

<b>Objectives</b>	<ul style="list-style-type: none"> <li>▪ The student will understand the elements relating to the learning process</li> </ul>
<b>Elements</b>	<ul style="list-style-type: none"> <li>▪ <a href="#">Learning Theory</a></li> <li>▪ <a href="#">Perceptions &amp; Insight</a></li> <li>▪ <a href="#">Acquiring Knowledge</a></li> <li>▪ <a href="#">The Laws of Learning</a></li> <li>▪ <a href="#">Domains of Learning</a></li> <li>▪ <a href="#">Characteristics of Learning</a></li> <li>▪ <a href="#">Acquiring Skill Knowledge</a></li> <li>▪ <a href="#">Types of Practice</a></li> <li>▪ <a href="#">Scenario Based Training</a></li> <li>▪ <a href="#">Errors</a></li> <li>▪ <a href="#">Memory &amp; Forgetting</a></li> <li>▪ <a href="#">Retention of Learning</a></li> <li>▪ <a href="#">Transfer of Learning</a></li> </ul>
<b>Schedule</b>	<ul style="list-style-type: none"> <li>▪ Review lesson objectives</li> <li>▪ Review lesson material</li> <li>▪ Conclusion &amp; Review</li> </ul>
<b>Equipment</b>	<ul style="list-style-type: none"> <li>▪ White Board / Markers</li> <li>▪ References</li> </ul>
<b>CFI Actions</b>	<ul style="list-style-type: none"> <li>▪ Present lesson</li> <li>▪ Use teaching aids</li> <li>▪ Ask/ answer questions</li> </ul>
<b>Student Actions</b>	<ul style="list-style-type: none"> <li>▪ Participate in discussion</li> <li>▪ Take notes</li> <li>▪ Ask / answer questions</li> </ul>
<b>Completion Standards</b>	<ul style="list-style-type: none"> <li>▪ The student understands the learning process and can integrate it when instructing students</li> </ul>

Additional Notes: \_\_\_\_\_

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## Introduction

### Overview

Review objectives / Elements

### What

Understanding how people learn and applying that knowledge to the learning environment

### Why

As a flight instructor, the ability to effectively teach is imperative. Understanding how people learn can help an instructor's teaching skills

### How

## Learning Theory

- **Definition** – A body of principles used to explain how people acquire skills, knowledge, and attitudes
- **Learning is explained by a combination of 2 basic approaches: Behaviorism and Cognitive Theory**

### Behaviorism

- **Learning based off rewards, emphasizes the need for positive reinforcement in order to gain knowledge**
  - This is like dogs learning by us feeding them treats
- **Rewards for the student can be tangible or intangible**

### Cognitive Theory

- **Cognitive theory focuses on what is happening inside the brain**
- **Learning isn't just a change in behavior, it is a change in the way the student thinks, understands, or feels**

### Branches of Cognitive Theory

- **Information Processing model** – The human mind can be thought of as a computer. Just like how we use a keyboard and mouse to control a computer, The 5 senses to input information to the brain for it to be stored
- **Constructivism** – Learning is obtained passively through past experiences
- **Higher Order Thinking Skills (HOTS)** – Cognitive theory that focuses on how we deal with things like judgement, Decision making and critical thinking
  - ADM lives in this area
  - HOTS are improved using Scenario Based Training (SBT)

## Perceptions & Insight

- **All learning comes from perception, which come from senses that the student gives meaning to**
  - New student can be overwhelmed and focus on meaningless things
    - It's important to guide the student to the proper perceptions to the student obtains relevant information

### Factors Affecting Perceptions

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- **G-STEP**
- **Goals & Values**
  - Every experience is affected by the individuals' values and beliefs
  - Students used to a more traditional flight school might not perceive information the same if they are thought a curriculum like ATP
- **Self-Concept**
  - The student's self-image (confidence or insecure) has a great influence in perception
    - Positive self-image allows students to remain open while a negative self-image may hinder learning
- **Time and Opportunity**
  - Students may not have had the time or opportunity to experience something and obtain that perception
- **Element of Threat**
  - Threat does not promote learning
    - Attention will be limited if threatened
- **Physical Organism**
  - The student needs to be physically ready to perceive information

### Insight

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- **Insight is grouping of perception into meaningful wholes**
- **That "aha" moment when the information clicks and the student gains a more complete understanding of the concept or subject**
- **Learning becomes more meaningful and permanent as result of insight**

## Acquiring Knowledge (MUC)

### Memorization

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- **First thing that we usually do to acquire knowledge**
  - Not good for problem solving

### Understanding

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- **Stage 2 of acquiring knowledge where the learner builds insight over the concept (organizes the information into useful ways)**

### Concept Learning

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- **Based on the assumption that humans tend to group objects, events, ideas, etc. that share one or more major attributes that set them apart**
  - Creates manageable categories of information
- **Builds ADM**

### Laws of Learning (REEPIR)

- **Laws of learning provide insight as to when people learn the best**

### Readiness

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- **Individuals learn best when they are ready to learn**
  - This is physically ready and mentally ready
- **Instructors need to make learning interesting to make students want to learn**

### Exercise

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- **Things most often repeated are remembered the best**
- **Basically, as students practice the skill, they get better**

### Effect

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- **Learning is strengthened when accompanied by a pleasant experience, and learning is weakened when accompanied by a negative or unpleasant feeling**
- **Good experience = Good learning vice-versa**

### Primacy

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- **The first time creates a strong, long-lasting expression**
- **The first time something is taught, it needs to be correct and positive**

### Intensity

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- **Vivid experiences teach better than routine or boring experiences**
- **A student will learn better when flying ground ref in the plane as opposed to a sim**

### Recency

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- **Things learned most recently are best remembered**
- **Repeat, restate, or reemphasize main points of a lesson to assist in memory**

## Domains of Learning

### Cognitive Domain (knowledge)

- The cognitive domain deals with knowledge that is gained in things like ground school, reading the PHAK, etc.
- Knowledge is acquired in a specific order here (RUAC)
  - Rote
  - Understanding
  - Application
  - Correlation

### Affective Domain (Feelings, Beliefs, and Values)

- Building in the Affective domain follows the order of:
  - Awareness – Student is aware of training
  - Response – Participation in training
  - Value – Students accept and value the topic
  - Organizing – Student Puts topic into personal beliefs
  - Integrate – Student integrates topic into their life

### Psychomotor Domain (Physical Skills)

- Stick and Rudder skills or programming a GPS etc.
- Learning in the Psychomotor domain is a bit like monkey see monkey do:
  - Observation – Student sees skill done within standards
  - Imitation – Student attempts to imitate instructor
  - Practice – Student practices skill
  - Habit – Student can perform the skill proficiently

## Characteristics of Learning (PRMA)

### Purposeful

- For learning to be effective, the learner needs a purpose for learning
- It is our job as instructors to motivate students to learn

### Result of Experience (Learn by doing)

- Learning is an individual process and the student can only learn from personal experiences

### Multifaceted

- Learning is done with multiple senses, this may cause a transfer of learning

### Active Process (people are constantly learning)

- If learning is a process of having behavior, that process must be an active one

## Acquiring Skill Knowledge

### Stages of Acquiring a Skill

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- **Cognitive Stage**
  - Memorizing the steps to a skill
  - Provide a clear, step by step example
- **Associate Stage**
  - Practice begins to store the skill
  - The student can assess progress and adjust instead of just repeating the steps
- **Automatic Response Stage**
  - After practice, the skill becomes automatic

### Knowledge of Results

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- **The student must be informed of their progress**
  - Both good and bad
- **Flying is hard and foreign; a student may know something is wrong but may not know how to correct it**
- **Learning plateau's**
  - Plateaus are normal and temporary, ensure the student understands this and is prepared for them

### Types of Practice

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- **Deliberate Practice**
  - Student practices specific areas for improvement and receives specific feedback after
- **Blocked Practice**
  - Practicing the same drill over and over until it becomes automatic with no regard to concept
- **Random Practice**
  - Mixes up the skills throughout the session
  - Performing multiple types of skills in one session tends to help retention

## Scenario Based Training

Scenarios that resemble the environment in which knowledge and skills are used are helpful to learning

### Good Scenario

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- **Good set of objectives**
- **Tailored to the needs of the student**
- **Capitalizes on the nuances of the local training environment**

## Errors

### Kinds of Errors

- **Slips**
  - A person plans to do one thing and inadvertently does another
  - Can be caused by time pressure or doing something in a weird way
- **Mistakes**
  - A person plans to do the wrong thing and is successful
  - Caused by incorrect understanding

### Reducing Errors

#### DR-CULT

- **Develop routines**
- **Raise awareness to common errors**
- **Check for errors**
- **Using Reminders**
- **Learning & Practicing**
- **Taking Time**

## Memory & Forgetting

### Memory General

- **Memory is broken into 3 parts: Sensory, Short Term, and Long Term**
- **The system operates like a computer**

### Sensory

- **Sensory deals with quick scan or pre-coded inputs from senses**
  - Ex. Stall horn will cause a reaction from an experienced pilot immediately

### Short Term Memory

- **Within seconds, relevant information is passed to short term where it may temporarily remain or rapidly fade, depending on the individual properties**
- **Time and capacity limited**
  - Time can be overcome by repetition

### Long Term Memory

- **Memory stored for long term use**
- **The more effort was placed in the short-term coding process, the easier the recall will be**
- **Memory is rebuilt from long term**

## Forgetting

- **Retrieval Failure**
  - When something is on “the tip of your tongue” and just cannot be rebuilt at the moment
- **Interference**
  - One idea gets mixed up with another idea
- **Fading**
  - Over time, it becomes harder to remember poor coded items
- **Repression**
  - Thoughts too dangerous for one’s mind will be placed into subconscious
- **Suppression**
  - Similar to Repression however, the thoughts are manually forced into subconscious

## Retention of Learning

The instructor is responsible for making sure the students learning is sufficient and ready for recall  
MR-LAMP

- **Meaningful Repetition**
  - Practice makes perfect, practice needs to be sufficient to yield a result
- **Recall is Promoted by Association**
  - When a student associates one item with another, retention tends to increase
- **Learning With all Senses**
  - Acceptance to all senses in learning is most effective
- **Favorable Attitudes aid in retention**
  - Positive learning environment encourages increased retention
- **Mnemonics**
  - Aid in memory
- **Praise**
  - Boost motivation and acts as a reward (behaviorism)

## Transfer of Learning

### Learning can transfer in two ways

- **Positive Transfer** – Learning a skill helps in learning another (Turns around a point and S-turns across a road)
- **Negative Transfer** – Learning a skill hinders learning another (Turns around a point and 8’s on Pylons)

### Ways to Achieve a Positive Transfer

- Plan for transfer as a primary objective
- Make sure the student understands what is learned can be applied in other situations
- Make high-order learning standards
- Make relationships clear through material



## Conclusion & Review

### Conclusion

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Briefly review the main points and ask question

### Review

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1. Learning Theory
2. Perceptions & Insight
3. Acquiring Knowledge
4. The laws of Learning
5. Domains of Learning
6. Characteristics of Learning
7. Acquiring Skill Knowledge
8. Types of Practice
9. Scenario-Based Training
10. Errors
11. Memory & Forgetting
12. Retention of Learning
13. Transfer of Learning