

Aviation Instructor's Handbook (FAA-H-8083-9)

Glossary

A

Abstractions. Words that are general rather than specific. Aircraft is an abstraction; airplane is less abstract; jet is more specific; and jet airliner is still more specific.

Aeronautical decision-making (ADM). A systematic approach to the mental process used by aircraft pilots to consistently determine the best course of action in response to a given set of circumstances.

Affective domain. A grouping of levels of learning associated with a person's attitudes, personal beliefs, and values which range from receiving through responding, valuing, and organization to characterization.

Air traffic control (ATC). A service provided by the FAA to promote the safe, orderly, and expeditious flow of air traffic.

Aircraft checkouts. An instructional program designed to familiarize and qualify a pilot to act as pilot in command of a particular aircraft type.

Airman Certification Standards (ACS). An FAA published list of standards which must be met for the issuance of a particular pilot certificate or rating. FAA inspectors and designated pilot examiners use these standards when conducting pilot practical tests and flight instructors should use the ACS while preparing applicants for practical tests.

Anxiety. Mental discomfort that arises from the fear of anything, real or imagined. May have a potent effect on actions and the ability to learn from perceptions.

Application. A basic level of learning at which the individual puts something to use that has been learned and understood.

Application step. The third step of the teaching process, where the learner performs the procedure or demonstrates the knowledge required in the lesson. In the telling-and-doing technique of flight instruction, this step consists of the learner doing the procedure while explaining it.

Area of operation. A phase of the practical test within the Airman Certification Standards (ACS) or the Practical Test Standards (PTS).

ATC. See air traffic control.

Attitude. A personal motivational predisposition to respond to persons, situations, or events in a given manner that can, nevertheless, be changed or modified through training as a sort of mental shortcut to decision-making.

Attitude management. The ability to recognize one's own hazardous attitudes and the willingness to modify them as necessary through the application of appropriate antidotal thoughts.

Authentic assessment. An assessment in which the learner is asked to perform real-world tasks, and demonstrate a meaningful application of skills and competencies.

B

Basic need. A perception factor that describes a person's ability to maintain and enhance the organized self.

Behaviorism. Theory of learning that stresses the importance of having a particular form of behavior reinforced by someone other than the learner to shape or control what is learned.

Bookmark. A means of saving addresses on the World Wide Web (WWW) for easy future access. Usually done by selecting a button on the web browser screen, it saves the current web address so it does not have to be input again in a lengthy series of characters.

Branching. A programming technique which allows users of interactive video, multimedia courseware, or online training to choose from several courses of action in moving from one sequence to another.

Briefing. An oral presentation where the speaker presents a concise array of facts without inclusion of extensive supporting material.

Building block concept. Concept of learning that new knowledge and skills are best based on a solid foundation of previous experience and/or old learning. As knowledge and skills increase, the base expands, supporting further learning.

C

CBI. See computer-based instruction.

CBT. See computer-based training.

CD. See compact disk.

Cognitive domain. A grouping of levels of learning associated with mental activity. In order of increasing complexity, the domains are knowledge, comprehension, application, analysis, synthesis, and evaluation.

Compact disk (CD). A small plastic optical disk which contains recorded music or computer data. Also, a popular format for storing information digitally. The major advantage of a CD is its capability to store enormous amounts of information.

Comprehensiveness. The degree to which a test measures the overall objective.

Computer-assisted instruction. Instruction in which the instructor is responsible for the class and uses the computer to assist in the instruction.

Computer-based training (CBT). The use of the computer as a training device. CBT is sometimes called computer-based instruction (CBI); the terms and acronyms are synonymous and may be used interchangeably.

Condition. The second part of a performance-based objective which describes the framework under which the skill or behavior will be demonstrated.

Confusion between the symbol and the symbolized object. Results when a word is confused with what it is meant to represent. Words and symbols create confusion when they mean different things to different people.

Cooperative or group learning. An instructional strategy which organizes learners into small groups so that they can work together to maximize their own and each other's learning.

Correlation. A basic level of learning where the learner can associate what has been learned, understood, and applied with previous or subsequent learning.

Course of training. A complete series of studies leading to attainment of a specific goal, such as a certificate of completion, graduation, or an academic degree.

Crew resource management (CRM). The application of team management concepts in the flight deck environment. It was initially known as cockpit resource management, but as CRM programs evolved to include cabin crews, maintenance personnel and others, the phrase "crew resource management" has been adopted. This includes single pilots, as in most general aviation aircraft. Pilots of small aircraft, as well as crews of larger aircraft, must make effective use of all available resources; human resources, hardware, and information. A current definition includes all groups routinely working with the cockpit crew who are involved in decisions required to operate a flight safely. These groups include, but are not limited to: pilots, dispatchers, cabin crewmembers, maintenance personnel, and air traffic controllers. CRM is one way of addressing the challenge of optimizing the human/ machine interface and accompanying interpersonal activities.

Criteria. The third part of a performance-based objective, descriptions of standards that will be used to measure the accomplishment of the objective.

Criterion-referenced testing. System of testing where learners are graded against a carefully written, measurable standard or criterion rather than against each other.

CRM. See crew resource management.

Curriculum. A set of courses in an area of specialization offered by an educational institution. A curriculum for a pilot school usually includes courses for the various pilot certificates and ratings.

Cut-away. Model of an object that is built in sections so it can be taken apart to reveal the inner structure.

D

Defense mechanisms. Subconscious ego-protecting reactions to unpleasant situations.

Demonstration-performance method. An educational presentation where an instructor first shows the learner the correct way to perform an activity and then has the learner attempt the same activity.

Description of the skill or behavior. The first part of a performance-based objective which explains the desired outcome of instruction in concrete terms that can be measured.

Determiners. In test items, words which give a clue to the answer. Words such as "always" and "never" are determiners in true-false questions. Since absolutes are rare, such words usually make the statement false.

Direct question. A question used for follow-up purposes, but directed at a specific individual.

Discrimination. The degree to which a test distinguishes the differences between learners.

Distractors. Incorrect responses to a multiple-choice test item.

Disuse. A theory of forgetting that suggests a person forgets those things that are not used.

Drill and practice method. A time-honored training delivery method based on the learning principle that connections are strengthened with practice.

E

Effect. A principle of learning that learning is strengthened when accompanied by a pleasant or satisfying feeling, and that learning is weakened when associated with an unpleasant feeling.

Electronic learning (e-learning). Any type of education that involves an electronic component such as the Internet, a network, a stand-alone computer, CD/DVDs, video conferencing, websites, or e-mail in its delivery.

Element of threat. A perception factor that describes how a person is unlikely to easily comprehend an event if that person is feeling threatened since most of a person's effort is focused on whatever is threatening them.

Exercise. A principle of learning emphasizing that those things most often repeated are best remembered.

F

FAASTeam. See Federal Aviation Administration Safety Team.

FAASTeam Program Manager. The person who designs, implements, and evaluates the FAASTeam within the FAA Flight Standards District Office (FSDO) area of responsibility.

FAASTeam Representative. A volunteer within the aviation community who shares technical expertise and professional knowledge as a part of the FAASTeam.

Federal Aviation Administration Safety Team (FAASTeam). An organization promoting safety standards and the reduction of aircraft related accidents. Each of the eight FAA Flight Standards regions have a dedicated FAASTeam office.

Flight review. A 14 CFR part 61.56 requirement designed to assess and update a pilot's knowledge and skills.

Flight training devices (FTDs). A full-size replica of the instruments, equipment, panels, and controls of an aircraft, or set of aircraft, in an open flight deck area or in an enclosed cockpit. A force (motion) cueing system or visual system is not required.

Follow-up question. In the guided discussion method, a question used by an instructor to get the discussion back on track or to get the learners to explain something more thoroughly.

Formal lecture. An oral presentation where the purpose is to inform, persuade, or entertain with little or no verbal participation by the listeners.

FTD. See flight training device.

G

Goals and values. A perception factor that describes how a person's perception of an event depends on beliefs. Motivation toward learning is affected by how much value a person puts on education. Instructors who have some idea of the goals and values of their learners will be more successful in teaching them.

Guided discussion method. An educational presentation typically used in the classroom where the topic to be covered by a group is introduced and the instructor participates only as necessary to keep the group focused on the subject.

H

Hierarchy of human needs. A listing by Abraham Maslow of needs from the most basic to the most fulfilling: physiological, security, belonging, esteem, cognitive and aesthetic, and self-actualization.

Human factors. A multidisciplinary field devoted to optimizing human performance and reducing human error. It incorporates the methods and principles of the behavioral and social sciences, engineering, and physiology. It may be described as the applied science which studies people working together in concert with machines. Human factors involve variables that influence individual performance, as well as team or crew performance.

Human nature. The general psychological characteristics, feelings, and behavioral traits shared by all humans.

I

Illustrated talk. An oral presentation where the speaker relies heavily on visual aids to convey ideas to the listeners.

Insight. The grouping of perceptions into meaningful wholes. Creating insight is one of the instructor's major responsibilities.

Instructional aids. Devices that assist an instructor in the teaching-learning process. They are supplementary training devices, and are not self-supporting.

Instrument proficiency check. An evaluation ride based on the instrument rating practical test standard which is required to regain instrument flying privileges when the privileges have expired due to lack of currency.

Integrated flight instruction. A technique of flight instruction in which learners are taught to perform flight maneuvers by reference to both the flight instruments and to outside visual references from the time the maneuver is first introduced. Handling of the controls is the same regardless of whether flight instruments or outside references are being used.

Intensity. A principle of learning in which a dramatic or exciting learning experience is likely to be remembered longer than a boring experience. Learners experiencing the real thing will learn understand more than when they are merely told about the real thing.

Interactive video. Software that responds quickly to certain choices and commands by the user. A typical system consists of a compact disk, computer, and video technology.

Interference. (1) A theory of forgetting proposing that a person forgets something because a certain experience overshadows it, or the learning of similar things has intervened. (2) Barriers to effective communication that are caused by physiological, environmental, and psychological factors outside the direct control of the instructor. The instructor must take these factors into account in order to communicate effectively.

Internet. An electronic network that connects computers around the world.

J

Judgment. The mental process of recognizing and analyzing all pertinent information in a particular situation, a rational evaluation of alternative actions in response to it, and a timely decision on which action to take.

K

Knowledge. Information that humans are consciously aware of and can articulate.

L

Lack of common experience. In communication, a difficulty which arises because words have different meanings for the source and the receiver of information due to their differing backgrounds.

Lead-off question. In the guided discussion method, a question used by an instructor to open up an area for discussion and get the discussion started.

Learning. A change in behavior as a result of experience.

Learning plateau. A learning phenomenon where progress appears to cease or slow down for a significant period of time before once again increasing.

Learning style. Preferred way(s) by which people learn. Common learning styles include visual, auditory, and kinesthetic, or tactile (hands on). Learning skills can be loosely grouped into physical and cognitive styles.

Learning theory. A body of principles advocated by psychologists and educators to explain how people acquire skills, knowledge, and attitudes.

Lecture method. An educational presentation usually delivered by an instructor to a group of learners with the use of instructional aids and training devices. Lectures are useful for the presentation of new material, summarizing ideas, and showing relationships between theory and practice.

Lesson plan. An organized outline for a single instructional period. It is a necessary guide for the instructor in that it tells what to do, in what order to do it, and what procedure to use in teaching the material of a lesson.

Link. On a website, an external web location that can be accessed by merely clicking on words identifying the new site. They are usually identified by a different color type, underlining, or a button (picture or icon) indicating access to a new site.

Long-term memory. The portion of the brain that stores information that has been determined to be of sufficient value to be retained. In order for it to be retained in long-term memory, it must have been processed or coded in the working memory.

M

Matching-type test item. A test item in which the learner is asked to match alternatives on one list to related alternatives on a second list. The lists may include words, terms, illustrations, phrases, or sentences.

Memory. The ability of people and other organisms to encode (initial perception and registration of information), store (retention of encoded information over time), and retrieve (processes involved in using stored information) information.

Mock-up. A three-dimensional working model used in which the actual object is either unavailable or too expensive to use. Mock-ups may emphasize some elements while eliminating nonessential elements.

Model. A copy of a real object which can be life-size, smaller, or larger than the original.

Motivation. A need or desire that causes a person to act. Motivation can be positive or negative, tangible or intangible, subtle or obvious.

Multimedia. A combination of more than one instructional medium. This format can include audio, text, graphics, animations, and video. Recently, multimedia implies a computer-based presentation.

Multiple choice-type test item. A test item consisting of a question or statement followed by a list of alternative answers or responses.

N

Navigate. To move between websites on the internet. Navigation is often accomplished by means of links or connections between sites.

Norm-referenced testing. System of testing in which learners are ranked against the performance of other learners.

O

Objectivity. The singleness of scoring of a test; it does not reflect the biases of the person grading the test.

Overhead question. In the guided discussion method, a question directed to the entire group in order to stimulate thought and discussion from the entire group. An overhead question may be used by an instructor as the lead-off question.

P

Perceptions. The basis of all learning, perceptions result when a person gives meaning to external stimuli or sensations. Meaning derived from perception is influenced by an individual's experience and many other factors.

Performance-based objectives. A statement of purpose for a lesson or instructional period that includes three elements: a description of the skill or behavior desired of the learner, a set of conditions under which the measurement will be taken, and a set of criteria describing the standard used to measure accomplishment of the objective.

Personal computer-based aviation training device (PCATD). A device which uses software which can be displayed on a personal computer to replicate the instrument panel of an airplane. A PCATD must replicate a type of airplane or family of airplanes and meet the virtual control requirements specified in Advisory Circular (AC) 61-126.

Personality. The embodiment of personal traits and characteristics of an individual that are set at a very early age and are extremely resistant to change.

Physical organism. A perception factor that describes a person's ability to sense the world around them.

Pilot error. Pilot action/inaction or decision/indecision causing or contributing to an accident or incident.

Poor judgment chain. A series of mistakes that may lead to an accident or incident. Two basic principles generally associated with the creation of a poor judgment chain are: (1) one bad decision often leads to another; and (2) as a string of bad decisions grows, it reduces the number of subsequent alternatives for continued safe flight. Aeronautical decision-making is intended to break the poor judgment chain before it can cause an accident or incident.

Practical Test Standards (PTS). An FAA published list of standards which must be met for the issuance of a particular pilot certificate or rating. FAA inspectors and designated pilot examiners use these standards when conducting pilot practical tests and flight instructors should use the PTS while preparing applicants for practical tests.

Preparation. The first step of the teaching process, which consists of determining the scope of the lesson, the objectives, and the goals to be attained. This portion also includes making certain all necessary supplies are on hand. When using the telling-and-doing technique of flight instruction, this step is accomplished prior to the flight lesson.

Presentation. The second step of the teaching process, which consists of delivering information or demonstrating the skills that make up the lesson. The delivery could be by either the lecture method or demonstration-performance method. In the telling-and-doing technique of flight instruction, this is the segment in which the instructor both talks about and performs the procedure.

Pretest. A test used to determine whether a learner has the necessary qualifications to begin a course of study. Also used to determine the level of knowledge a learner has in relation to the material that will be presented in the course.

Primacy. A principle of learning in which the first experience of something often creates a strong, almost unshakable impression. The importance to an instructor is that the first time something is demonstrated, it must be shown correctly since that experience is the one most likely to be remembered by the learner.

Problem-based learning. Lessons in such a way as to confront learners with problems that are encountered in real life which force them to reach real-world solutions.

Psychomotor domain. A grouping of levels of learning associated with physical skill levels which range from perception through set, guided response, mechanism, complex overt response, and adaptation to origination.

PTS. See Practical Test Standards.

R

Readiness. A principle of learning where the eagerness and single-mindedness of a person toward learning affect the outcome of the learning experience.

Receiver. In communication, the listener, reader, or learner who takes in a message containing information from a source, processes it, reacts with understanding, and changes behavior in accordance with the message.

Recency. Principle of learning stating that things learned recently are remembered better than things learned some time ago. As time passes, less is remembered. Instructors use this principle when summarizing the important points at the end of a lecture in order for learners to better remember them.

Relay question. Used in response to a learner's question, the question is redirected to another individual.

Reliability. The degree to which test results are consistent with repeated measurements.

Repression. Theory of forgetting proposing that a person is more likely to forget information which is unpleasant or produces anxiety.

Response. Possible answer to a multiple choice test item. The correct response is often called the keyed response, and incorrect responses are called distractors.

Reverse question. Used in response to a learner's question. Rather than give a direct answer to the learner's query, the instructor returns the question to the same individual to provide the answer.

Review and evaluation. The fourth and last step in the teaching process, which consists of a review of all material and an evaluation of the learners. In the telling-and-doing technique of flight instruction, this step consists of the instructor evaluating the performance while the learner performs the required procedure.

Rhetorical question. Generally, a question asked for a purpose other than to obtain the information the question asks. For this handbook's purpose, a question asked to stimulate group thought. Normally answered by the instructor, it is more commonly used in lecturing rather than in guided discussions.

Risk elements in ADM. Take into consideration the four fundamental risk elements: the pilot, the aircraft, the environment, and external pressures.

Risk management. The part of the decision-making process which relies on situational awareness, problem recognition, and good judgment to reduce risks associated with each flight.

Rote learning. A basic level of learning in which the learner has the ability to repeat back something learned, with no understanding or ability to apply what was learned.

S

Scenario-based training (SBT). Training method that uses a highly structured script of real-world experiences to address aviation training objectives in an operational environment.

Selection-type test items. Test items requiring the learner to choose from two or more alternatives provided. True-false, matching, and multiple choice type questions are examples of selection type test items.

Self-concept. A perception factor that ties together how people feel about themselves with how well they receive experiences.

Sensory register. That portion of the brain which receives input from the five senses. The individual's preconceived concept of what is important determines how the register prioritizes the information for passing it on to the rest of the brain for action.

Single-Pilot Resource Management (SRM). The art/science of managing all the resources (both onboard the aircraft and from outside sources) available to a single pilot (prior and during flight) to ensure that the successful outcome of the flight is never in doubt.

Sites. Internet addresses which provide information and often are linked to other similar sites

Situational awareness. The accurate perception and understanding of all the factors and conditions within the four fundamental risk elements that affect safety before, during, and after the flight.

Skill knowledge. Knowledge reflected in motor or manual skills and in cognitive or mental skills that manifests itself in the doing of something.

Skills and procedures. The procedural, psychomotor, and perceptual skills used to control a specific aircraft or its systems. They are the stick and rudder or airmanship abilities that are gained through conventional training, are perfected, and become almost automatic through experience.

Source. In communication, the sender, speaker, transmitter, or instructor who composes and transmits a message made up of symbols which are meaningful to listeners and readers.

Stem. The part of a multiple choice test item consisting of the question, statement, or problem.

Stress management. The personal analysis of the kinds of stress experienced while flying, the application of appropriate stress assessment tools, and other coping mechanisms.

Supply-type test item. Question in which the learner supplies answers as opposed to selecting from choices provided. Essay or fill-in-the-blank-type questions are examples of supply-type test items.

Symbols. In communication, simple oral and visual codes such as words, gestures, and facial expressions which are formed into sentences, paragraphs, lectures, or chapters to compose and transmit a message that means something to the receiver of the information.

T

Task. Knowledge area, flight procedure, or maneuver within an area of operation in a practical test standard.

Taxonomy of educational objectives. A systematic classification scheme for sorting learning outcomes into three broad categories (cognitive, affective, and psychomotor) and ranking the desired outcomes in a developmental hierarchy from least complex to most complex.

Teaching. Instructing, training, or imparting knowledge or skill; the profession of someone who teaches.

Teaching lecture. An oral presentation that is directed toward desired learning outcomes. Some learner participation is allowed.

Telling-and-doing technique. A technique of flight instruction that consists of the instructor first telling the learner about a new procedure and then demonstrating it. This is followed by the learner telling and the instructor doing. Third, the learner explains the new procedure while doing it. Last, the instructor evaluates while the learner performs the procedure.

Test. A set of questions, problems, or exercises for determining whether a person has a particular knowledge or skill.

Test item. A question, problem, or exercise that measures a single objective and requires a single response.

Time and opportunity. A perception factor in which learning something is dependent on the individual having the time to sense and relate current experiences in context with previous events.

Traditional assessment. Written testing, such as multiple choice, matching, true-false, or fill-in-the-blank.

Training course outline. Within a curriculum, describes the content of a particular course by statement of objectives, descriptions of teaching aids, definition of evaluation criteria, and indication of desired outcome.

Training media. Any physical means that communicates an instructional message to learners.

Training syllabus. A step-by-step, building block progression of learning with provisions for regular review and evaluations at prescribed stages of learning. The syllabus defines the unit of training, states by objective what the learner is expected to accomplish during the unit of training, shows an organized plan for instruction, and dictates the evaluation process for either the unit or stages of learning.

Transfer of learning. The ability to apply knowledge or procedures learned in one context to new contexts

Transition training. An instructional program designed to familiarize and qualify a pilot to fly types of aircraft not previously flown, such as tail wheel aircraft, high performance aircraft, and aircraft capable of flying at high altitudes.

True-false test item. A test item consisting of a statement followed by an opportunity for the learner to determine whether the statement is true or false.

U

Understanding. A basic level of learning at which a learner comprehends or grasps the nature or meaning of something.

Usability. The functionality of tests.

V

Validity. The extent to which a test measures what it is supposed to measure.

Virtual reality (VR). A form of computer-based technology that creates a sensory experience allowing a participant to believe and barely distinguish a virtual experience from a real one. VR uses graphics with animation systems, sounds, and images to reproduce electronic versions of real-life experience.

W

Working or short-term memory. The portion of the brain that receives information from the sensory register. This portion of the brain can store information in memory for only a short period of time. If the information is determined by an individual to be important enough to remember, it must be coded in some way for transmittal to long-term memory.