

Fundamentals Of Instruction - Manual

“Learning is a psychological problem, not a logical one”

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The Learning Process

Definition of Learning:

Learning can be defined as a change in behavior as a result of experience.

Basic Characteristics of Learning

- **Learning is purposeful:** Each student is a unique individual whose past experience affects readiness to learn and understanding of the requirements involved.
- **Learning comes through experience:** Learning is an individual process. Knowledge cannot be poured into the student’s head. The student only learns through individual experience.
- **Learning is multifaceted:** The learning process may involve different elements (see *Elements*) taking place at once.
- **Learning is an active process:** For students to learn they must react and respond.

Elements:

- verbal
- conceptual (an abstract or generic idea generalized from particular instances)
- perceptual (an impression of an object obtained by use of the senses)
- motor skills
- emotional
- problem solving

Incidental Learning:

While learning a subject at hand, the student may be learning other useful things as well. It can have a significant impact on the student’s total development.

The Laws of Learning:

While these laws are not absolute, they do give an important insight into effective teaching.

- **Readiness:** If a student is ready to learn, has a strong purpose, clear objective, and well-fixed reason, (s)he will make more progress than if (s)he lacks motivation. It implies single-mindedness.
- **Exercise:** Those things most often repeated are best remembered or performed. The basis of the law is to provide opportunities for a student to practice and then direct this process towards a goal.
- **Effect:** It related to the emotional reaction of the learner:
 - Learning is strengthened when accompanied by a pleasant or satisfying feeling.
 - Learning is weakened when associated with an unpleasant feeling.
- **Primacy:** Those things learned first often create a strong, almost unshakable impression. Bad habits learned early are hard to break.
- **Intensity:** A vivid, dramatic, or exciting experience teaches more than a routine or boring experience. A student will learn more from the real thing than from a substitute.

- **Recency:** Things most recently learned are best remembered. It determines the relative position of lectures within a course syllabus.

Perception And Insight

- Perception involves more than the perception of stimuli from the five senses. **Perceptions result when the person gives meaning to sensations being experienced.**
- Perceptions are the **basis of all learning.**
- A person's basic need is to maintain, enhance, preserve, and perpetuate the organized self. Thus, all perceptions are affected by this basic need.
- Self-concept, or self-image, has a great influence on the perceptual process.
- Fear or the element of threat narrows the student's perceptual field. The resulting anxiety may limit a person's ability to learn from perceptions.
- **Insight** occurs when associated **perceptions are grouped into meaningful wholes.**
 - Evoking insights is the instructor's major responsibility.
 - Instruction speeds the learning process by teaching the relationship of perceptions as they occur, thus promoting the development of insights by students.
 - An instructor can help develop student insight by providing a safe environment in which to learn.

Motivation

- It is probably the dominant force governing the student's progress and ability to learn.
- Positive motivations are provided by the promise of achievements or rewards.
- The desire for personal gain, either the acquisition of things or position, is a basic motivation for all human endeavor.
- Students like all other workers want a tangible return for their efforts.
- Insecure and unpleasant training situations retard learning.
- Students are likely to learn actions and operations which may prevent injury or loss of life.
- The attractive features of the activity to be learned can provide a powerful motivation.
- Group approval is a strong motivating force.
- Every person seeks to establish a favorable self-image.
- Positive motivation is essential to true learning.
- Negative motivations in the form of reproof and threats should be avoided with all but the most overconfident and impulsive students.
- Motivations may be
 - positive or negative
 - tangible or intangible
 - obvious or subtle and difficult to identify

How people Learn

All learning involves the following:

- **Perception**
- **Insight**
- **Motivation:** The most dominant force governing the student's progress and ability to learn.

Factors Which Affect Perception

- **Physical Organism:** The vehicle by which individuals become aware of, and operate in, the world of which they are part.
- **Basic Need:** To maintain and enhance the organized self. The self is complete. It is a person's past, present, and future combined; it is both physical and psychological.

- **Goals and Values:** Every experience that is funneled into one's central nervous system is color by the individual's own beliefs and value structures.
- **Self-concept:** How one pictures oneself. It is a most powerful determinant in learning.
- **Time and Opportunity:** It takes time and opportunity to perceive. Learning some things depends on other perceptions which have preceded these learnings, and on the availability of time to sense and relate these new things to the earlier perception.
- **Element of Threat:** Fear adversely affects student's perception by narrowing their perceptual field. Confronted with threat, students tend to limit their attention to the threatening object or condition.

Forgetting And Retention

- **Disuse:** A person forgets those things which are not used.
- **Interference:** People forget because new experiences overshadow the original learning experience.
- **Repression:** Some forgetting is due to the submerging of ideals or thoughts into the subconscious mind. Unpleasant or anxiety-producing material is forgotten by the individual, although not intentionally.
- **Praise:** Responses that produce a pleasurable return are called praise. It stimulates remembering because responses that give a pleasurable return tend to be repeated.

Actions To Assist Individuals In Remembering What Has Been Learned

- Praise stimulates remembering.
- Recall is prompted by association.
- Favorable attitudes aid retention - people learn and remember only what they wish to know.
- Learning with all the senses is most effective - the best perception results from all senses working together.
- Meaningful repetition aids recall.

Transfer of Learning

- **Positive transfer** of learning occurs when the learning of one maneuver aids in learning another.
- **Negative transfer** occurs when a performance of a maneuver interferes with the learning of another maneuver.
- **Application of positive transfer** of learning: Building-block technique, in which each simple task is performed acceptably and correctly before the next learning task is introduced.

Levels of Learning

- **Rote:** Repeat back without understanding.
- **Understanding:** The student also comprehends the principles and theory behind the knowledge.
- **Application:** The student also can apply what has been learned and perform in accordance with that knowledge.
- **Correlation:** The student is able to associate various learned elements with other segments or blocks of learning or accomplishment.

Principles Utilized In Learning A Skill

- **Physical skills involve more than muscles:** Perceptions change as the physical becomes easier.

- **Desire to learn:** Shorter initial learning time and more rapid progress take place when a desire to learn exists.
- **Patterns to follow:** The best way to prepare a student is to provide a clear step-by-step example.
- **Perform the skill:** The students needs coordination between muscles and visual and tactile senses.
- **Knowledge of results:** it is important for students to be aware of their progress.
- **Progress follows a pattern:** learning a skill usually follows a pattern. There is rapid improvement in the early stages, followed by a leveling-off of the learning curve.
- **Duration and organization of the lesson:** In planning for student performance, a primary consideration is the length of time devoted to practice.
- **Evaluation versus critique:** In the initial stages, practical suggestions are more valuable than a grade.
- **Application of skill:** The student must use what has been learned. A student must learn the skill so well that it becomes easy to perform it. The student must recognize the types of situations where it is appropriate to use the skill.

Learning Skills and The Learning Curve

- The best way to prepare a student to perform a task is to provide a clear, step-by-step example. Students need a clear picture of what they are to do and how they are to do it.
- The shape of a learning curve: The first part of the curve indicates rapid early improvement. Then the curve levels off. This normal and temporary leveling-off of an individual's learning rate is called a learning plateau.

'Building Block' Method of Instruction

- Splitting a complex task into small blocks
- Each block is trained and treated as an individual task.
- Each simple task (block) is performed acceptably and correctly before the next learning task (block) is introduced.
- As soon as each block is being performed to an adequate level, they will be assembled into the whole.

Barriers of Learning

Self-concept

- Self-concept is how one pictures oneself.
 - This is the most powerful determinant in learning.
 - Self-concept has a great influence on the total perceptual process.
- Negative self-concept contributes most to a student's failure to remain receptive to new experiences and creates a tendency to reject additional training.
- The instructor can foster the development of insights by helping the student acquire and maintain a favorable self-concept.

Defense Mechanisms

- Subconscious defenses against the reality of unpleasant situations.
- Used to soften feelings of failure, alleviate feelings of guilt, and protect of personal worth and adequacy.

- Can be a hindrance to learning because they involve some **self-deception** and **distortion of reality**.
- **Rationalization**: Real reasons for behavior cannot be accepted, it permits substitution of excuses for reasons. Subconscious technique for justifying actions that otherwise would be unacceptable.
- **Flight**: Escape from frustration by taking physical (running away) or mental flight (daydreaming).
- **Aggression**: Avoiding frustrating situations by means of aggressive behavior. It can involve shouting and accusing others. Typically, it involves
 - asking irrelevant questions,
 - refuse to participate in class activities, or
 - disrupt activities.
- **Resignation**: Becoming so frustrated to lose interest and giving up. Students may no longer believe it profitable or even possible to work further. Resignation usually occurs when the student has completed early lessons without grasping the fundamentals and then becomes bewildered and lost in the advanced phase.

Stress and Anxiety

- **Normal reaction to stress**:
 - Rapid and exact response, often automatically, within experience and training.
 - The effective individual thinks and acts rapidly and is extremely sensitive to the surrounding.
- Underlines the need for proper training prior to emergency situations.
- **Abnormal reaction to stress**:
 - Extreme over cooperation, painstaking self-control, inappropriate laughter or singing, very rapid changes in emotion.
 - Marked changes in mood.
 - Severe, unreasonable anger toward flight instructor, service personnel, or others.
- **Anxiety** is probably the most significant psychological barrier affecting flight instruction. It is the extreme worry brought on by stressful situations.
- **Anxiety** can be countered by
 - treating fears as a normal reaction rather than ignoring them,
 - reinforcing the student's enjoyment of flying, and
 - teaching students to cope with fears.

The Overconfident or Impatient Student

- Impatience is a greater deterrent to learning pilot skills than generally recognized.
 - The impatient student fails to understand the need for preliminary training. (S)he seeks only the final objective without considering the means necessary to reach it.
 - Impatience can be corrected by the instructor by presenting the necessary preliminary training one step at a time, with clearly stated goals for each step.
- Because they make few mistakes, apt students may assume that the correction of those errors is unimportant.
 - This overconfidence soon results in faulty performance.
 - For apt students a good instructor will constantly raise the standard of performance for each lesson, demanding greater effort.

Human Factors

Human Behavior

Human Needs

1. **Physical:** food, rest, exercise, sex, etc.
2. **Safety:** shelter, protection against danger, threat, deprivation.
3. **Social:** Needs to belong and to associate with other people
4. **Egoistic:**
 - Relating to one's self-esteem: self-confidence, independence, achievement, knowledge.
 - Relating to one's reputation: status, appreciation, deserved respect of one's fellow beings.
5. **Self-fulfillment:** realizing one's own potentialities, continued development, creativity.

The need for self-fulfillment of a student should offer the greatest challenge to an instructor. Helping students realize self-fulfillment is perhaps the most worthwhile accomplishment an instructor can achieve.

Effective Communication

Dynamically interrelated elements of communication:

- Source
- The symbols used in composing and transmitting the message
- Receiver

Communication takes place when one person transmits ideas or feelings to another person or to a group of people. The effectiveness of communication is measured by the similarity between the idea transmitted and the idea received. Effective communication has taken place only when the receivers react with understanding and change their behavior accordingly.

Basic factors that relate to the effectiveness of the communicator:

1. Ability to select symbols that are meaningful to the listener.
2. Communicators consciously or unconsciously reveal attitudes toward themselves, toward the ideas they are trying to transmit, and toward their receivers. A positive attitude helps delivering the message.
3. Successful communicators speak or write from a broad background of accurate, up-to-date, stimulating material.

Characteristics of receivers:

1. Ability to question and comprehend the ideas that have been transmitted.
2. The receiver's attitude may be of resistance, willingness, or of passive neutrality. Communicators must gain the receiver's attention and retain it.
3. The receiver's background, experience, and education frame the target at which communicators must aim.

Barriers To Effective Communication

Greatest barrier is the lack of a common core of experience between communicator and receiver. Overuse of abstractions should be avoided. Abstract words stand for ideas that cannot be directly experienced or things that do not call forth specific mental images.. By using concrete words, the communicator narrows the image produced in the receivers' minds.

Instructor Professionalism

- Professionals must be able to reason logically and accurately.
- Professionalism requires good decision-making ability.
- Professionals cannot limit their actions and decisions to standard patterns and practice.
- Professionalism demands a code of ethics.
- Professionals should be straightforward and honest.
- Anything less than sincere performance is quickly detected and immediately destroys instructor effectiveness.
- Student confidence tends to be destroyed if instructors bluff when in doubt about some point.
- Safety should be one of the highest priorities of flight training. A safe environment produces safe students.
- Professionals should be prepared. Students quickly become apathetic when they recognize that the instructor is inadequately prepared.
- The attitude, movements, and general demeanor of an instructor contribute a great deal to the professional image. (Examples: calm, thoughtful, disciplined)
- The professional relationship should be based on a mutual acknowledgment that both the student and instructor are important to each other and are working towards the same objective.
- Professional instructors should accept students as they are with all their faults and problems.
- Instructors fail to provide competent instruction when they permit students to partially learn an important item of knowledge or skill.