a computer) where information from long-term memory and the environment is combined to help solve problems.

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3. Long term memory

- It is the stored representation of all that a person knows.
- Items stored in long term memory lie "asleep" until they are called back into the working memory and thus put to use.
- It has two components
- Explicit memory: information you have to consciously work to remember.
- Implicit memory: information remembered by you unconsciously and effortlessly.
- Can last as little as a few days or as long as decades.
- Subject to fading in the natural forgetting process.
- Maintenance rehearsal (several recalls/retrievals of memory) may be needed to preserve long term memories.

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Lesson no 12

INFORMATION PROCESSING THEEORY II

Topic 67: Ways to Organize Information

The Central Executive

- The most important component
- Responsible for monitoring and coordinating the operation of the sub-systems and relating them to Long term memory (LTM).
- For example, two activities sometimes come into conflict such as driving a car and talking. Rather than hitting a cyclist who is wobbling all over the road, it is preferable to stop talking and concentrate on driving.
- The central executive directs attention and gives priority to particular activities.

Topic 68: The Role of Attention

- The process by which people select some of the environmental input they receive for further cognitive processing.

Factors influencing attention

- Size
- Intensity
- Novelty
- Incongruity
- Emotion
- Personal significance
- Competition between similar tasks

Topic 69: Getting to the LTM

- There are two ways to move short term memory to long term memory.
- Rote learning and learning through understanding.

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Rote Learning

- Learning through repetition.
- Mechanical and requires little understanding (e.g. learning multiplication tables)

Learning through Understanding

- Learning and remembering by understanding the relationships among ideas and information.
- Both types of learning and memory are useful and often are used together.

Topic 70: The Keys to Remembering

Choose to remember:

- Be interested
- Pay attention
- Want to learn and know
- What you want is an important part of learning.

Visualize in your mind what you wish to remember:

- For each major concept that you want to remember, create a mental picture and then look at it carefully for a few seconds.

Repeat what you wish to learn until you overlearn it:

- Say it in your own words. Even though you have already learned something, go over it one more time.

Topic 71: Reasons Why We Forget-1

Fading

- A memory trace is created every time a new theory is formed.
- These memory traces begin to fade and disappear as time passes.

Remembering

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- Remembering what you have heard in lectures is even more difficult to recall because you are not able to slow down, pause, reflect or to reread unless you take excellent notes.
- In a study on recall after listening to a seminar, students forgot more than 90% of the points from the lecture after 14 days!

The conclusions to be made from these studies?

- Without review, most information will be lost from memory.
- The best time to review materials is within a day or two after the material has been read or presented in lecture.

Topic 72: Reasons Why We Forget-2

Retrieval

- Sometimes a forgotten fact has not faded but misplaced in the "file cabinet" of your mind – and lost because it is forgotten.

Interferences

- As you keep adding new information, a conflict develops between the old and new information over the space available.

Interactive interferences

- When you are learning a great deal of information at one time, you tend to remember best what is read or presented first and last. The rest gets lost in the shuffle.

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Lesson no 13

SITUATED COGNITION I

Topic 73: Situated Cognition

Situated cognition is a theory that posits that knowing is inseparable from doing by arguing that all knowledge is situated in activity bound to social, cultural and physical contexts

Topic 74: Basic Idea and Perspective

Theory

- Knowing is attached to doing.
- Argument
- All knowledge is situated in activity that occurs in its social, cultural and physical context.
- This model of knowledge and learning requires …… thinking on the fly …… rather than the storage and retrieval of conceptual knowledge.

The theory ….

- Emphasis perception.
- And proposes that memory plays a significantly diminished role in the learning process.

Topic 75: Background

Background: By the 1970s……

- Growing dissatisfaction among the school graduates' inability to transfer skills learned in school to the workplace e.g. Math.
- Some attempts were made to connect the syllabus with the real world.
- **Problems of determining the real context.**

Topic 76: Development

Development: Allan Collins 1988

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Defines situated learning as:

- The notion of learning knowledge and skills in contexts that reflect the way they will be used in the real life.
- This concept encourages educators to place their students in an environment that is as similar as possible to the context in which their learning will actually be used.



Topic 77: Situated Cognition Theory

- Situated Cognition produce knowledge through activity.
- Knowledge is a product of
  - Activity
  - Context
  - Culture

Community of Practice

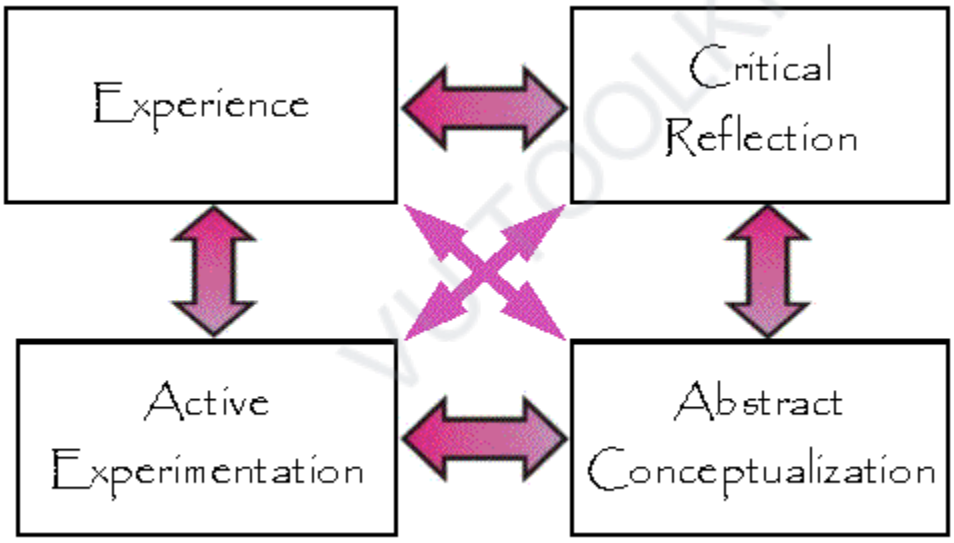
- **Embedded learning in activity.**
- **Use a social and physical context**
- **Learning is:**

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- Demand driven
- A social act
- Creates individual identity formation

Community and Apprentice

- **Learners perceive**
- Implicit knowledge
- Explicit knowledge
- **By observing experts**
- Educational
- Workplace
- Environment



Topic 78: Traditional Education vs Situated Cognition

Brown Collins and Duguid say……

Traditional education

- Separation between “knowledge” and “doing”.
- Knowledge treated as integral, theoretically independent and self sufficient.

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Knowledge Situated and Evolving through Activity.

Situated Learning Environments

Four concepts:

- Context (environment, setting)
- Content (concepts, activities, situations)
- Facilitation (internalize, information)
- Assessment (cognitive growth)

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Lesson no 14

SITUATED COGNITION II

Topic 79: Learning Communities and Instructor's Role

Learning communities

Build upon:

- Situatedness
  Embedded learning in rich social situations (context)
- Commonality
  Create a sense of enculturation and identity
- Interdependency
  Share expertise and perspective
- Infrastructure
  Mechanism for accountability through structure.

Motivation

- The situative view emphasizes how people's identities are formed by their participation in a group.
- According to this way of thinking, students can be motivated to learn by participating in communities where learning is valued.

Instructor's role

- Move away from providing and structuring information.
- Focus on modeling, coaching and scaffolding.
- Create knowledge to solve contextual real-life problems.

Topic 80: Classroom Implications

- Knowledge is not an object and memory is not a location; knowledge is socially-constructed.

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- Knowledge is thus located in the actions of people and groups of people; it evolves naturally as a result of individuals participating in and negotiating their way through new situations.
- Mediation artifacts: cultural models are not held by individuals but live in the practices of a community and how people engage with each other, as well as any tools they use and the specific cultural context.
- As situations shape individual cognition, individual thinking and action shape the situation.
- The reciprocal influence signifies concept of systematic causality in place of more commonly assumed liner causality. (Wilson and Myers, 2000)

Topic 81: Situated Cognition in Education

- Knowing how to participate in social practices has a large role in schools.
- Much of students' identities are formed by the groups they participate in at school, e.g. sports, debates, journalism, music.
- A push for "authentic learning" where students learn content matter that is situated in areal world context.
- Students are encouraged to think and work like scientists, historians, mathematicians, etc.

Topic 82: Phenomenon Explained by the Theory

There is a mismatch between the learning situation in school and the real world situations.

- Learning is conceived as increasing participation in communities of practices.
- Learning is a co-constitutive process in which all participants change and are transformed through their actions and relations.

There is a failure of knowledge to transfer.

- Knowledge accrues through the lived practices of the people in the society.
- Knowledge remains inert and unused if taught in contexts that separate knowing from doing.

Training by abstraction is of little use.

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- Learning involves social participation.
- Hence, cognition takes place within the world and not in minds.

Learning is inherently a social phenomena.

- Cognition is a matter of sign activity.
- Or semiosis i.e. the continuously dynamic and productive activity of signs.

Topic 83: Benefits of Situated Cognition for Students

1. Students learn about the cognitions for applying knowledge.
2. Students are more likely to engage in invention and problem solving.
3. Students can see the implications of knowledge.
4. Students are supported in structuring knowledge in ways appropriate for later use.

Topic 84: Critiques of Situated Cognition

- While the theory takes into account the social, the individual tends to be ignored.
- Transfer is problematic since knowledge does not transfer between the tasks.
- The theory can not account for learning through abstraction or generalization (most school learning).

Theory's claim: Knowledge can not be separated from the context of its use.

- But this is a demonstration that skills practiced out side of schools do not generalize to schools.

Theory's claim: Transfer is difficult since knowledge does not transfer between the tasks.

- Objection: The psychological literature contains both success and failures to achieve transfer.

Theory's claim: Training in abstraction is of little use.

- Objection: research in psychology shows training is often more effective when nearly independent parts are practiced first, before combining them.

Theory's claim: Training in abstraction is of little use.

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- In team sports and orchestras, more time is spent on individual practice than group practice, although both are necessary.

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Lesson no 15

MASLOW'S NEED HIERARCHY I

Topic 85: Humanistic Learning Theory

Introduction

Humanistic approach:

- The approach emphasizes individual's natural motivation towards creativity and self actualization.

Self actualization

- According to humanistic psychologists, we are motivated not merely to survive, but to become better and better.
- This process is called self actualization.
- Personal growth and fulfillment moving towards bigger goal.

According to Huitt (2001) people act with intentionality and values.

This is in contrast with……

- Behaviorists view of "Operant Conditioning" which argues that all behavior is the result of the application of consequences.

And…..

- Cognitive belief that constructing meaning or discovering, knowledge is central to learning.

The fundamental humanistic beliefs:

- That people are naturally good.
- That mental and social problems result from deviations from this natural tendency.
- And that people have the ability to shape their own destiny, and this is not driven by biological instinctive influences.

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- Humanistic focus on human freedom, dignity and potential.

Topic 86: Origins

- Humanistic education has its roots in Renaissance philosophers (period roughly between 1350 and 1650) who emphasized the study of the humanities (academic disciplines that study human culture)
- These in turn became the basis for Classical models of Education.
- According to George Makdisi, certain aspects of Renaissance humanism are rooted in medieval Islamic world.
- A wide range of Islamic writings on poetry, history and philosophical theology show that medieval Islamic thought was open to the Humanistic ideas of "Individualism and Liberalism".

Humanistic approach became popular during 1950s and 1960 after the WWII and the cold war.

- During this time period, psychologists were seeking a more optimistic and nurturing approach in response to the stresses that came with the war.
- Carl Rogers and Abraham Maslow are most closely associated with the Humanistic psychology of learning.

Topic 87: Abraham Maslow (1908-1970)

- Considered to be the founder of Humanistic psychology.
- Developed the Hierarchy of Needs, theory that remains valid for understanding human motivation, training and personal development.
- The hierarchy of needs illustrate his theory that people's behaviors are guided by a sequence of needs.
- Maslow argued that humans possess unique qualities that enable them to make independent choices, thus giving them control of their destiny.

Maslow's need hierarchy theory:

- People have hierarchy of increasingly higher level needs.

Prepotency Process Principle

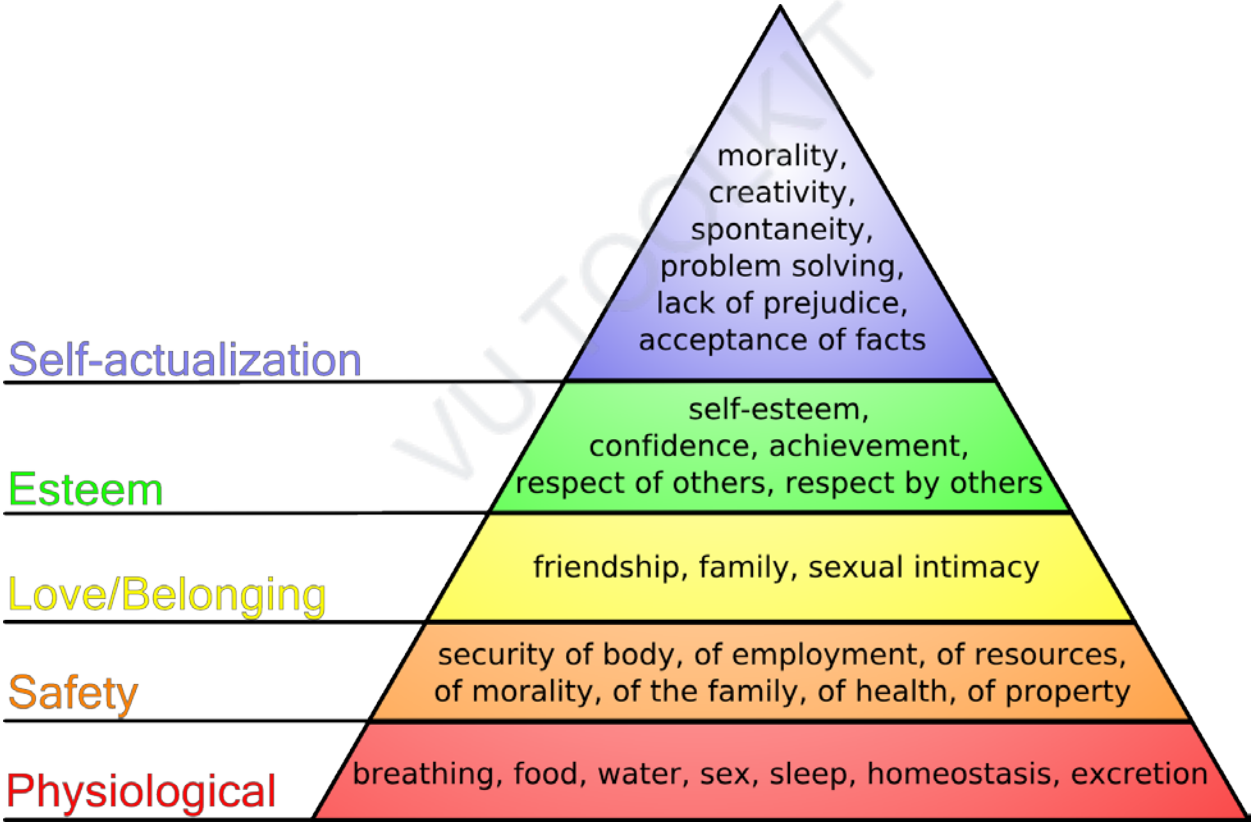
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- People are motivated first to satisfy the lower-order needs and then, in sequence, each of the higher order needs.
- Maslow believed that self actualization (reaching your full potential) was the ultimate psychological need.

Topic 88: Maslow's Hierarchy of Needs

1. Physiological needs
2. Safety needs
3. Affiliation and affection
4. Esteem needs
5. Self actualization



Physiological Needs

- These includes the most basic needs that are vital to survival such as the need for water, air, food and sleep.

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Topic 89: Safety, Affection and Esteem Needs

Safety needs

- Much like physiological needs require maintenance throughout life, so does the need to feel secure. This need is more psychological.
- These includes needs for safety and security, e.g. a desire for steady employment , health insurance, safe neighborhoods and shelter from the environment.

Affection needs

- When physiological needs and safety needs are, by and large, taken care of a third layer starts to show up.
- You begin to feel the needs of friends, husband/wife, children, affectionate relationships in general, even a sense of community.

Esteem needs

- After the first three needs have been satisfied, esteem needs becomes increasingly important.
- These include the need for things that reflect on self esteem, personal worth, social recognition and accomplishment.

Topic 90: Self Actualization

"What a man can be he must be"

This is the highest level of Maslow's hierarchy of needs.

People are:

- Self aware
- Concerned with personal growth
- Less concerned with the opinions of others
- And interested in fulfilling their potentials

Characteristics of self actualized people:

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- Acceptance and realism
- Problem centering
- Spontaneity
- Continued freshness of appreciation
- Peak experience
- The journey toward achieving a goal is just as important and enjoyable as actually accomplishing the goal.

Topic 91: Maslow's Hierarchy Applied to Education

Physiological

- Lunch time
- Correct room temperatures
- Breaks
- Sports

Safety and security

- Well planned lessons, carried out in an orderly fashion
- Controlled classroom behavior
- Emergency procedures well planned, discussed and practiced.

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Lesson no 16

MASLOW'S NEED HIERARCHY II

Topic 92: Affiliation and Affection

Teacher-students relationship:

- Provide positive comments and feedback rather than negative.
- Teacher personality: empathetic, considerate and interested in the individual, patient, fair, positive attitude, good listener.
- Use one-on-one instruction.
- Get to know students (like, dislikes, concern)
- Be available for students in need.
- Listen to student.

Topic 93: Self esteem

- Develop new knowledge based on background knowledge so as to help to ensure success
- Pace instruction to fit individual need
- Focus on strengths and assets

Respect from others

- Develop a classroom environment where students are positive and nonjudgmental.
- Develop and carry out a curriculum to encourage children to be emphatic and good listeners.
- Employ cooperative learning in such a way as to develop trust between group members.
- Involve students in activities of importance and worthiness.
- For instance, cleaning up the environment, carrying out a clothes drive for the needy.

Topic 94: Hierarchy and Knowledge

1. Physiological
2. Safety and security
3. Belongingness and affiliation

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4. Esteem
5. Cognitive (1998)
6. Aesthetic
7. Self actualization
8. Self transcendence

- Allow students time to explore areas of curiosity.
- Provide lessons that are intellectually challenging.
- Plan lessons that connect areas of learning and have students compare and contrast to search for relationships
- Use a discovery approach to learning whenever possible

Topic 95: Aesthetic

- Organize classroom materials in a neat and appealing way
- Display student art work in an pleasing manner
- Put up interesting and colorful wall hangings
- Replace overly worn classroom material periodically
- Well maintained physical surroundings (e.g., keeping walls painted, desks clean and repaired etc.)
- Create varied appealing and interesting learning centers
- Rooms painted in pleasing colors
- Large window areas
- Clean rooms
- Fresh smelling rooms

Topic 96: Self Actualization

- Expect students to do their best
- Give students freedom to explore and discover on their own
- Make learning meaningful—connect to “real” life
- Plan lessons involving activities
- Get students involved in self-expressive projects
- Allow students to be involved in creative activities and projects

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Lesson no 17

LEARNING STYLES I

Topic 97: Introduction

Have you ever wondered?

1. Why did you have difficulty learning from a particular teacher, whereas another seems to explain things in just the right way?
2. Did you ever questions why the course that your friend said was so easy turned into a struggle for you?

- It is based on our natural learning gifts, bents and strengths.
- It is our own individual way of inputting, processing, concentrating, remembering, understanding. Storing and processing information.
- Simply students can learn in lots of different ways known as “learning styles”.

Topic 98: Growth of Learning Styles Theory 1

- In the beginning research focused on the relationship between the memory and oral or visual methods.
- In 1904 the first intelligence test was developed – generated interest in individual differences.
- The study of learning styles was next: Dr. Maria Montessori (1907), began using materials to enhance the learning styles of the students.
- Bloom’s taxonomy (1956) took another step toward defining the learning style differences
- In 1984, David Kolb published his learning style model, where he determined that learning styles are closely related to cognitive skills.
- Learning styles in education recommend that teachers assess the learning styles of their students and adapt their classroom methods to best fit each student’s learning style.

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Topic 99: Growth of Learning Style Theory 2

Various theories on learning have been developed with increasing frequency in the last few decades:

Personality learning theories:

- Influence of basic personality on learning extraovert vs. introvert.

Information processing theories

- Individual's preferred intellectual approach to assimilating information.

Social learning theories

- Determine how students interact in the classroom.

Multidimensional and instructional theories

- Students' environmental preference for learning.

Topic 100: Basic concepts of Learning Styles

- Core concept: individual differ in how they learn.
- Assessment of learning styles typically ask people to evaluate what sort of information presentation they prefer (e.g., words versus pictures versus speech)
- And what kind of mental activity they find most engaging or agreeable (e.g. analysis versus listening)
- Instruction is best provided in a format that matches the preferences of the learner (e.g. for a "visual learner" emphasizing visual presentation of information)
- Students learning styles can change and develop and do not necessarily stay the same.
- It is possible to test children to determine their preferences

Topic 101: Importance of Learning Styles

a) Maximize success within the classroom by understanding that various learning styles and preferences exist and vary among students.

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b) In corporate activities that will maximize students preference. This will make learning more enjoyable, also faster and easier for students to learn the material.

c) Creation of diverse lesson plans help:
   Students to be comfortable in an optimal learning environment
   Students to grow and develop beyond their learning preferences

d) Motivates the pupils and increases the teaching.

e) Stimulates the learner's learning process

f) Eases the teaching process with different aids and provides each lesson with the proper tool.

Topic 102: Learning Preferences

Learners prefer different types of input and experiences such as:

a) Some prefer structure:
   They interact with the outside world when taking in information
   They tend to like things decided and organized

b) Others like flexibility:
   They interact with the outside world when making decisions
   They like to understand and adapt to the world rather than organize it.

c) Some prefer independence while others like a social or group learning environment.
   Distance education students – independent learning environment
   On-campus students – working with others

d) Some prefer auditory (hearing) input, others visual (seeing) and still others like kinesthetic (movements) input

Although we have inherent preferences we will learn in most every environment.

But learning is more pleasant and lasting when our individual preferences are targeted.

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Lesson no 18

LEARNING STYLES II

Topic 103: Information Processing

1) The first factor involved in learning styles is information processing.

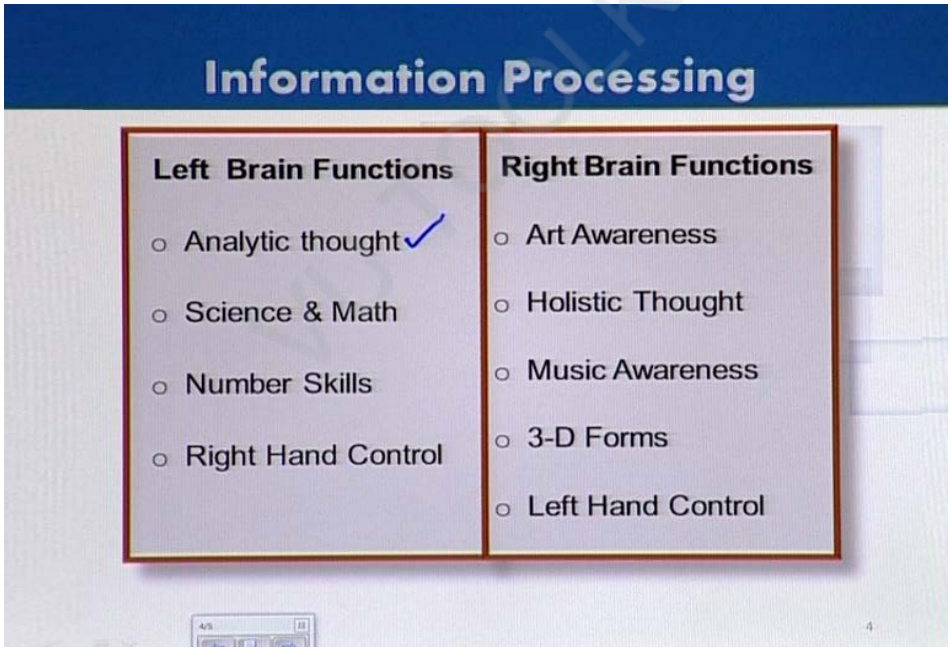
   Information processing styles refer to the way in which the child concentrates, absorbs and retains information.

   There are two information styles

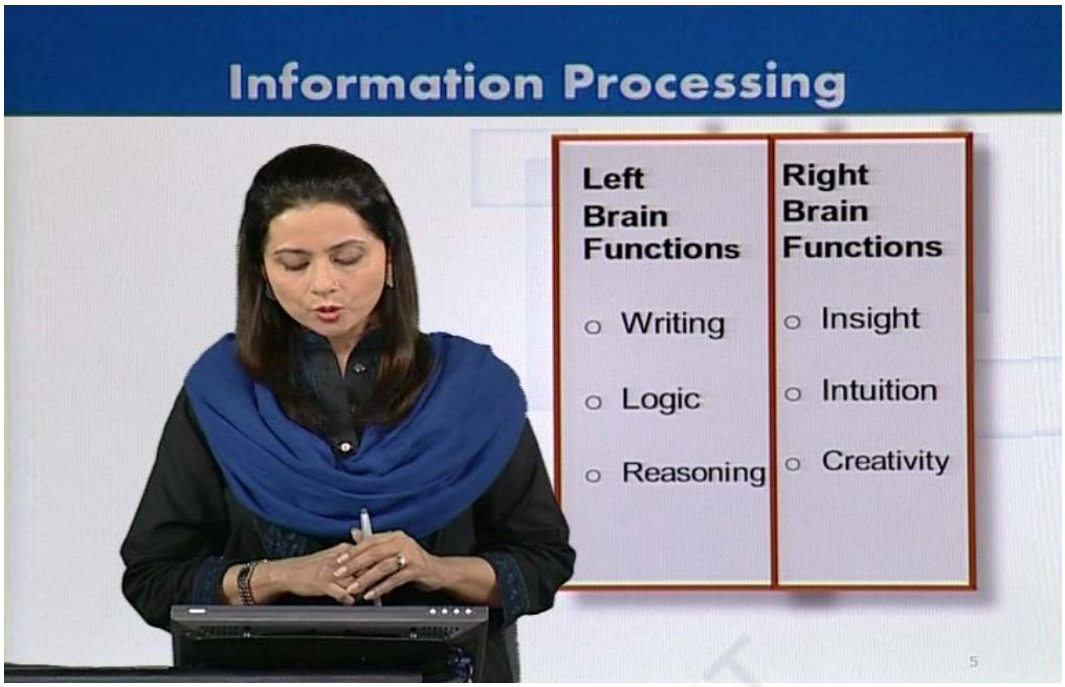
   a) Analytic – prefer details

   b) Global – prefer the big picture

      Sometimes also called right-brain and left-brain.



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Topic 104: Analytic and Global Learners

Analytic and Global Learning Theory

This theory describes the order in which a learner prefers to process information received

- By looking at the whole then breaking it down into individual parts
- Or by looking at each individual part and then combining it into a whole

Analytic learners prefer details:

- Step by step approaches, fact by fact modes
- Focused approaches, consistency
- As well as logical, objective and organized presentation of facts.

Global learners prefer seeing the broad view (the big picture):

- Using intuition
- Seeing the interrelationship between things
- Doing group activities

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- Completing multiple tasks

Topic 105: Concrete and Abstract learners

The second learning style model concerns itself with the perceptual processes of knowing or cognitive abilities.

It describes the way in which we view our environment.

The two perceptual patterns are:

- Concrete
- Abstract

Concrete Learners:

Like to learn through their physical sense,

- What they can touch, see, hear, taste and smell.
- They like to deal with things that exists in the physical world.

Abstract learners:

Prefer the world of ideas and feelings.

- Abstract learners use intuitions and imaginations.

Topic 106: Sequential and Random Learners

Cognitive abilities include ordering learning styles.

- Ordering is understanding, using and storing new information in accomplishing a goal or task.

Two types of ordering styles are:

Sequential learners organize information in a step by step manner – like logical and linear thinking.

Random learners are spontaneous.

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Sequential

Like clockwork, a process followed step by step, over a period of time.

Random

Like a stopwatch, starting and stopping at will, subject to what is important at the moment.

Topic 107; Learning through Perception

The next learning factor is perceptual ability.

It is the ability to be able to deal with and give meaning to sensory stimuli.

Perception – a process that involves sensing various aspects of a person, task or event and forming impressions based on selected inputs.

Three basic stages:

- Sensing characteristics
- Selecting facts
- Organizing into useful concepts

Often the way we perceive reality is colored by how we want it rather than simply the way it is.

What people perceive is usually what they believe and this is based on what they hear, see and think.

Topic 108: Perception and Reality

That was quite fast!!!

Can anyone do it faster!!!

Now look at the list on the again and say the word, not the color as fast as you can!!!

Why did the second reading of the colors take longer?

The right side of the brain tries to say the color but the left side of the brain insists on readin the word.

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Lesson no 19

FLEMING VAK VARK MODEL

Topic 109: Fleming's VAK VARK Model 1

- Perceptual strength relates to auditory, visual, tactual or kinesthetic learning.
- Fleming (1987) developed a list of perceptual factors designed to help students learn more about their individual learning preferences.
- Neil Fleming's VARK model is one of the most popular representations.
- Identifies 4 learning preferences:
  1. Visual
  2. Auditory
  3. Read/write
  4. Kinesthetic

Visual

Seeing: pictures, flow charts, diagrams, graphs, symbols, body language.

Likes information to be presented as charts, graphs and flow charts.

About 60% of people are visual learners.

Topic 110: Fleming's VAK VARK Model 2

Auditory

Listening/speaking: spoken words, stories, recordings, repetition, discussion, lectures, tutorials

Likes information to be presented in "Spoken word", i.e. that is "heard".

About 30% of people are auditory learners.

Read/write

Reading/writing: text, prose, essays, reports, printed words, newspapers

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Likes to read about new information in all the various forms, lecture, notes, books, articles, web pages etc.

Kinesthetic

Move/doing: smells, tastes, case studies, multisensory experiences, role-play, lab sessions.

Learners best by doing the tasks – stimulated o0r real

About 10% of the general population are kinesthetic learners.

Topic 111: Learning Styles

Advantages and Disadvantages

The visual style

Advantage: makes recollection easier when in an environment which is different from where you had learned the information.

Disadvantage: the difficulty when only texts and speeches are available for learning, without any visual aids.

The auditory style

Advantage: you assimilate and retain information without having to see it in texts or pictures.

Disadvantages: difficulty of learning among silently reading learners – for example, in a liberary.

The read/write style

Advantage: makes pupil more self dependent because they can learn much by themselves.

Disadvantage: not being able to learn easily where the only medium of instruction is visual or audio; or lack of access to writing materials.

The kinesthetic style

Advantage: of exposing learners faster to practice and evidence: you practice and practice what you learn

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Disadvantage: where there are no places to move to for such live experience and nobody to interact with.

Topic 112; Benefits of Knowing your LS

It is beneficial to find out:

The learning style that suits you

To know what kind of learner you are

Some of these benefits include:

Academic advantages

- Maximize your learning potential
- Succeed on all educational levels
- Understand how to best study and score better on exams and tests

Personal advantages

- Improve your self confidence and self esteem
- Learn how to best use your brain
- Gain insight into your own strengths as well as weaknesses
- Learn how to enjoy learning more

Student benefits

- Know how they learn and make smarter choices
- Target areas that need improvement

Educator benefits

- Develop better lesson plans
- Give all students an equal opportunity to succeed

Topic 113: What is your learning style?

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Topic 114: Critique

- Those who oppose the use of learning styles put forward a number of objections.
- Many of these are in fact criticisms of the way that learning styles are misused rather than a criticism of the concept itself
- It is argued that using learning styles could be detrimental because:
  Should not be used as mere labels
  Rather it should appreciate full range of factors
- Teachers should not focus exclusively on one style
- Interconnectivity should be appreciated
- Children may be discouraged from trying activities that do not fit with their own preference
- Teachers may think a child's preferred style is as unchangeable, forgetting that they are just acquired habits.

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Lecture no 20

KOLB MODEL

Topic 115: Kolb's Learning Cycle

Introduction

"Learning is the process whereby knowledge is created through the transformation of experience"

(David A. Kolb 1984, 38)

- Kolb's (1984) theory sets out four distinct learning styles (or preferences) which are based on a four stage learning cycle.
- Kolb's model offers both a way to understand individual learning styles, and also an explanation of a cycle of experiential learning.
- Kolb proposed that an individual learner moves through a spiral of immediate experience which leads to observations and reflections on the experience
- These reflections are then absorbed and linked with previous knowledge and translated into abstract concepts or theories
- Which results in new ways and actions to adjust to the experience that can be tested and explored

Topic 117: Reflective Observation

- In this stage of the learning cycle, people understand ideas and situations from different points of view.
- In a learning situation the learner would rely on patience, objectivity and careful judgment but would not necessarily take any action.
- The learners would rely on their own thoughts and feelings in forming opinions.
- In the example, after finishing tutorial, the students reflects on what they did, makes observations and discusses how they went with their teacher.

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Topic 118: Abstract Conceptualization

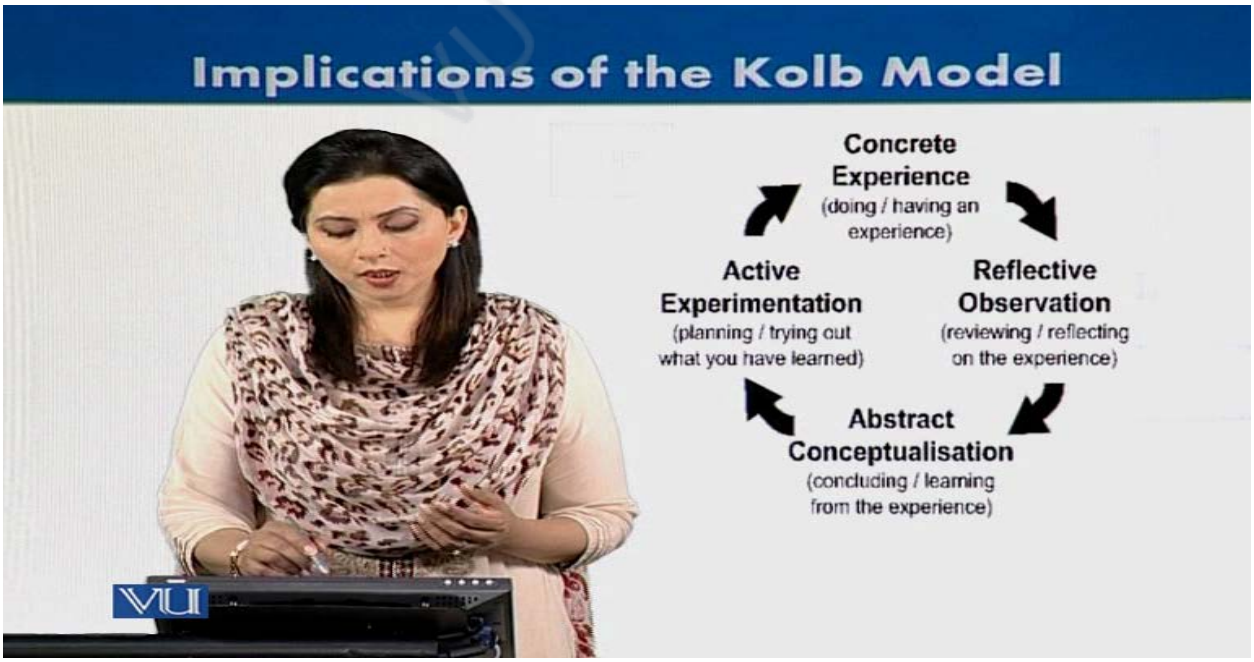
- In this stage, learning involves using theories, logic and ideas rather than feelings, to understand problems or situations.
- Typically, the learner relies on systematic planning and develops theories and ideas to solve problems
- In the example, the student then thinks about the tutorial process and their performance and tries to make links between previous experience of learning.

Topic 119: Active Experimentation

- Learning in this stage takes an active form – experimenting with changing situations.
- The learner would take a practical approach and be concerned with what really works, as opposed to simply watching a situation.
- In the example the student considers ways to improve, and tries out methods and strategies based on the previous stages of the cycle.

Topic 120

Implications of Kolb Model



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- The cycle can be entered at any point but all stages must be followed in sequence for successful learning to take place
- The learning cycle suggests that it is not sufficient to have an experience in order to learn.
- It is necessary to reflect on the experience to make generalizations and formulate concepts.
- Which can then be applied to new situations.
- This learning must then be tested out in new situation.
- The learner must make the link between the theory and action by planning, acting out, reflecting and relating it back to the theory.

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Lesson no 21

KOLB LEARNING STYLES

Topic 121: Collaborative and Cooperative learning

Introduction

Teaching vs Learning

John Amos Comenius, a 16th Century scholars; summarized the approach that teaching should follow, “the main object is to find a method by which teachers teach less but learners learn more”, proving that current problems have noble pedigrees.

Definition

An instruction method in which learners work in groups towards a common academic goal.

“collaborative learning is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together”.

(Smith and McGregor: 1992)

Topic 122: Kolb’s Learning Styles

Explanation of Learning Styles

- Kolb said that learning is a combination of:
- How we approach a task and how we respond to and assimilate the experience.

In approaching a task (processing) we have a preference for

- either doing
- or watching

In responding to the experience we have a preference for

- either feeling
- or thinking

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The combination of these preferences creates four main learning styles

For example, a person with a dominant learning style of “doing” rather than watching the task and “feeling” rather than “thinking” about the experience will have a learning style which combines these processes, namely an “accommodating” learning style in Kolb’s terminology.

Topic 123: Learning Styles Continuum

Knowing your and your student’s learning style enables learning to be positioned with the preferred method.

Experience can be tailored to best fit with the given situation and a student’s learning style preference.

Topic 124: Characteristics of Learning Styles

Accommodator-CE/AE (feeling and doing)

- Is a hands-on learner
- Likes to take new challenges
- Is a team worker relies more on intuition than logic
- Is target oriented depends on others for problem solving

Diverger-CE/RO

- Likes to watch more than do
- Is sensitive, emotional and creative
- Prefers group work
- Uses own imagination for problem solving
- Shows open mind and accepts personal feedback

Assimilator-AC/RO

(thinking and watching)

- A thinker; needs time to think
- Prefers a to the point, logical approach to learning

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- Likes to have clear explanation instead of practical opportunity
- Creates abstract ideas and theories

Converge-AC/AE

(thinking and doing)

- Technical minded, likes technical tasks
- Likes experimentation, test new ideas
- Applies learning to find solutions to practical situations

Topic 125: Argument for Learning Styles

- People with a distinct learning style preferences will be likely to achieve more success in their learning when the process of learning is tuned with their preference.
- **For example** assimilators without their notes and clear instructions will be very uncomfortable in such a learning situation.
- Accommodators will be easily frustrated if they are made to read a lot of instruction and rules and are not allowed to get hands-on experience as soon as possible.
- **For example** differences in learning styles of teachers and their students can also lead to development of tension between them.

Topic 126: Argument Against Learning Styles

- Process of reflection: not adequate
- Claims about the four learning styles: exaggerated
- Cultural conditions/experiences: not addressed adequately
- The idea of stages: does not match reality empirical evidence: weak
- Learning styles theories: largely unproven methodologies counter-productive in same cases of questionable benefits
- Recognizing that students have different preferred learning styles, the fact needs to be built in to the design of learning activities and assessment

Conclusion

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Kolb's learning cycle provides a useful framework for designing effective active learning experiences

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Lesson no 22

DISCOVERY LEARNING

Topic 127: Eureka Effect

- Hiero II asked Archimedes to find a method for determining whether a crown was pure gold or mixed with silver.
- While taking a bath in bath tub he realized that a given weight of silver would displace more water than an equal weight of gold.
- At this point the shouted, "EUREKA" (I have found it!)
- Discovery learning is based on this "Aha!" method.
- This Aha! Moment occurs when a learner finally comes across the answer to a problem on their own and when things suddenly begin to make sense.
- --- although in some of out classrooms, "Aha!" sounds more like, Aaaaaahhhhh!

Topic 128: Inquiry-Based Learning

- Discovery learning is an inquiry based learning method, and is based on the **constructivist** school of thought.
- Discovery learning takes place in **"problem solving situations".**
- In a problem solving situation, learners draw on their own past experience and current knowledge to discover new truths and facts and thus they learn.
- In this way, students are more likely to remember concepts and knowledge when it is discovered by themselves than in transmission model which assumes that learning is mainly dependent on the teacher.

"You can not teach people everything they need to know. The best you can do is position them where they can find what they need to know when they need to know it".

(Seymour Papert)

Topic 129: Discovery Learning in Practice

Using discovery learning for obtaining **educational goals** will include:

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- Promoting a deep understanding.
- Developing **meta- cognitive** skills.
- Encouraging a high level of student engagement.

It is process of **"inductive inquiry"**- learners conducting experiments like in scientific process:

1. Identify variables
2. Collect data
3. Interpret data
4. Make conclusions about information

Discovery learning has three main **characteristics:**

1. Exploration and problem solving;
2. Student cantered activities based on student interest ; and
3. Scaffolding new information into students' funds of knowledge.

Topic 130: Forms of Discovery Learning 1

Experiment – a systematic procedure undertaken with the purpose of

- Confirming, or
- Contradicting

The validity of a theory

Even very young children perform basic experiments to learn about the world.

Exploration – to look for information and resources.

Simulation- based Learning – provides learners with an experience of working on simplified model of reality reflecting some or all of its properties – e.g. medical education.

Topic 131:Forms of Discovery Learning 2

Inquiry-based Learning – where knowledge is built from experience and process, especially socially based experience.

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- Learning develops best in group situations.

Problem-based Learning – provides learners with an experience of working on simplified model of reality reflecting some or all of its properties – e.g. medical education.

Webquests – an inquiry oriented lesson format in which most of all the information that learners work with comes from the web.

- These can be created using a simple word processing document that includes links to websites.

Topic 132: Levels of Inquiry based Learning

Confirmation Inquiry

- Learner is given the problem and the procedure (method).
- Results are known in advance.
- Confirmation of the results is the object of the inquiry.

Useful to reinforce a previously learned idea.

Structured inquiry

- Learner is given the problem and the procedure (method).
- Task is to generate an explanation that is supported by the evidence collected in the procedure.

Students evaluate and analyze the collected data.

Guided inquiry

- Learner is given the problem only (research question).
- Task is to design the procedure (method).
- And to test the question and the resulting explanations.

More open than the previous two.

Open inquiry

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- Learner formulates questions.
- Designs procedures (method) for carrying out an inquiry.
- Communicates results.

Often seen in science fair contexts where students pursue their own investigative questions.

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Lesson no 23

DISCOVERY LEARNING….CONT

Topic 133: Jerome Bruner

- He wrote a book: **On Knowing: Essays for the Left Hand** and discussed in detail how people construct knowledge based on prior experiences.

In most matters of achieving mastery, we also want learners to gain good judgement, to become self-reliant, to work well with each other. And such competencies do not flourish under a one way "transmission regimen". (Bruner)

Topic 134: Theoretical approach

Bruner viewed the goal of education to be intellectual development, as against rote memorization of facts:

- Curriculum to help develop problem solving skills through inquiry and discovery.
- Curriculum to be designed so that the mastery of skills at one level leads to the mastery of skills at the next level.
- Subject matter to be in line with the way the learner views the world.
- Teaching by way of organizing concepts and learning through discovery.
- Culture forms concepts through which people organize views about self and others, and the world they live in.

Topic 135: Stages of Representation 1

Bruner put forwarded that:

The intellectual development progresses through three stages:

- **Enactive**
- **Iconic**
- **Symbolic**

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However unlike the Piaget's stages, Bruner did not insist that these stages were necessarily age-specific or are unvarying in nature.

Enactive (birth- 3)

Action based: (concrete)

- Children view their environment in terms of what they can do with it.
- At this stage demonstrating to a child is most effective. A child will better show than tell.

Topic 136: Stages of Representation 2

Iconic (3-8 years)

Image-based: (pictorial)

- Children visualize how to do something without actually doing.
- View things as they perceives their environment, not how it is explained to them.

Symbolic (8-up)

Language-based: (abstract)

- Knowledge is stored mainly as words, mathematical symbols or in other symbol systems.

Topic 137: Jerome Bruner and Education

- Unlike Piaget and Vygotsky, neither of whom tailored their work directly towards education, Bruner's work relate to education process in every respect.
- Bruner's theory is most useful in teaching mathematics – which is primarily conceptual – it begins with a concrete mode and progresses to an abstract or representation.
- Unlike Piaget, Bruner believes that teachers can help sped up the child's process of cognitive development.
- Like Vygotsky, Bruner believes that scaffolding provided by more competent one is an essential part of the teaching process.

Accordingly,

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- Role of teacher is seen as important.
- And so as the role of language and communication that facilitates scaffolding and use of language (symbolic mode) by the child.

Topic 138: Critical Perspectives

Support: this theory:

- Actively engages students in the learning process.
- Motivates students to participate.
- Encourages autonomy and independence.
- Helps develop creativity and problem solving skills.
- Provides an individualized learning experiences.

Criticism: this theory:

- May be overwhelming for learners who need more structure.
- May allow for possible misunderstanding.
- May prevent teachers from gauging whether students are having problems.

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Lesson no 24

ADLESCENT BRAIN

Topic 139: Introduction

From Quite Some Time Ago

"….. the frivolous youth of today, for certainly all youth are reckless beyond words…. When I was a boy we were taught to be discrete and respectful of elders but the present youth are exceedingly wise and impatient of restraint".

Attribute to: Hesiod; 8th Centaury B.C.

What is happening to our young people?

They disrespect their elders, they disobey their parents. They ignore the law. They riot in the streets inflamed with wild notions. Their morals are decaying. What is to become of them?

Attributed to Plato about 400 BC.

Topic 140: A Difficult Time

Adolescence

- A transition from childhood to adulthood.
- The psychological, emotional and social changes of puberty.
- The teenager changing from a child into an adult.
- Transitions are difficult – a person in transit is not really anywhere.
- He is in one place at one time and a different place at a different time – and belongs nowhere!
- Early adolescence – 11 to 13 years old.
- Middle adolescence – 14 to 17 years old(continues to be pushed earlier, 9-10….)
- Late adolescence (early adulthood) – 18 to 20 years old (continues to be pushed later, 21-24….)
- Brain reaches 90% of its full size by age six – then skull thickens.

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- Then undergoes a great reorganization between age 12 & 20 and continues till 25.
- As such, some essential parts of brain are still developing during adolescence.

Topic 141: Prefrontal Cortex

- The CEO of brain
- - Control thoughts and thus everything
- Located in front of the brain just behind forehead

Also known as the seat of good judgment, controls:

- Reasoning ability
- Goal and priority setting
- Ability to make sound judgments
- Planning/organizing multiple tasks
- Behavior
- Self control
- Emotional control
- Determining right from wrong
- Determining cause and effect relationships
- This section of brain develops last (by age 25)

As such they are prone to errors of judgment.

- Are high risk-takers
- They are not reckless because they underestimate risks, but because they overestimate rewards – or, rather, find rewards more rewarding than adults do.

Topic 142: Cerebellum

- Located at the back of the brain
- Part of the brain that changes most during the teen years
- Not finished growing even well into the early20s
- Involved in the coordination of our muscles
- Responsible for many learned physical skills such as posture, balance and coordination

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- Action like playing guitar takes effort first – but becomes easier with practice because the memory of how to do it is stored in the cerebellum
- Also known as "little brain" – coordinates cognitive processes (thinking processes)
- Physical activity enhances development of the cerebellum, so….
- Sports/physical activities are good for the brain

Topic 143: Amygdala is unfinished, too!

- Located at the side of the brain, above ear, deep inside
- Links emotions with sensory inputs from the environment
- Triggers the emotions of rage, fear, reward, aggression and attraction – instinctive emotional reactions
- Matures before the frontal cortex
- So, adolescents respond with emotional reactions before reasoned ones
- This accounts for impulsive and risky behavior

Behavior effects of Amygdala

- Erratic behavior
- Compulsive behavior
- Pleasure/ thrill seeking

Solutions

- Keep a level head. Remain calm.
- Sympathize. Say, "Unfortunate".
- Remain firm – this does not excuse behavior.

Topic 144: Putting it all together….

- The physical makeup of the brain affects learning and retention.
- When the principles of mindful instruction are in place students are more successful.
- A brain-compatible classroom is one that recognizes the physical and emotional needs of the brain in relationship to learning.

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- Learning is biological and active – mind/body/spirit.
- Exercise improves cognitive function.
- Emotion increases learning.
- Knowledge about changes to adolescent brain helps design truly effective instructions.

Topic 145: Is Learning Real?

- When I think of my own childhood, I remember being taught about the weather through posters on the wall that had drawings of the seasons.
- I learned that snowfalls in the winter, the leaves change colors in the fall, flowers blooms in the Spring, and it is sunny in the summer.
- I learned all of this despite the fact that where I grew up in Karachi it had never snowed, the leaves never really changed and there always seemed to be flowers blooming. Why did what I learned in school not match what I saw outside? Was what I was learning real?
- From the standpoint of the child, the great waste in school comes from his inability to utilize the experience he gets outside while on the other hand he is unable to apply in daily life what he is learning in school. That is the isolation of the School – its isolation from life. (John Dewey, 1916)
- Real learning has to relate student's work to their lives, experiences and thoughts.
- This process happens if the students combine deep learning with self regulated learning.
- This is the process of authentic learning.

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Lesson no 25

AUTHENTIC LEARNING

Topic 146: What is Authentic Learning?

- A pedagogical approach facilitating students to explore, discuss and meaningfully construct concepts and relationships in contexts that involve real-world problems and projects that are relevant to the learner. (Donovan, Bransford & Pellegrino, 1999).

It is defined as:

- Learning that is implanted into meaningful, real – life situations.
- Learners presented with realistic problems/projects to investigate and converse in ways applicable to their lives.

The learning environments are multidisciplinary similar to a real world application (managing a city, building a house, flying an airplane, setting a budget, solving a crime)

Students build on skills for real life success: e.g. judgement, patience and flexibility.

Topic 147: History of Authentic Learning

- Concept has been around long since apprentice-mentor relationship was the main method of training in 18th century.
- Allows pupils to become cognitive apprentices to the experts and learn what happens in the real world. Lombardi (2007).
- Descartes first proposed the idea of authenticity.
- Rousseau supported by saying that authenticity is voice of nature within us.
- Herder concludes that authenticity changes to an inner voice, developed through experience.
- Grimmett combines the three ideas and concludes that:
  Knowledge is deeply rooted in consciousness, experience and reflection.
  This is how authenticity is defined today.

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Topic 148: Authentic Approach

Authentic

Students are presented with problem solving activities that incorporate authentic real life questions and issues.

Hands On – students perform, construct meaning and acquire understanding.

As students put projects together, create crafts or use familiar materials in new ways, they are constructing meaning. Hands on activities activate kids brain.

Minds On – students develop thinking processes through activities.

Combining activities of movement, talking and listening activates multiple areas of brain.

"The more parts of your brain you use, the more likely you are to retain information".

Topic 149: Principles of authentic Learning 1

Four principles:

1. Activity involves real world problems.
2. Use open-ended inquiry, thinking, skills and metacognition.
3. Students engage in discourse and social learning.
4. Students direct their own learning.

Real World Problems

Students focus on a real problem and their engagement holds the possibility of having an impact outside the classroom. E.g.

- Collection of water quality samples in teaching science.
- Analyzing documents for teaching history.

Inquiry and Thinking skills

Students to use higher levels of thinking. E.g.

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- For art class, reviewing visual and textual information in advertisements.

Topic 150: Principles of authentic Learning 2

Dialogue in a community of learners

- Students and industry leaders (where the project is based) to link up and share the investigation to solve a problem.
- For example, an online community linking students with research scholars to collect data about a research project.

Students directed learning

- Students define the problem and select the line of action for its solution.
- For example, student making their own interpretations of literature and art.
- Students to interact with the wider community and reflect upon their experiences.

Topic 151: Authentic Guidelines

- Authentic learning is a pedagogical model based on situated learning theories, which are founded on a constructive philosophy of learning.
- It is a process involving the dynamic interactions between the learner, the task and the environment.
- Philosophically and pedagogically authentic learning is related to strategies such as: personalized learning, community based learning, project based demonstrations of learning, Capstone project, personal learning plans and portfolios.



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Lesson no 26

AUTHENTIC TASKS

Topic 152: Authentic Tasks 1&2

Authentic task 1

1. Must have real relevance

The activities match the real world tasks of professionals in practice. They are realistic and not realistic.

The tasks given to students have to be ones that are being faced in the work place

Authentic task 2

2. Must be ill defined

Tasks open to multiple interpretations

Requiring students to find their own unique tasks and sub-tasks to complete the major task

To challenges cannot be solved easily by the application of an existing method

Topic 153: Authentic Tasks 3, 4 & 5

Authentic Task 3

- Complex tasks to be investigated over an extended period of time.
- Requiring significant investment of time, efforts and intellectual resources.

Authentic Task 4

Authentic learning allows students to examine the tasks from a variety of theoretical and practical perspectives, not just one perspective.

Authentic Task 5

Collaboration

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Collaboration is integral to the task, both within the course and the real world.

Topic 154: Authentic Tasks 6, 7 & 8

Authentic Task 6

Reflection

This task allows the learner to make choices and reflect on their learning as an individual or a team.

Authentic Task 7

Must be integrated

The task encourages the students to adapt diverse roles and think across different subject areas.

Authentic Task 8

Integrated Assessment

Assessments are not only summative in authentic activities but also reflect real-world evaluation processes.

Topic 155: Authentic Tasks 9 & 10

Authentic Task 9

Create polished products

Authentic activities end in creation of a whole product which is valuable and useful on its own, rather than creating a sub-step of something else.

Authentic Task 10

Multiple interpretations and outcomes

Authentic activities as a whole allow for diverse interpretations and competing solutions instead of just yielding one correct answer.

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Authentic tasks create a bridge between what is learned in the classroom and why this knowledge is important to the world outside of the classroom. Authentic tasks are not meant to replace current classroom practice, but to provide another strategy to meet learning goals and measure student understanding.

Topic 156: Authentic Learning

Conclusion

Rationale for using AL

- It is a key concept in Constructivists theory.
- It connects new knowledge to existing knowledge by encouraging students to make direct connections between their new learning and the real world in which they live.

Criticism

Instructionally teachers may require:

- More planning and preparation
- Sophisticated instructional techniques
- Revise lesson plans substantially
- Logistically more complexities

Standpoint

Authentic learning is an effective instructional strategy to be used with multiple age groups in multiple disciplines. Technology can enhance the authenticity of learning experiences by making them more accessible to the pupils of modern times.

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Lesson no 27

TRANSFORMATIONAL LEARNING I

Topic 157: Transformational Learning

The Landscape

- In childhood learning is formative – derived from formal sources of authority and socialization.
- In adulthood learning is transformative – as adults are more capable of seeing distortions in their own beliefs, feelings and attitudes.
- "We are caught in our own histories" (Mezirow, 1991)
- We individually assimilate the culture of which we are a part.
- We uncritically adopt characteristics from primary child care givers in childhood.
- We have many intentionally and unintentionally learned theories about the world, some of which may no longer be serving us well.

Topic 158: Conceptual Framework 1

- Most of the time when we learn new information, it fits into the existing patterns or pathways in our brains.
- It fits with what we already know.
- If you already play a musical instrument, say Guitar.
- When you learn a new piece.
- Your new learning fits with what you already know.
- About notes, scales, rhythm and how musical sound is created.
- If you learn a new instrument, say Sitar
- You will transfer some of what you know to the new context.
- This new instrument may enhance your skill or offer new ways to create sound.
- But it generally will not challenge or cause you to question what you previously understood about music.

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Topic 159: Conceptual Framework 2

- If you experience something that causes you to question what music is and how it is created, that could be the trigger for a transformative learning experience.
- If what you learn changes the way you understand music itself, then you have a new story frame about what music is. This is a transformative learning experience.
- And seeking of others' experiences, perspectives and stories that will lead to further transformative learning.
- Critical reflection is the key to transformation as it challenges learners' assumptions and pushes to reconsider and reframe them.

Topic 160: Mezirow's Theory

- 1978
- 1991

In 1978 Jack Mezirow introduced transformative learning theory to help explain how adults change the way they interpret the world.

"The process of using a prior interpretation to construe a new or revised interpretation of the meaning of one's experience in order to guide future action" Mezirow, 1991: 162

Human Communities and the Learning Process

- Human begins to show a significant need to understand the meaning of their experience.
- We seek agreement on the meaning and justification for our understandings and beliefs.
- We seek more functional beliefs.
- We want to act on our beliefs.

Topic 161: Mezirow's Theory (Operational Parameters)

Before there is transformative learning:

- There is discomfort because something does not with a person's known stories.
- The new information is connected with deeply felt experiences, emotions and images.

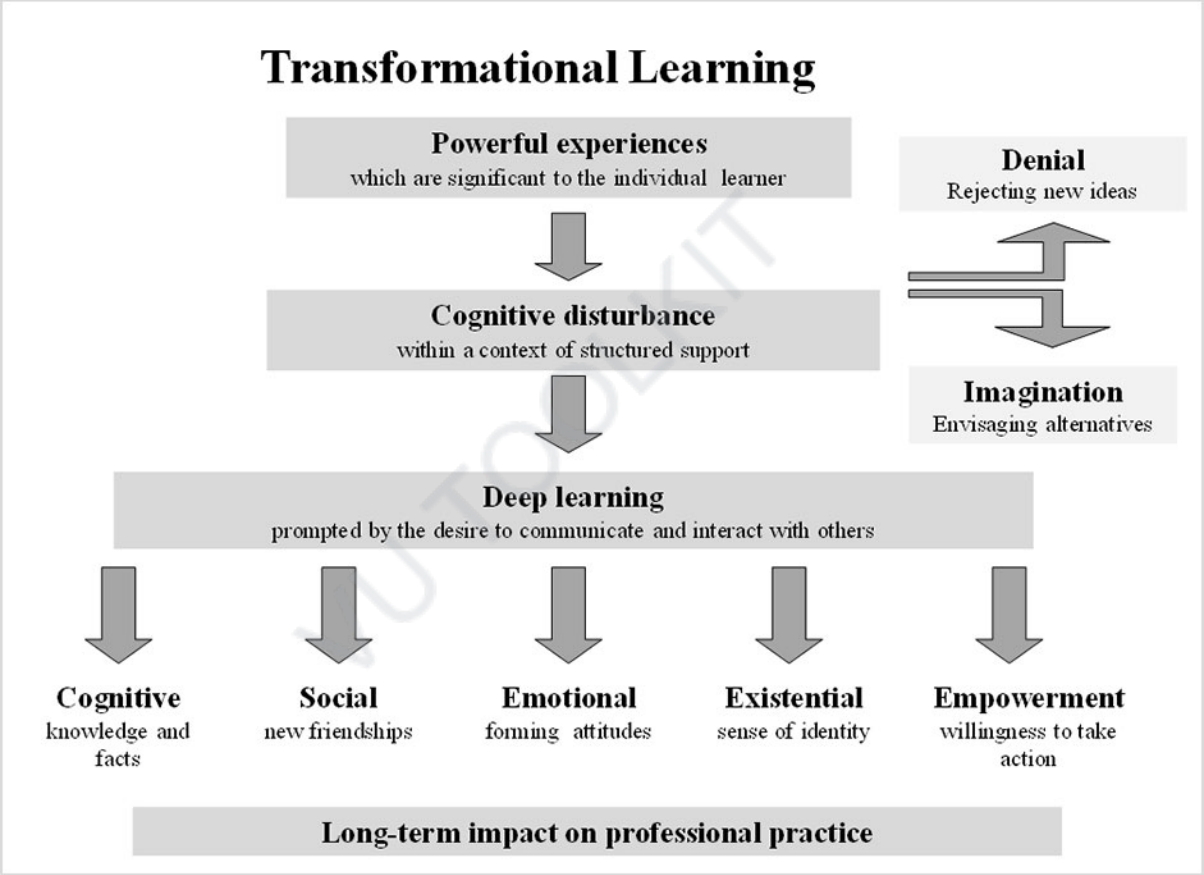
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- The person is open to new meaning and new stories rather than rejecting information and experiences that “do not fit”.

Transformative learning has two learning domains:

1. Building a new story for new information which can lead to re-examination and modification of old stories.
2. Seeking of others’ experiences, perspectives and stories that will lead to further transformative learning.



Topic 162: Building a New Story

- What do adults do when confronted with experience or information that does not “fit” into any of our known story pathway?
- When the established brain patterns are not adequate?

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- Adults try to make the new information fit, checking to see if existing story pathways can hold the new information.
- Sometimes they can.
- And that modifies the story so that similar information makes sense the next time.
- And sometimes the new experience makes an adult question the story (understanding) they hold about a particular subject.
- They might ask: is the story I know inaccurate?
- Do I need a new story to make sense of this?
- Adults have the developmental capacity to question the very brain structure they have developed earlier to store and make sense of information and experiences.
- They must have the ability to experience transformative learning.

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Lesson no 28

TRANSFORMATIONAL LEARNING II

Topic 163: Seeking of Others' Experiences

- Adults also have the ability to seek transformative learning experiences by seeking an encounter with information that does not fit into their previous story patterns.
- This can happen when we truly listen to the stories of others whose life experiences are different from our own.
- As we listen to, read, watch on film or otherwise encounter something unfamiliar, we can experience a dissonance.
- Or disconnect between what we know and understand and the new piece of information.
- This experience of dissonance is especially powerful if it is connected with a strong emotional response to new information-grief, joy, empathy, etc.

Topic 164: Domains of Learning

There are two domains of learning in Mezirow's Theory:

- Instrumental learning is learning to control and manipulate the environment or other people, e.g. task oriented learning (cause/effect).
- Communicative learning is learning what others mean when they communicate with us. It involves feelings, intentions, values, moral issues and meanings.

Topic 165: Key Points in TLT 1

- Constructivist perspective of reality.
- Defines learning as making meaning of experience.
- Adults make meaning of experiences by examining, questioning, validating and revising beliefs, values, attitudes and feelings.
- Interpretations of experience are called meaning structures.
- Meaning structures filter and provide the context for understanding experience.

Meaning structure consists of:

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- Points of view
- habits of mind
- Frames of reference

Topic 166; Key Points in TLT2

Point of View:

- Consist of meaning schemes: specific attitudes, knowledge, beliefs, value judgements and feeling involved in making interpretations.
- Transformed on critical reflection on content of problem or the process of problem solving.

Habits of mind:

- Clusters of meaning schemes which constitute an overarching view or a rule system for guiding behaviour and action.
- Transformed on critical reflection on the premise of a problem.

Frames of Reference:

- Involve orienting habits of mind and resulting points of view. They shape, delimit and often distort the way we make meaning of our experience.
- Derived from the culture, language and the habits of principal caregivers.
- Frame of reference include values, affective dispositions, moral and aesthetic preferences, paradigms, learning preferences and sense of self.

Topic 167; Criticism

- Mezirow gives too much emphasis to critical reflection; reflection alone does not result in transformative learning.
- Mezirow does not address the role of affective learning; since emotions can be hard to manage in learners especially where there is critical awareness and to change this is problematic.

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- Transformative learning may require higher levels of cognitive functioning that most adults cannot achieve.
- Transformation is not always positive or transformative; pupils have to be prepared for either a positive or negative outcome.
- The hardest step of transformative learning is to change invalid assumptions and behaviors based on them.

Topic 168: Final Outcome

- The outcome of transformational learning is development that is irreversible; we do not go back to levels of less understanding.
- Transformational learning change people. They are different afterward, in ways they and others can recognize.
- Transformative Learning: It is about YOU!

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Lesson no 29

COLLABORATIVE AND COOPERATIVE LEARNING I

Topic 169: Collaborative and cooperative learning

Introduction

Teaching vs. Learning

- John Amos Comenius, a century scholar; summarized the approach that teaching should follow, "The main objective is to find a method by which teachers teach less but learners learn more", proving that current problems have noble pedigrees.

Definition

- An instruction method in which learners work in groups towards a common academic goal.
- **"Collaborative learning is an umbrella term for a variety of educational approaches involving joint intellectual effort by students, or students and teachers together".**

(Smith and McGregor, 1992)



Topic 170: Philosophy

- Interaction and personal lifestyle.
- Individuals responsible for their actions and learning.

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- Show respect for peer's abilities and contributions.
- Share authority and responsibility.
- Cooperate not compete.
- Learners use existing cognitive structures.
- Or construct new.
- Learners are active receivers of knowledge.
- Teaching learning process engages all stakeholders.

Topic 171: Widespread Use

Based on theory and validated by research.

Amount, breadth, generalizability and applicability provide validation.

Variety of cooperative learning methods available.

In collaborative learning students team together to explore a significant question or create a meaningful project e.g.

- Group of students discussing a lecture.
- Students from different schools working together over the internet on a shared assignment.

Collaborative learning is also called cooperative learning, collective learning , learning communities.

- Because they all work together towards a common goal.
- They all incorporate group work.
- Collaboration is more than cooperation.

Topic 172: Collaborative Approaches

- Cooperative learning is a specific kind of collaborative learning.
- Students work together in small groups on a structured activity.
- Cooperative groups work face to face and learn to work as a team.

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- They are individually accountable for their work and the work of the group is also assessed.
- In cooperative learning teacher is still in control, whereas in collaborative learning, students are fully responsible.



Topic 173: Elements of Collaborative Learning 1

1. **Positive Interdependence**

   Each student's contribution essential for group success.

   Interdependence occurs when students cannot succeed unless all their group members also succeed.

   Sink or swim together!

2. **Face-to-face interaction**

   Members provide feedback.

   Teach and encourage one another.

   Discuss concepts being learned.

   Cannot present with past learning.

   Promote each others success.

3. **Individual accountability**

   Ensuring each member completes the assigned task.

   Students as checker.

   Students teach others what they learned.

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Lesson no 30

COLLABORATIVE AND COOPERATIVE LEARNING II

Topic 174: Elements of Collaborative Learning 2

4. Use of Collaborative Skills

- Leadership
- Decision making
- Communication
- Conflict management skills
- Trust building
- Mutual understanding

5. Group Processing

- Team Members:
- Set group goals.
- Periodically assess what they are doing well as a team.
- Identify changes to be made to function more effectively in the future.

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Topic 175: Collaborative and Cooperative Learning

Major Phases

1. Teacher clarifies goals, provides a hook and introductory information.
2. Organize student teams with clearly defined roles.
3. Facilitate team activities including academic learning, social skills and cooperative behavior.
4. Assess student knowledge throughout the process or by team presentation.
5. Recognize both group and individual efforts such as active participation and taking responsibility for learning.

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Topic 176: Collaborative Learning Strategies

1. **Think pair share**

   The instructor poses a question and gives students time to think.

   This think time can be spent writing also.

   Students turn to a partner and share their responses.

   During the third step, student responses can be shared within a four-person learning team, within a large group, or with an entire class during a follow up discussion.

   Students learn by reflection and by verbalization.

2. **Simple Jigsaw**

   The instructor divides the topic into four or five parts with all stude4nts from each "learning team".

   These volunteers become "experts" on one of the parts (that is ¼ of the whole)

   Expert teams work together to master the fourth of the material.

   They discover the best way to help others learn it.

   Experts reassemble in their home "Learning Team" where they teach the other group members.

Topic 177; Benefits of Collaborative Learning 1

Social Benefits:

- CL helps develop a social support system for learners.
- Builds diversity understanding among students and staff.

Academic Benefits:

- CL promotes critical thinking skills.
- Involves students actively in the learning process.
- Classroom results are improved.
- Models appropriate student problem solving techniques.

Topic 178: Benefits of Collaborative Learning 2

Collaborative Learning:

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- Promotes students learning and academic achievement.
- Enhances student satisfaction with their learning experience.
- Help students develop skills in oral communication.
- All group members gain from each others efforts.
- Recognize that all group members share a common fate.
- All group members proudly and jointly celebrate when a group member's achievement is recognized.

Topic 179; Challenges

- Rewarding opportunity but full of challenges.
- Engaging students in group activity is hard work.
- Requires rethinking of course content and time allocation of syllabus.
- Tension between the process of student learning and content coverage.
- Classroom roles change.
- Complex roles and responsibilities of students and teachers.
- Power relationships are questioned or reshaped.
- Constrained by the traditional structures and cultures of the organization.

Topic 180; Collaborative and cooperative Learning

Critical Perspectives

Critics identify weaknesses:

- Teacher escape responsibility.
- Teaching others place burden on students.
- Stronger students are left to teach weaker students.
- Focus on the task at its most basic level.

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Lesson no 31

PROBLEM BASED LEARNING

Topic 181: Problem Solving

What is problem?

A problem is a situation in which one has a goal but must find a means for reaching it.

(Chi & Glasser, 1985)

What is problem solving?

Problem solving refers to the effort to achieve a goal for which there is no automatic solution.

Topic 182: Problem based Learning

Introduction

Definition

PBL is an instructional strategy in which students work cooperatively to investigate and resolve an ill-structured problem based on real-world issues or situations.

PBL is a style of active learning students develop:

- Flexible knowledge.
- Effective problem solving skills.
- Self directed learning.
- Effective collaboration skills and intrinsic motivation.

Topic 183: The Flow of PBL

According to Stepien & Gallaghar:

- Problem engagement
- Inquiry and investigation
- Problem resolution

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- Problem debriefing

Topic 184: Problem based/Project based

Problem based and project based learning have much in common both:

- Involve realistic problems and solutions.
- Are based on authentic educational goals.
- Include formative and summative assessments.

Topic 185: Why use PBL?

- It represents the way learning occurs in the world outside the classroom.
- Learning occurs only within the context of activity and is securely tied to the situation in which it occurs.
- It increases the likelihood of transfer.
- Transferable learning experiences occur in an environment characterized by meaningful activity, expert guidance and knowledge building collaboration.
- It promotes desirable students outcomes:
  - Intentional learning
  - Relational understanding
  - Critical thinking
  - Creative thinking
  - Effective collaboration
  - Elastic communication
- PBL considered inappropriate for subjects like mathematics.
- Success of PBL is not measureable by standard measuring tools.
- Final product of the project may minimize the content focus of the project.
- A teacher adopting a PBL approach may not be able to cover as much material as a conventional lecture-based course.
- Implementing PBL can be very challenging it requires a lot of hard work and planning for the teacher.

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Lesson no 32

BLOOM'S TAXONOMY I

Topic 187: Introduction

Bloom classified learning into three domains (categories):

1. Cognitive – mental skills (knowledge)
2. Emotional – growth in feelings or emotional areas (attitudes or self)
3. Psychomotor – manual or physical skills (skills)

Topic 188: Cognitive Domain

There are six levels of Blooms cognitive domain.

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

Topic 189: Bloom's Taxonomy

Knowledge

Students recall or recognizes information, ideas and principles in the approximate form in which they were learned.

Examples:

- Define a term.
- Recite a policy.
- Know the safety rules.
- Knowledge of major ideas, mastery of subject matter.

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Potential activities:

- Make a story map showing the main events of the story.
- Make a time line of your typical day.
- Write a list of keywords you know about ….
- What characters were in the story?
- Make a chart showing….

Topic 190: Comprehension

Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects).

Examples:

Rewrite the principles of test writing. Explain in one's own words the steps of performing a complex task. Translate knowledge into new context. Understand information. Interpret facts. Infer causes. Predict consequences.

Potential activities

- Write in your own words…
- Draw pictures to illustrate a particular event in the story.
- Illustrate what you think the main idea may have been.
- Write and perform a play based on the story.

Topic 191: Application

Application denotes the ability to use learned material in a context different from the one in which it was learned.

- Application of such things as rules, methods, concepts, principles, laws and theories.

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Topic 192: Analysis

Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood.

- Learning outcomes represent a higher intellectual level than comprehension and application because these require an understanding of both the content and the structural form of the material.

Potential activities:

- Use a Venn diagram to show how two topics are the same and different.
- Design a questionnaire to gather information.
- Make a flow chart to show the critical stages.
- Draw a graph.

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Lesson no 33

BLOOM'S TAXONOMY II

Topic 193: Synthesis

Synthesis means the ability to put parts together to form a new whole.

- Production of a unique communication(theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information)

Examples

Write a company operations or process manual….

Integrate training from several sources to solve a problem.

Revised and process to improve the outcome.

Potential activities:

- Invent a machine to do a specific task.
- Design a robot to do your home work.
- Design a monetary system.
- Sell an idea.

Topic 194: Evaluation

Evaluation is about the ability to judge the value of material (statement, novel, poem, research report for a given purpose).

- The learner makes decisions based on in-depth reflection, criticism and assessment.

Examples

Select the most effective solution.

Hire the most qualified candidate.

Explain and justify a new role.

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Making new rules.

Potential activities

- Write a letter to the editor.
- Prepare and conduct a debate.
- Prepare a list of criteria to judge…
- Write a persuasive speech arguing for/against….
- Prepare a case to present your views….

Topic 195: Bloom's Revised Taxonomy

- One of Bloom's students, Lorin Anderson, revisited the learning taxonomy in the mid-nineties and made changes in terminology, structure and emphasis.
- This new taxonomy reflects a more active form of thinking and is considered more accurate.

Topic 196: What is the Difference?

Nomenclature

- Old taxonomy used nouns to describe the levels of thinking.
- New taxonomy uses verbs to describe the levels of thinking.

Structure

- Old taxonomy (one dimensional using the cognitive processes)
- New taxonomy (two dimensional using the knowledge dimension and how it interact with the cognitive process).

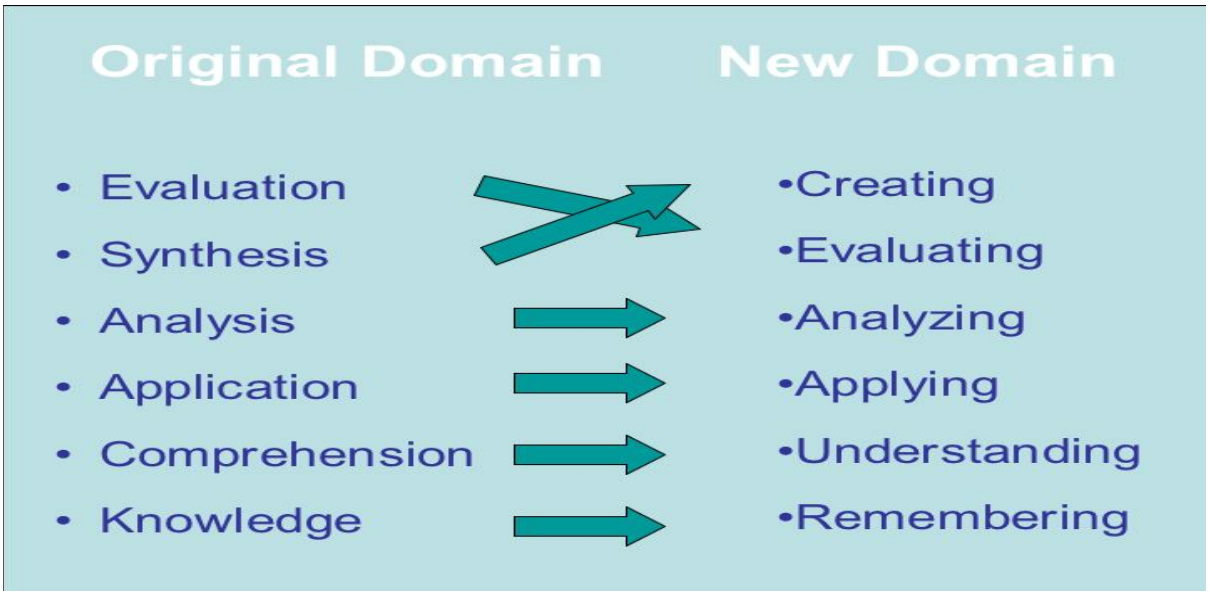
Emphasis

New taxonomy

- Emphasis is placed upon its use as a more authentic tool for curriculum planning, instructional delivery and assessment.

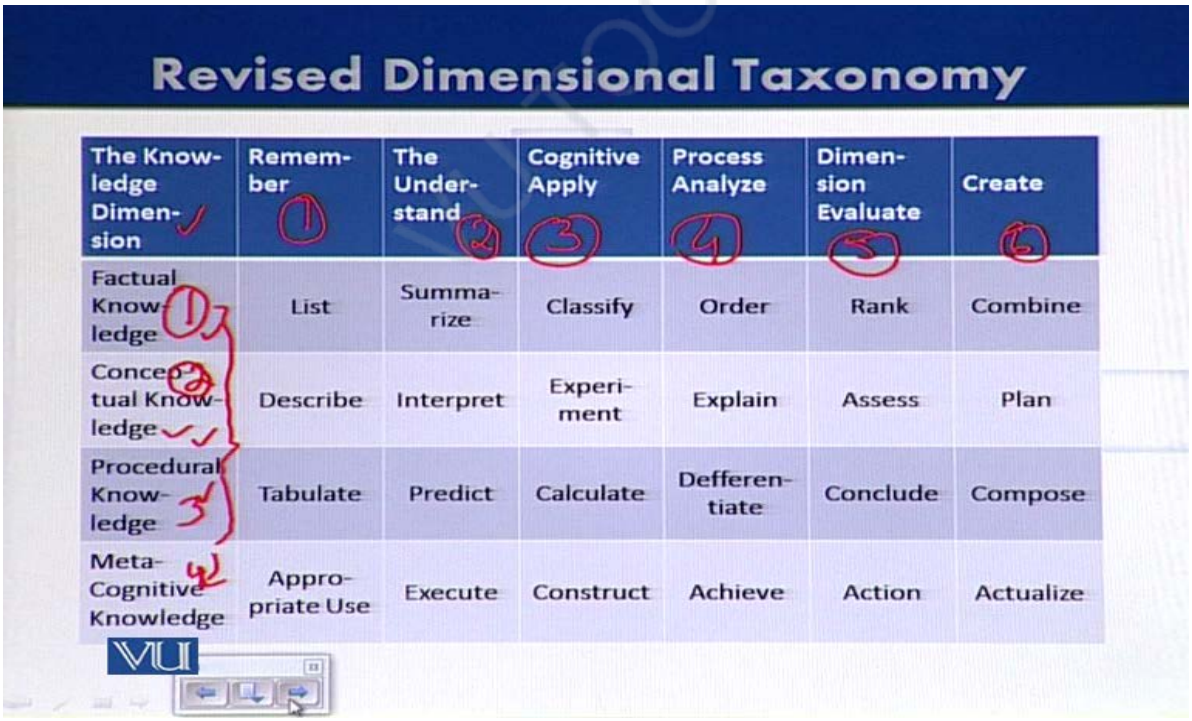
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Topic 197: Revised Dimensional Taxonomy

The **knowledge dimension** represents a range from concrete (factual) to abstract (metacognitive).



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Topic 198: Bloom in Classroom

- The reason that some teachers fail to move students up the levels of Bloom's taxonomy are many.
- For example a teacher might have low expectations concerning the student's abilities.
- Education must be increasingly concerned about the fullest development of all children and youth and it will be the responsibility of the schools to seek learning conditions which will enable each individual to reach the highest level of learning possible. Benjamin Bloom.

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Lesson no 34

GAGNE'S THEORY

Topic 199: Robert Gagne

Background

A definition of learning

Learning is the mechanism by which an individual becomes a competently functioning member of society.

Instruction is the arrangement of conditions of learning to promote attainment of some goal.

Robert Gagne an experimental psychologist worked on learning and instruction for several decades.

- He earlier worked in a behaviorist tradition, but was later inspired by the information processing view of learning and memory.
- Gagne theory includes five categories of learning outcomes and the nine events of instruction.
- Together these two themes provide a framework for learning outcomes.

Topic 200: Introduction

Robert Gagne's theory is based upon an information processing model, defining several factors that influence learning and are called the Conditions of Learning. (internal/external)

Gagne's conditions of learning shift the study of learning from lab to the real-world settings.

According to Gagne:

The internal conditions consist of learner's existing capabilities.

The external conditions include the stimuli that exist outside the learner, such as the environment, the teacher and the learning situation.

Gagne's theory is broken into three areas:

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1. A taxonomy
2. Internal and external factors necessary to achieve learning.
3. Nine events of instruction.

Gagne's Taxonomy of learning outcomes is somewhat similar to Bloom's taxonomies of cognitive, affective and psychomotor outcomes.

Both Bloom and Gagne Believed that it was important to break down humans' learned capabilities into categories or domains.

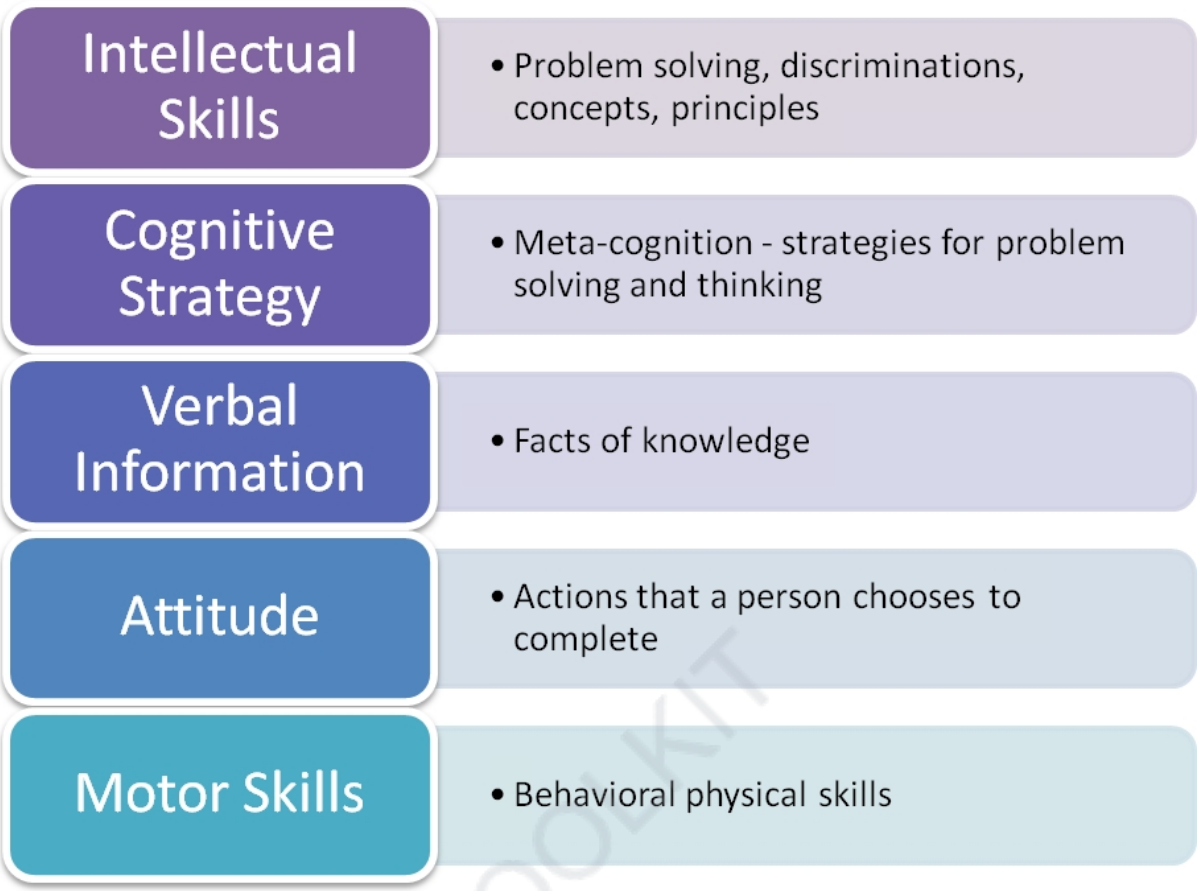
Topic 201: Gagne's theory

Gagne's taxonomy of learning (1972) is classified as an instructional theory as it has great significance for the design of instructional materials.

- It tells a part the types of outcomes that learning produces – i.e. the categories of learned capabilities – observed as human performances – that have common characteristics.
- The taxonomy comprises five major categories of learning:
  1. Verbal information
  2. Intellectual skill
  3. Cognitive strategy
  4. Attitude
  5. Motor skill
- Each of the categories leads to a different class of human performance.
  (Gagne, Briggs and Wager,1992)

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Topic 202: Verbal and Intellectual

Verbal Information

Description

- Being able to state ideas, "knowing that" or having declarative knowledge.

Conditions

Retrieving stored information: the internal conditions to support this learning include:

- Pre-existing organized knowledge.
- Strategies for processing the new information.

Conditions

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Mental operations that permit individuals to respond to conceptualizations of the environment: the internal conditions include:

- Applying the new skills to a variety of different situations and contexts
- Recalling prerequisite skills.

Topic 203: Cognitive and Attitude

Cognitive Strategy

Description

- Having a certain techniques of thinking, ways of analysing problems and having approaches to solving problems.

Conditions

An internal process by which the learners plans, controls and monitors his/her own ways of thinking and learning, including

- Task specific
- General
- Executive

Attitude

Description

- Mental state that influence the choices of personal actions.

Conditions

- An internal state, i.e. predisposition that affects an individual choice of action.

Topic 204: Motor Skills

Description

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Executing movements in a number of organized motor acts such as playing sports or dividing a car.

Conditions

Capability to perform a sequence of physical movements.

Conditions

It involves three stages:

1. Learning the sequence of the movement.
2. Practicing the movement.
3. Refining the movement based on the feedback received from the environment.



Figure 2. Nine Events of Instruction by Robert Gagne

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Lesson no 35

NINE INSTRUCTIONAL EVENTS

Topic 205: Nine Instructional Events 1

- According to Gagne, learning is a step-by-step process.
- Each step must be accomplished before the next in order for learning to take place.
- The events of instruction are the eternal events that help learning occur and are designed to achieve each of the five different learning outcomes.
- Gagne puts numbers to the instructional events from one to nine, putting them in sequential order.
- General considerations to be taken into account when designing instruction. Although some steps might need to be rearranged (or might be unnecessary) for certain types of lessons, the general set of considerations provide a good checklist of key design steps.

Topic 206: Nine Instructional Events 2

- Telling learners the learning objectives
- The teacher tells the learners what they will be able to do because of the instruction.
- The teacher communicates the desired outcome to the group.
- Sharing the goals of instruction with the learners allows the learners to organize their thoughts on what they will learn, what they will be able to perform and how they will be able to use their new skills.

Topic 207: Nine Instructional Events 3

- Stimulating recall of prior learning
- The teacher asks for recall of existing relevant knowledge.
- This allows the learners to use two important learning processes.
- Retrieval practice: enhances learning by retrieval – retrieve and reconstruct knowledge.
- Scaffolding: is building upon the learners' previous knowledge and skill – slowly build previous, add more details, leave learners to perform on their own.

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- Feedback is given to learners on individualized tasks , to correct isolated problems rather than having little idea of where the root of the learning challenge lies.

Topic 208: Nine instructional Events 4

Providing learning guidance

- The teacher helps the students in understanding (semantic encoding) by providing organization and relevance.
- Providing coaching on how to learn the skills.
- The rate of learning increases because learners are less likely to lose time and become frustrated by practicing the wrong way or having poorly understood concepts.

Eliciting Performance

- The teacher asks the learners to respond, demonstrating learning.
- Practice by letting the learner do something with the newly acquired behavior, skills or knowledge.

Topic 209: Nine Instructional Events 5

Providing feedback

- The teacher gives informative feedback on the learner's performance.
- This can be a test, quiz, or verbal comments. Be specific, not, "you are doing a job". Tell them why they are doing a good job or provide a specific guidance.

Assessing performance

- The teacher requires more learner performance and gives feedback to reinforce learning.
- Test to determine if the lesson has been learned and provide general progress information.
- Enhancing retention and transfer to other context
- The teacher provides varied practice to generalize the capability.
- Inform the learner about similar problem situations, provide additional practice, review the lesson.

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Topic 210: Put into Practice

The method of putting Gagne's theory in practice as follow:

1. The instructor determines the objectives of the instruction.
2. Objectives are categorized into one of the five domains of learning outcomes.
3. Each of the objectives is stated in performance terms using one of the standard verbs associated with the particular learning outcome.
4. The instructor then uses the conditions necessary for learning.
5. The events of instruction necessary to promote the internal process of learning are chosen and put into the lesson plan.

The events in principles become the framework for the lesson plan or steps for instruction.

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Lesson no 36

DIFFERENTIATED LEARNING

Topic 211: What is Differentiation?

- A teacher's response to learner's needs.
- The recognition of students varying background knowledge and preferences.
- Instruction that accommodates students' differences.
- Whenever a teacher reaches out to an individual or small group to vary his or her teaching in order to create the best learning experience possible, that teacher is differentiating instruction.

Why Differentiate?

- All kids are different.
- One size does not fit all.
- Differentiation provides all students with access to all curriculum

Topic 212: Differentiated Elements 1

Teachers can differentiate four classroom elements based on student readiness, interest or learning profile:

- Content
- Process
- Product
- Learning environment

Content

What is being taught; what the students needs to learn or how the students will get access to the information.

You can differentiate the actual content being presented to students.

Examples

- Using reading materials at varying readability levels.
- Using spelling or vocabulary lists at readiness levels of students.
- Presenting ides through both auditory and visual means;

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Topic 213: Differentiating Elements 2

Process

Activities in which the student engages in order to make sense of or master the content.

How the student learns what is being taught.

Example

- Varying the length of time a student may take to complete a task in order to provide additional support for a struggling learner or to encourage an advanced learner to pursue a topic in greater depth.

Product

- Culminating projects that ask the students to rehearse, apply and extend what he or she has learned in a unit.
- How the student shows what he or she has learned. How is learning assessed.

Examples

- Giving students options of how to express required learning (e.g. create a play, write a letter or develop a picture with labels)
- Using rubrics that match and extend students' varied skills levels.

Topic 214: Differentiating Elements 3

Learning Environment

The way the classroom works and feels.

Example

- There are places in the classroom to work quietly and without distraction, as well as places that invite student collaboration.
- Making sure there are places in the room to work quietly and without distraction, as well as places that invite student collaboration;
- Providing materials that reflect a variety of cultures and home settings.

Topic 215: Differentiating States

Readiness

Skill level and background knowledge of the student.

Example

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- Some students may be ready to read text at a fifth grade level, while others are ready to read text at a third-grade level.
- Knowing a student's favorite cartoon character could allow you to tie that into an example and might motivate the student.

Learning Profile

- This includes learning styles (visual, auditory, tactile or kinesthetic) as well as preferences for environmental factors (such as level of distraction or exposure to light or noise) or grouping factors (small group, large group or individual)

Topic 216: Arguments for and against

The idea behind Differentiated Instruction is beautiful: instead of teachers teaching to the mean of the whole class, teachers "meet children where they are" and teach all children based on their individual pre-existing skills/learning styles.

Helps both:

- Low achievers who need more structure and basics and
- High achievers who need that push and enrichment to reach deeper conceptual knowledge.

A 2008 nationwide survey of 900 teachers by the Fordham Institute (Ohio, USA) in the US, over 80% said Differentiate Inst. Was "very difficult" to implement.

46% teachers believe that it benefits low-achievers more.

A consensus among experts on practical teaching that Differentiated Instruction is highly effective does not exist.

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Lesson no 37

ASSESSMENT IN LEARNING

Topic 217: Importance of assessment

Assessment Derives Learning

"Assessment is essential not only to guide the development of individual students but also to monitor and continuously improve the quality of programs, inform prospective students and their parents and provide evidence of accountability to those who pay our way".

Assessment is needed for learning.

Assessment and feedback are crucial for helping people learn.

Individuals acquire a skill much more rapidly if they receive feedback about the correctness (or otherwise) of what they have done.

Assessment is needed for quality learning environment

Quality learning environments are:

- **Learner- centered**
- **Knowledge centered**
- **Assessment centered**
- **Community centered**

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Topic 218: Purpose of Assessment

- Assessment is used for various purposes
- Assessment for learning:
- Assessment helps teachers to gain insight into what students understand; enables teacher to plan and guide instruction effectively, and provide helpful feedback to students.
- Assessment as learning:
- Students develop an awareness of how they learn about assessment and use that awareness to adjust and advance their relevant learning.
- Assessment of learning assessment informs students, teachers and parents, as well as the boarder educational community, of achievement at a certain point in time in order to celebrate success, plan interventions and support continued progress.

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Topic 219: Assessment Applied I

- Provides diagnostic feedback
- What is the student's knowledge base?
- What is the student's performance base?
- What are the student's needs?
- What has to be taught?
- Helps educators set standards
- What performance demonstrates understanding?
- What performance demonstrates knowledge?
- What performance demonstrates mastery?

Topic 220: Assessment Applied II

Evaluates progress

- How is the student doing?
- What teaching methods or approaches are most effective?
- What changes or modifications to a lesson are needed to help the student?

Relates to a students Progress

- What has the student learned?
- Can the student talk about the new knowledge?
- Can the student demonstrate and use the new skills in other projects?

Topic 221: Assessment Applied III

Motivates performance

For student self-evaluation:

Now that I'm in charge of my learning, how am I doing?

Now that I know how I'm doing, how can I do better?

What else would I like to learn?

Motivates performance

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For teacher self- evaluation:

What is working for the students?

What can I do to help the students more?

In what direction should we go next?

Topic 222:Assessment Outlook

- Assessment is embedded in the learning process.
- It is firmly interconnected with curriculum and instruction.
- As teachers and students work towards the achievement of curriculum.
- Outcomes, assessment plays a constant role in informing instruction, guiding the student's next steps, and checking progress and achievement.

Research and experience show that student learning is best Supported

When:

Instruction and assessment are based on clear learning goals

Research and experience show that student learning is best supported

When:

Instruction and assessment are differentiated according to student learning

Needs

Assessment information is used to make decisions that support further learning

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Lesson no 38

ASSESSMENT FOR LEARNING I

Topic 223: AfL is a process

For teachers:

- AfL helps teachers to gather information to plan and modify teaching and learning programmes for individual students, groups of students and the class as a whole

For teachers:

- AfL helps teachers to identify students' learning needs in a clear and constructive way so they can be addressed

For students:

- AfL provides students with information and guidance so they can plan and manage the next steps in their learning.
- AfL uses information to start from what has been learned to what needs to be learned next.



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Topic 224: Historical Perspective

- Historically, teachers used to design a unit of study that would include objectives, teaching strategies, and resources.
- The student's score on this test was taken as the indicator of his or her understanding of the topic.
- In 1998, Black & William made a study which highlighted that students who were given formative teaching achieved much better results than matched control groups receiving normal teaching.
- Their groundbreaking work developed into several significant research projects on
- Assessment for Learning all over the academic world in UK, USA and Latin America.

Topic 225: Learning to Learn

- Good assessment should focus less on "do they have the right or wrong answer?" and more on making students' thinking visible to both teacher and student
- It should help develop understanding of the strategies and patterns students have constructed in order to make sense of the world.
- The assessment for learning process can explain the approaches used by students and help them to become more aware of not only what they are learning, but how they are learning it.
- This empowers students to take control of their learning.
- Learners like this have the ability to seek out and gain new skills, new knowledge and new understanding, according to their own needs and learning goals.

Topic 226: Building Students Assessment Capability

- Students who actively participate in assessing their learning by interpreting their performance, are found to be better placed to identify their own strengths and needs, and discover how to make 'Where to next..' decisions?
- Students should be educated In ways that build their assessment capabilities, so they can take increasing control of their own learning and, through this process, become more effective and independent learners.

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- Assessment-capable students can also provide better information to teachers.
- Better student feedback gives teachers a clearer picture of students' learning needs and enables more personalized development of next teaching and learning steps.

Topic 227: Engagement and Motivation

- One of the most important purposes of assessment for learning is the role it plays in student motivation.
- Assessment that encourages learning promotes motivation by highlighting progress and achievement rather than failure.
- Developing students assessment capabilities engages and motivates them, and helps them to become more independent learners.

Topic 228: Planning and Communication

- Assessment for learning should be built into teachers' planning as a part of everyday classroom practice. Learning goals, teaching strategies and assessment criteria should be carefully matched.
- Students should know in advance what they will learn, as well as how and why they are to be assessed.
- A teacher's planning should provide opportunities for both student and teacher to obtain information about progress towards learning goals, and use it to direct the learning process.

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Lesson no 39

ASSESSMENT FOR LEARNING II

Topic 229: Cumulative Measurement of Progress

- Assessment should be valid. fair and suited to the purpose. It should measure progress not just achievement.
- To make a valid and fair measure of progress overtime, teachers need to analyze information from a range of sources. It's important that teachers gather information both formally and informally
- Any assessment can only be a snapshot of achievement on a particular day.
- Performance will vary from day to day depending on the nature of the assessment task the conditions in which the assessment is undertaken

Topic 230: Support for Teaching and Learning Goals I

- Teachers need to know how a given assessment should enhance learning, and how to check if it has.
- Assessment should emphasize quality student-teacher learning interactions and be fit for
- purpose.

Identifying the learning need

- Assessment information helps teachers and students identify where a student is in terms of their learning, where they want to be, and what next teaching and learning steps can help them to achieve their goals.

- This means striking a delicate balance...if the next instructional steps are too hard for the
- Student, frustration will be the most likely result, lf they are too easy, boredom and
- Disengagement will occur.

Topic 231: Support for Teaching and Learning goals II

Feedback

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- Feedback based on assessment is one of the most powerful ingredients in teaching and learning, and maximizing the quality, appropriateness and use of feedback should be a core aim of all assessment practice.
- There should be as much or as little feedback as is needed, using a number of approaches if necessary.
- Knowledge of the learner is essential for knowing what is appropriate and ensuring feedback empowers the learner.
- Feedback can drive a loop of continuous change and improvement for both the teacher and student, as both learn from each other.

Topic 232: Support for Teaching and Learning Goals III

Next teaching and learning steps

- To be effective in describing next teaching and learning steps, assessment for learning should be linked to some form of learning progression.
- A learning progression should clearly express what steps will indicate progress towards an ultimate learning goal.
- Assessment for learning helps to locate the student's position along the learning progression.
- Progression does not necessarily always happen in a linear fashion. Students will often move far ahead in one area while retaining significant learning needs in another.
- Part of the art of teaching is supporting students to build on strengths in order to meet needs, and providing students challenging yet achievable steps towards their learning goals.

Topic 233: Social Aspects of AfL

- To be effective, assessment for learning needs to take place within a positive learning environment.
- Students should be encouraged to take risks and make errors, and understand that
- Wrong answers can assist learning just as effectively as right answers.

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- Encouraging a culture of listening critically to one another, responding positively and constructively. Appreciating the different strengths, experiences and skill sets among peers will help create such an environment.
- Effective AfL recognizes importance of the knowledge, skills and understanding that both teachers and students bring to learning interactions, and it acknowledges the way that new knowledge and understandings can grow out of shared learning experiences

Topic 234: Cultural Aspects of AfL

- In the classroom, non-judgmental exploration of teachers' and students' own cultural values, assumptions and understandings about learning and assessment may help them to use the differences that surface to develop their own strengths, and identify areas for improvement.
- Effective assessment practice needs to recognize different values, assumptions and understandings and the impact they have on students response to different assessment approaches.
- Effective assessment practice should plan for collaborative and collective assessment in both formal and informal contexts, in order to reflect the educational values of different cultures, backgrounds and experiences.

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Lesson no 40

THEORY OF MULTIPLE INTELLEGENCE I

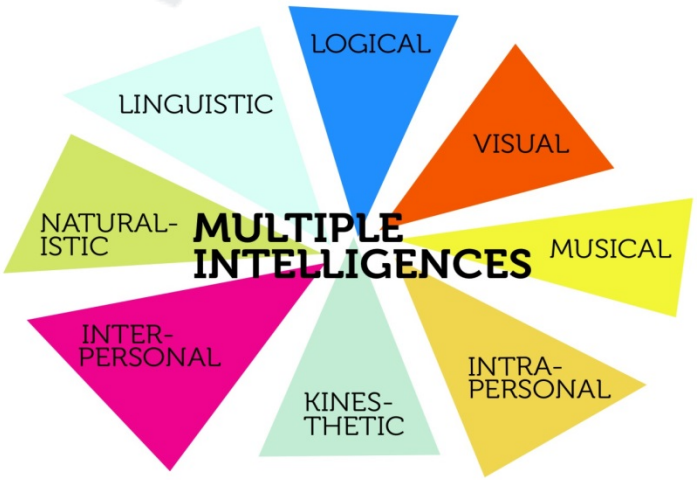
Topic 235: Theory of Multiple Intelligences

"I am 100% convinced that if I were to come back to Earth in 50 years, people would laugh at the idea of uniform education." Howard Gardner

- Developed by Howard Gardner in the early 1980's at Harvard.
- Attempt at a better understanding of human intelligence.
- Developed 8 (eight) intelligences.

We all have a unique blend of intelligences

- **Multiple intelligences**
- **Naturalist**
- **Musical**
- **Bodily Kinesthetic**
- **Intrapersonal**
- **Interpersonal**
- **Linguistic**
- **Logical Mathematical**



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Topic 236: Verbal/ Linguistic Intelligence

Linguistic Intelligence (Word Smart) is the capacity to use language

"Ability to manipulate the structure and practical dimensions of language. Journalists, poets, playwrights, public speakers".

- Can understand words and manipulate the structure of language
- Has highly developed communication skills including writing, speaking, and story-telling
- Knows and correctly uses rules of grammar
- Enjoys reading, writing, and speaking
- Has a large vocabulary

He learns best by:

- Saying, hearing, and seeing words
- Writing
- Talking
- Reading

Activities These People Would Enjoy

- Book reporting
- Telling jokes
- Writing words
- Reading
- Journal writing
- Speaking

Topic 237: Logical-Mathematics Intelligence

It is the Capacity to use numbers, logical patterns.

Such a person think by reasoning, loves questioning, calculating experimenting and figuring out logical puzzles.

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Kinds of Processes

- Used in logical mathematical intelligence sequence:
- Categorization
- Classification
- Inference
- Generalization
- Calculation
- Hypothesis testing
- Mathematicians, scientists, accountants, statisticians….

Topic 238: Spatial Intelligence

- The brain's ability to perceive and interpret visual stimuli.
- Its how our minds process what we see.
- Spatial intelligence is very important in the arts and in every day life.

Importance of Spatial Intelligence

We visually perceive and interpret the world around us.

In the arts, the ability to transfer a vision ton a painting, sculpture or film is a key quality.

Teaching activities

Visual presentations, art activities, imagination games, visualization, metaphor

Instructional Strategies

See it, draw it, visualize it, color it, mind-map it.

Topic 239: Bodily-Kinesthetic Intelligence

- It is expertise in using one's body to express ideas and feelings.
- It is the ability to use something by hands.

Teaching activities

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Hands on learning, drama, dance, sports that teach tactile activities, relaxation exercises.

Instructional Strategies

- Build it, act it out, touch it, get a "gut feeling" of it, dance it.
- Activities these people would enjoy
- Using whole body

Examples: acting, sports dancing and using body language.

Using hands

Examples: sculpting clay and hands-on learning

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Lesson no 41

THEORY OF MULTIPLE INTELLIGENCE II

Topic 240: Musical Intelligence

- Being able to distinguish the sounds around you.
- Having the ability to make your own melodies.
- Singing a song or making music.
- Identifying rhythm.
- Teaching activities
- Rhythmic learning, rapping, using songs that teach.
- Instructional Strategies
- Sing it, rap it, listen to it, activities Sing Ballads Create Chants , create Concept Songs

Topic 241: Intrapersonal Intelligence

- It is a self-knowledge and the ability to act adaptively on the basis of that knowledge.
- This intelligence includes having an accurate picture of one's strengths and weaknesses.
- It is awareness of inner moods, intentions, motivations, desires and temperaments.
- The capacity for self-discipline, self-understanding and self-esteem.
- Its how well you know yourself.

Teaching activities

Individualized instruction, independent study, options in course of study, self esteem building.

Instructional Strategies

Connect it to your personal life, make choices with regard to it, reflect on it.

Topic 242: Interpersonal Intelligence

- Interpersonal Intelligence (people smart) is understanding others.
- Ability is at a premium in teachers, clinicians, salespersons and politicians.
- Dealing with other people requires skill in the interpersonal sphere.

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- Interpersonally intelligent people enjoy:
- Giving feedback
- Understanding other's feelings
- Person-to-person communication
- Cooperative learning strategies:
- Group projects
- Conducting an interview

Topic 243: Naturalist

- Ability to function well in the natural environment.
- The recognition and categorization of natural objects.
- Sensitive to patterns in and connecting to nature.
- Especially like animals and natural phenomena.
- People with naturalistic intelligence learn better by:
- Studying outside
- Learning in the presence of plants and pets
- Relating environmental issues to topic
- Smelling, seeing, touching, tasting,
- Observing natural phenomenon
- Suggestions for Teachers
- Be aware to changes in even minute details of the classroom environment, bring the outdoors in.

Topic 244: Key Points

Four key points that are important to remember when using this theory in practice;

- Each person possesses all in intelligence.
- There are many ways to be intelligence within each category.
- Intelligence usually work together in complex ways.
- Most people can develop each intelligence to an adequate level of competency.

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Topic 245: Arguments For and Against

Pros

- All students will be seen as successful,
- All talents of students will be appreciated.
- A variety of instructional practices are used.
- Lessons are planned with more thought.
- Meets individual needs better.

Cons

- More time is needed for lessons.
- Assessing students learning could be cumbersome.
- Uniting a staff would be difficult.
- More supplies would be needed.

Topic 246: Implications

- MI theory challenges the widely held belief that intelligence is a unitary trait that can be adequately measured by an IQ test.
- MI theory claims that there are many ways to be smart and that those abilities are expressed in our performances, products and ideas.
- MI theory does not direct teachers to practices, but serves as a catalyst.
- MI theory offers both a framework and a language to use to develop practices that best fit one's context.

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Lesson no 42

QUESTIONING TECHNIQUES

Topic 247: Overview

"Good learning starts with questions, not answers"

Why ask questions?

- Check the students understanding of key points.
- Check for mastery of basic concepts.
- Stimulate interaction among students, as well as between student and instructor.

What do we mean by questioning techniques?

- Methods used for constructing and presenting questions in order to promote effective discussion and learning or to elicit information.



Topic 248: Types of Question Techniques 1

Closed Questions

A closed question usually receives a single word or short factual answer. For example:

- Are you thirsty?

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- Answer Yes/No
- Where do you live?
- Answer generally the name of your town/your address.

Usage

- To test understanding, so if two plus three make five, three plus two will also make five?"
- To conclude a discussion or make a decision: now we know the facts, are we all agreed this is the right course of action?
- Frame setting: "are you happy with the exam setting?
- A misplaced closed question, on the other hand, can block a discussion and lead to awkward silences, so are best avoided when a discussion is on.

Topic 249: Types of Question Techniques 2

Open questions

- Open questions prompt longer answers.
- They usually begin with what, why, how.
- An open question asks the respondent for his or her knowledge, opinion or feelings.
- Tell me and describe can also be used as an open question.

Examples:

- Tell me what happened next.
- Describe the circumstances in more detail.

Usage

- Developing an open conversation: what did you learn?
- Finding out more details: what else can we do for success?
- Finding out the other person's opinion or issues: what do you think about those changes?

Topic 250: Questioning Techniques 1

- Encourage students to ask questions at any time.
- Give adequate consideration to all questions – never evade a question.

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- Scatter questions over the entire class.
- Use “APPLE”

APPLE

Ask the question: questions should be prepared in your lesson plan in advance.

Pause: let the learners think about what you are asking . give the learners 3-5 seconds in order to respond.

Topic 251: Questioning Techniques 2

APPLE

Pick: pick on a learner by name to answer the question. Do not always pick on the first learner that raised his hand. You may also pick on someone that has not raised his hand in order to force participation.

Listen: listen to the answer, make eye contact with the learner, provide effect words when the answer is provided. Mix your effect words, nothing sounds more untrue than an instructor who always says ”very good”.

Topic 252: Questioning for Learning

Questions that seek clarification include:

Can you explain that?

What do you mean by…?

Can you give me an example of….?

How does that help us?

Does anyone has a question to ask?

Hierarchy (Questioning to Learning)

- Questioning
- Thinking

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- Understanding
- Learning
- Performance
- Achievement

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Lesson no 43

TEACHER TALK

Topic 253

Importance of Teacher Talk in Learning



What is teacher talk?

"Everything that a teacher says in a classroom".

- The language used by the teacher for instruction in the classroom is known as teacher talk.
- Longman dictionary of language teaching and applied linguistics defines it as "that variety of language sometimes used by teachers when they are in the process of teaching".
- Teacher talk is used in class when teachers are conducting instructions, cultivating their intellectual ability and managing classroom activities.
- Teacher talk is a kind of communication-based or instruction-based talk.

Topic 254

Categories of Teacher Talk

- Curriculum-related any talk about the actual content and skills to be taught.
- Organizational- talk to organize activities and participation patterns, to manage transitions, to frame activities, to manage time, space, provide general instructions, etc.

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- Regulatory: disciplining, behavior management, class and student control by teacher, generally with a negative connotation.
- Test-strategy: explicit reference to testing, exams or test requirements; it might include advice on how to take test.
- Informal- digressive class talk with teacher, time out and chats with students; it does not include students chatting in the classroom.
- Uncodable talk- talk that cannot be categorized, or its context of utterance is not clear.

Topic 255: Descriptors for Teacher Talk

Areas relating to promoting learning

Goal setting: Teacher talk which refers to learning goals, objectives, and outcomes for the lesson.

Prior experience: Teacher talk which encourages students to use or build on prior experiences.

Encourages independent learning: Talk that encourages students to learn independently.

Encourages/discourages collaboration: Teacher talk that encourages/discourages students to collaborate with each other in their learning.

TOPIC 256: Benefits of Teacher Talk 1

- Educators and researchers in general emphasize that classroom talk has the power to improve both students' learning and ability to reason and teachers' ability to teach.
- It has many more advantages/benefits.

1. Talk can reveal understanding and misunderstanding.
   This helps teachers adjust their teaching also called formative assessment. Students may themselves realize what they do not understand and what they do understand.
2. Talk supports learning by boosting memory.
   Talk is a rich source of information and plays a part in almost every memory we form. By hearing and talking about concepts, procedures and uses, our memories have more to work with.

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Topic 257: Benefits of Teacher Talk 2

3. Talk supports language development.

When talk is used intensively in classes, students may get a richer sense of meaning and uses of words and phrases. Their control of complex grammar also improves in speaking, reading and listening.

4. Talk supports deeper reasoning.

Learning to reason well takes time, practice and working with other people: explaining your and talking about other people reasoning. Teachers can give students that practice by using talk in strategic ways.

5. Talk supports development of social skills.

Teachers talk gives students a chance to learn about respect and kindness. It improves students' social skills and ability to be patient and cooperative with others.

Topic 258: Affect in Teacher Talk

"Your choice of words and your language selections are critical to the self-esteem, the academic success and the healthy mental and emotional development of your students".

- A definite link exists between the words that a teacher speaks and the attitudes and outcomes the students create in their lives.

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Lessson no 44

COMPARING THEORIES I

Topic 259: Overview

- For thousands of years, philosophers, psychologists and educators have sought to understand the nature of learning, how it occurs and how one person can influence the learning of another person through teaching and similar endeavors.
- Various theories of learning have been suggested.
- A theory, most simply, is a combination of different factors or variables knitted together in an effort to explain whatever the theory is about.
- None of the learning theories completely defines the learning process in its entirety.
- Each depends on the context in which learning is occurring and the goal of learning – a theory takes predominance accordingly.

Topic 260: Background Information

- Learning theories allows teachers to better understand the process of learning.
- There are many learning theories, however, we will focus on the Behaviorism, Cognitivism and Constructivism models.

Behaviourism

- The theory derives from Pavlov's classical conditioning and Skinner's operant conditioning.
- Reinforcement help keep interest.
- Stimuli are effective in controlling behaviour.
- The behavior can be measured to record learning success.

Cognitivism

- Learning is attained through rehearsal and consistent use of the information.
- Retention strategies such as breaking down information and putting the information to long term storage are great techniques.

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Constructivism

- Learning viewed as a process in which the learner construct knowledge based on their past experiences.
- Learners may collaborate with others to organize their ideas and learn from each other to construct their own knowledge.

Topic 261: Key Principles

Representation of the learning process:

Behaviorism

- Stimulus- response
- Reinforced behavior
- Antecedent behavior consequence
- Sequenced knowledge and skills presented in logical limited steps

Cognitivism

- Cognitivist learning perspective
- Information processing
- Schema
- Mental models

Constructivism

- Inquiry-based
- Discovery learning

Topic 262: Key Differences

Behaviorism

- Learning happens when a correct response is demonstrated following the presentation of a specific environmental stimulus.

Cognitivism

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- Learning is viewed as an active process that occurs within the learner and which can be influenced by the learner.

Constructivism

- Learners build personal interpretation of the world based on experiences and interaction.

Topic 263: Principle Theorists

Behaviorism

Skinner, Burrhus Fredrick (1904-1990)

- Psychologist, studied at Harvard, proponent of the operant conditioning, and the inventor of the Skinner box for facilitating experimental observations.

Cognitivism

Gagne, Robert (1916-present)

- An experimental psychologist – earlier worked in behaviorist tradition, then was influenced by the information processing view of learning and memory.

Constructivism

Lave, Jean

- A social anthropologist believes that learning is a social – not a cognitive- process; pioneered the theory of situated learning and communities of practice.

Topic 264: Embedded theories

Behaviorism

Skinner's Operant Conditioning

- Modification of behavior by using positive and negative reinforcement- an individual makes an association between a particular behavior and a consequence.

Cognitivism

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Schema Theory

- Memory takes the form of schema which provide a mental framework for understanding and remembering information.

Constructivism

Situated cognition

- Knowing is inseparable from doing and all knowledge is p-laced inactivity connected with social, cultural and physical context.

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Lesson no 45

COMPARING THEORIES II

Topic 265: Goals of Instruction

Behaviorism

- Communicate or transfer behaviors representing knowledge and skills to the learner (does not consider mental processing)

Cognitivism

- Teachers/designers are responsible for assisting learners in organizing information in an optimal way so that it can be readily assimilated.

Constructivism

- Instruction is a process of supporting knowledge construction rather than communicating knowledge.

Topic 266: Instructional Models

Behaviorism

Information Transferring

- This model represents information transferring to some extent as a computer model.
- It can be related to computer input-process-output; involves subroutines or procedures.

Cognitivism

Keller's ARCS Model of Motivation

- Proposed four conditions for a learner to be motivated to learn- attention, relevance, confidence and satisfaction- when integrated, motivate one to learn.

Constructivism

Problem- Based Learning (PBL)

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- Instruction begins with a problem to be solved rather than content to be students are introduced to a real world problem and are encouraged to find a solution themselves.

Topic 267: Implications for Instructional Design

Behaviorism

Behavioral objectives

- Learning means learners show correct response to a certain stimulus.

Cognitivism

Cognitive objectives

- Cognitive psychology has influenced the types of goals and objectives that are developed as a result of task analysis.
- Bloom's taxonomy addresses the cognitive domain.

Constructivism

Problem-oriented activities

- Focus is on students solving problems, methods integrate problem posing, problem solving and peer persuasion.

Topic 268: Knowledge Perspective

Behaviorism

- Learning can be detected by observing an organism over a period of time.
- Emphasis is on observable and measureable behaviors.

Cognitivism

- Knowledge acquisition is described as a mental activity that entails internal coding and structuring by the learner.
- Learner is viewed as an active participant in the learning process.

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Constructivism

- Create novel and situation-specific understandings by "assembling" knowledge from diverse sources appropriate to the problem at hand (flexible use of knowledge)

Topic 269: Role of Memory

Behaviourism

- Memory is the hardwiring of repeated experiences, where reward and punishment are most influential.

Cognitivism

- Encoding
- Storage
- Retrieval

Constructivism

- Prior knowledge remixed to current context.

Topic 270: Technology Support

Behaviourism

- Educational software can be used to measure the students' assessment.

Cognitivism

- Flashcards and memory games can help retain information taught in a lesson.

Constructivism

- Group power-point projects allow students to work together and combine their knowledge to learn.

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