



Instructor Training Course

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15 – 19 June 2020

EU-South East Asia Aviation Partnership Project (EU-SEA APP)

*This project is funded by the European Union and implemented
by the European Union Aviation Safety Agency - EASA*

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Introduction

Let's introduce ourselves

- Name?
- Where do you work?
- Job role?
- Education & experience?

Mladen Hanževački – Professional Profile



- Avia Educon d.o.o. – CEO & Owner
- Avia Technics d.o.o. – CEO & Part-145 Accountable Manager
- Aviation Training Services d.o.o – Part-147 Training & Examination Manager
- CCAA Airworthiness Inspector (responsible for Part-66/147) (9 years)
- EASA Standardisation Team Member (4 years)
- EASA TeB member on behalf of CCAA
- EASA Regulations Officer - Continuing Airworthiness (2012.-2016.), EASA, Cologne (4 years)
- Leading rulemaking task RMT.0281 "New Training Methods and Teaching Technologies" at EASA
- Former Training & Licensing Department Manager at CCAA (3 years)
- Former Part-147 MTO Training Manager (10 years)
- Technical Instructor since 1992. (a/c type training, basic training, regulatory training,...) (27 yrs)
- Holder of Part-66 licence with 6 CMPA a/c type rating endorsed (30 years)
- Numerous training courses (including Quality Management, Auditing Techniques, SMS, Technical Training and Management) (more than 100 specialised training certificates)
- University degree in aircraft engineering

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COURSE OBJECTIVES

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THE STAGES OF LEARNING
(ACTION VERBS)

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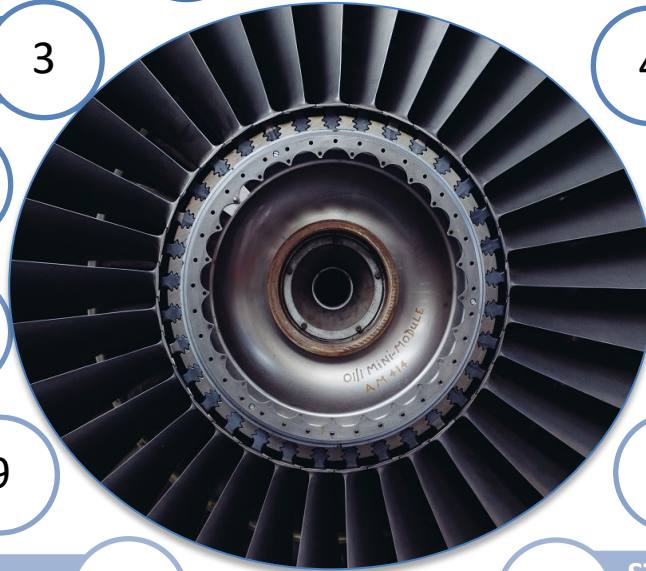
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Course Objectives

After this course you will be able to:

- **Formulate an objective** in accordance with a training syllabus requirement
- Use action verbs to **formulate objectives** for each stage of learning (Bloom)
- Understand how the humans **process information**
- Explain importance of **communication skills** for instructor
- Use **appropriate question technique** in your lesson
- Understand the importance and proper use of **teaching aids**

Course Objectives

After this course you will be able to:

- Describe the **theory lessons** and how to prepare them
- Understand the characteristics and relationship of **instructors and students**
- Explain the different **layouts of classrooms**
- Use **appropriate question and assessment techniques** in your lesson
- Prepare and conduct **theory lesson** by using all **three main elements**:
 - **Introduction**
 - **Development**
 - **Consolidation**

Teaching Adults

- Andragogy vs. Pedagogy
- **Adults learn better when they:**
 - Know **why** they have to learn
 - Learn a **useful** item **related** to their profile
 - Work and **experiment themselves**
- People are different and thereby learn in **different ways**
- People who thrive and feel **comfortable** in their situation **learn more effectively**

Instructor as a guide to the learning process

People **learn by themselves**.

All learning is a **result of the experiences** of the learner.

The instructor should use the **proper techniques** to:

- **Help** this learning **happen earlier** by using the proper learning **impulses**
- Use the **methods** to create the correct **understanding**
- Evaluate the **feedback** to **monitor** the learning state
- **Explain and guide** accordingly

Instructor as a guide to the learning process

The **classroom** instructor :

- Selects the **objectives** for the particular training session and **methods** or **tools** indicated
- Decides and prepares the most **effective training aids**
- Prepares the proper **lesson plan**
- Selects the **feedback** by which the achievement of the objectives is checked
- Selects the proper **homework**

Learning Definition

→ Learning can be defined as:

A relatively permanent change in behaviour as the result of a training experience

Course Objectives

Lesson 1

Lesson Objectives

After this lesson you will be able to:

- Explain the **purpose of an objective**.
- State the **different parts of an objective**.
- **Formulate an objective** in accordance with a training syllabus requirement

Training Objectives

- The purpose of an objective is to state precisely what a student **will be able to do** as a result of training.
- It also ensures that a specified teaching **standard is maintained** from one course to the next.
- Objectives make lesson planning easier as they help you **structure your training events** and provide you with a basis for any type of recapping, testing and evaluation.

Components of Objectives

An objective has the following three components:

- 1. Performance** → What the student will be able to do.
- 2. Standards** → How well he must be able to do it.
- 3. Conditions** → Under what circumstances must he do it, how much time etc.

Components of objectives

Example:

→ *Student will be able to: perform IDG removal, in accordance with AMM procedure number Xxx.Xxx, by using standard aircraft maintenance equipment in hangar*

→ *Performance*

→ *Standard*

→ *Conditions*

→ How about this?:

Given IAS, air temperature and pressure, calculate the TAS, at an accuracy of $-/+ 5$ Kt.

Conditions

Performance

Standard

Four easy steps to writing objectives

1. Select an **action verb**
2. Add the pertinent **subject matter**
3. Decide on the **conditions** (given or denied), under which the task must be performed
4. Decide on the **standards** according to which the task must be performed

Recap

- What is the **purpose** of an objective?
- Which are **three different parts** of an objective?
- **Formulate** one objective by using performance, standard and conditions.

The Stages of Learning & Action Verbs

Lesson 2

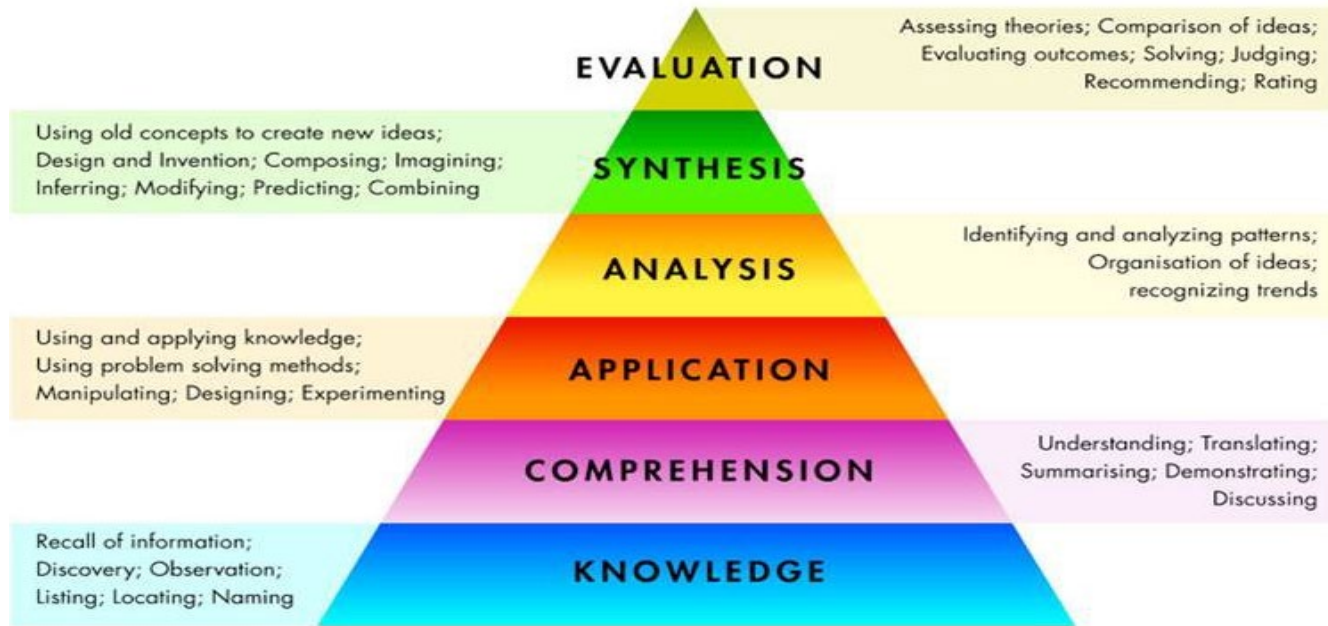
Lesson Objectives

After this lesson you will be able to:

- Explain 6 **stages of learning** according to Bloom.
- Write **action verbs** for first 5 stages of learning
- Use action verbs to **formulate objectives** for each stage of learning

The Stages of Learning

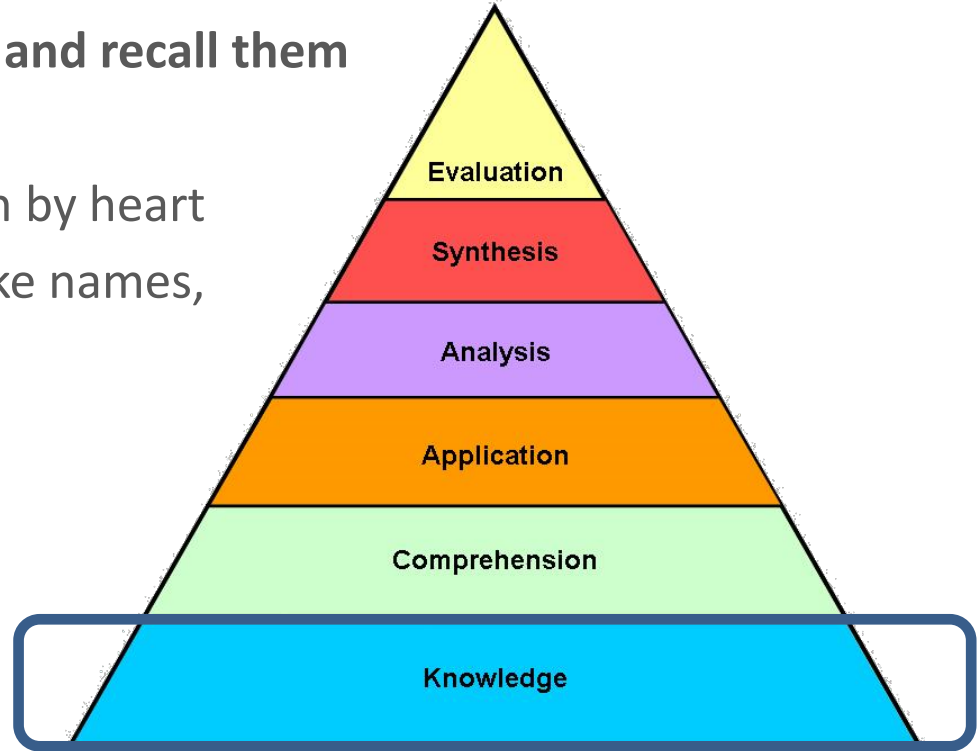
→ A full learning experience takes place in a series of six separate stages (Bloom taxonomy)



Knowledge

The ability to store elementary data and recall them

Anything we have to **memorize**, learn by heart and then **later recall** is Knowledge, like names, definitions, terms etc.



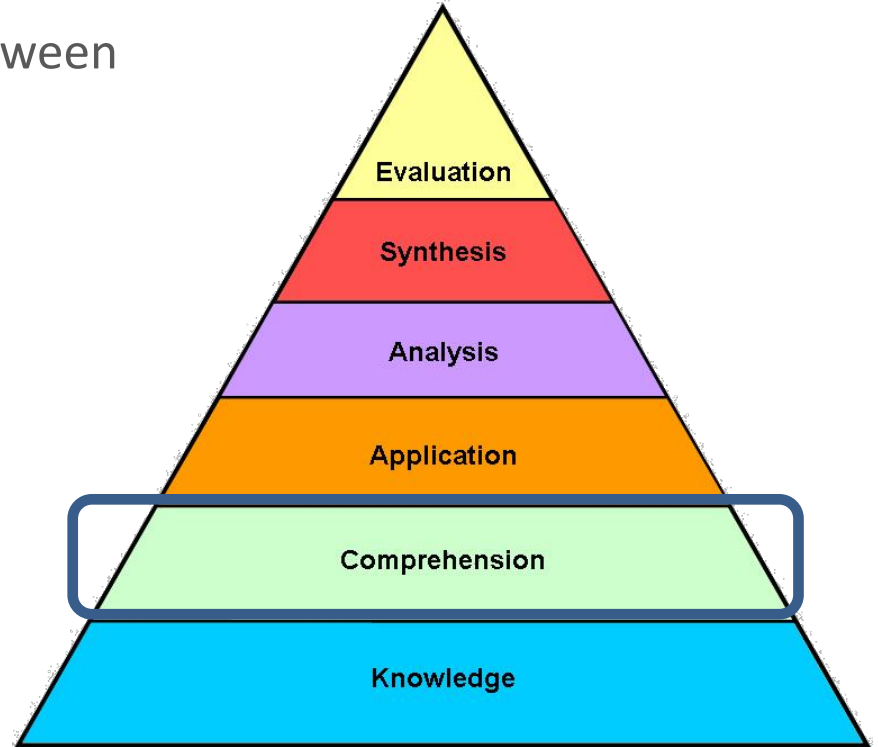
Action Verbs — Level 1

Verb	Definition	Example
Define	State what it is and what its limits are; state the definition.	Define airborne safety nets.
Draw	Produce a picture, pattern, or diagram.	Draw the MLAT system architecture.
List	Say one after the other.	List the most common weather messages.
Name	Give the name of objects or procedures.	Name a range of air-ground aviation-related network concepts.
Recognise	Know what it is, because you have seen it before.	Recognise surveillance information on a display.
State	Say or write in a formal or definite way.	State the function of a network management system.

Comprehension

The ability to identify or differentiate between the memorized data in knowledge

When we can detect the differences or similarities between terms, drawings, colors, shapes etc. we say that we comprehend them.



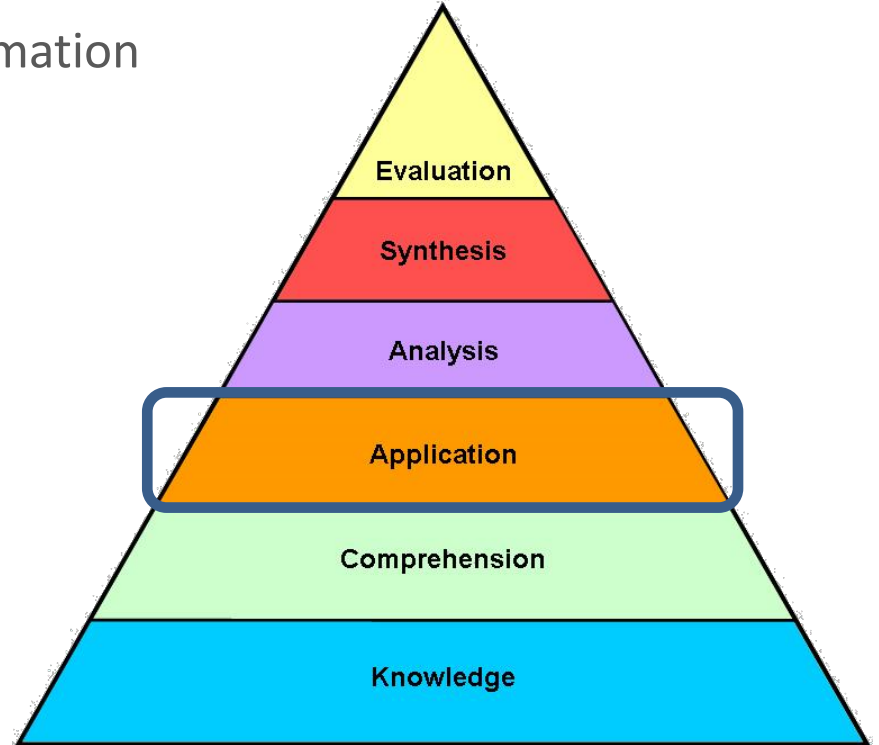
Action Verbs — Level 2 (Comprehension)

Verb	Definition	Example
Characterise	Describe the quality of features in something.	Characterise navigation methods.
Consider	Think carefully about it.	Consider the benefits of Critical Incident Stress Management (CISM).
Demonstrate	Describe and explain. Logically or mathematically, prove the truth of the statement.	Demonstrate the use of middleware in an ATM environment.
Describe	Say what it is like or what happened.	Describe the elements of Global Navigation Satellite System (GNSS) in Europe.
Differentiate	Show the difference between things.	Differentiate conventional navigation from area navigation.
Explain	Give details about something or describe so that it can be understood.	Explain the function of FDP.
Take account of	Take into consideration before deciding.	Take account of hardware/software compatibility.

Application

The ability to apply use memorized information to create new concepts

An application is the use of a formula to arrive at a result, the implementation of a method, the filling of a drawing with the appropriate shapes and colors etc.



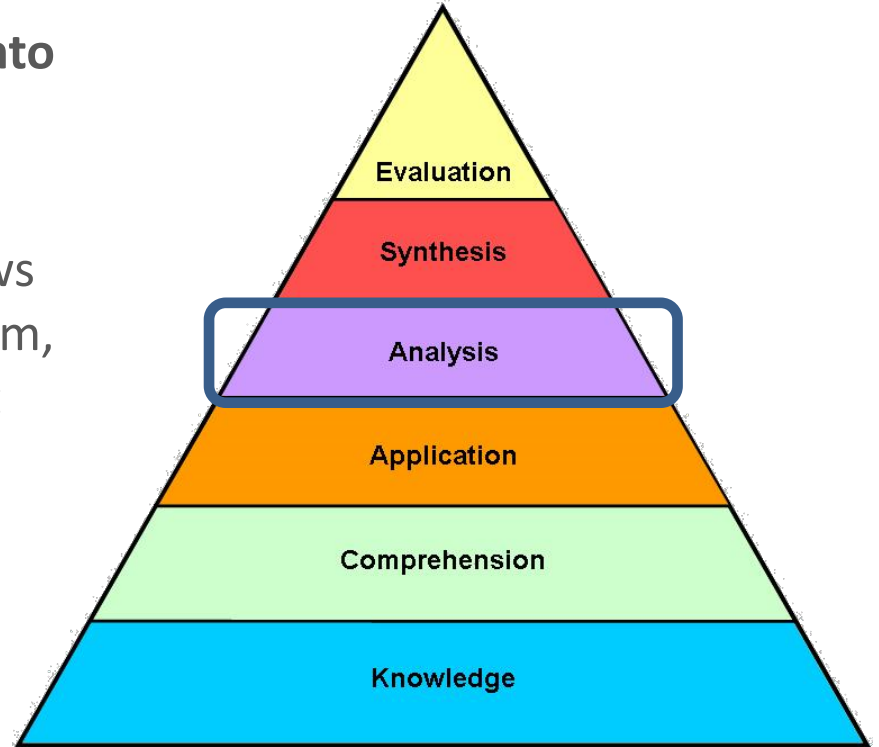
Action Verbs — Level 3 (Application)

Verb	Definition	Example
Apply	Use something in a situation or activity.	Apply the principles of layers.
Appreciate	Understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it.	Appreciate how to troubleshoot a network.
Calculate	Discover from information you already have by arithmetic; to think about a possible cause of action in order to form an opinion or decide what to do.	Calculate parameters of a line.
Check	Make sure the information is correct (satisfactory).	Check the conformity of a system to ITU and national regulation.
Decode	Turn into ordinary writing, decipher.	Decode a typical OLDI message.
Estimate	Form an approximate judgement of a number, form an opinion.	Estimate the impact of security and integrity failure to the operational service.
Identify	Associate oneself inseparably with, establish the identity.	Identify the major elements of the ADS-C system.
Operate	Conduct work on equipment.	Operate measuring equipment.
Perform	Carry into effect, go through, execute.	Perform measurements with generic radio test equipment.
Use	Employ for a purpose, handle as instrument, put into operation.	Use appropriate vocabulary to communicate effectively on technical matters.

Analysis

The ability to break down information into all its constituent parts

It means that the one who analyses knows the **functioning of all the parts** of a system, **any relation** between and **the effect** that they produce to **each other** and to the system.



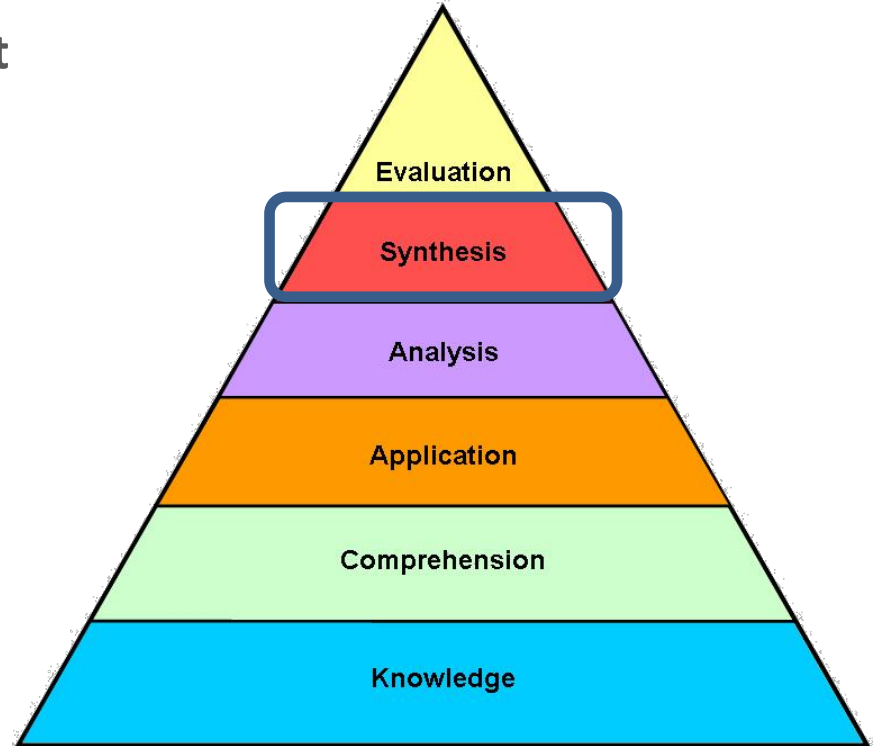
Action Verbs — Level 4 (Analysis)

Verb	Definition	Example
Adjust	Change to a new position, value or setting.	Adjust a generic radio receiver.
Analyse	Examine minutely the constitution of.	Analyse the block diagram of a generic radio receiver.
Justify	Show the rightness of a choice or of an option.	Justify the occasions when it is necessary to downgrade an ILS facility performance category.
Relate	Establish link with.	Relate VOR station design to operational requirement.

Synthesis

The ability to rebuild information, to put together elements and parts so as to form a new whole.

Synthesis is the **opposite of Analysis**. It is a **higher level of understanding** and corresponds to the ability of a person to **conceive and design** a new complex system not existing before.



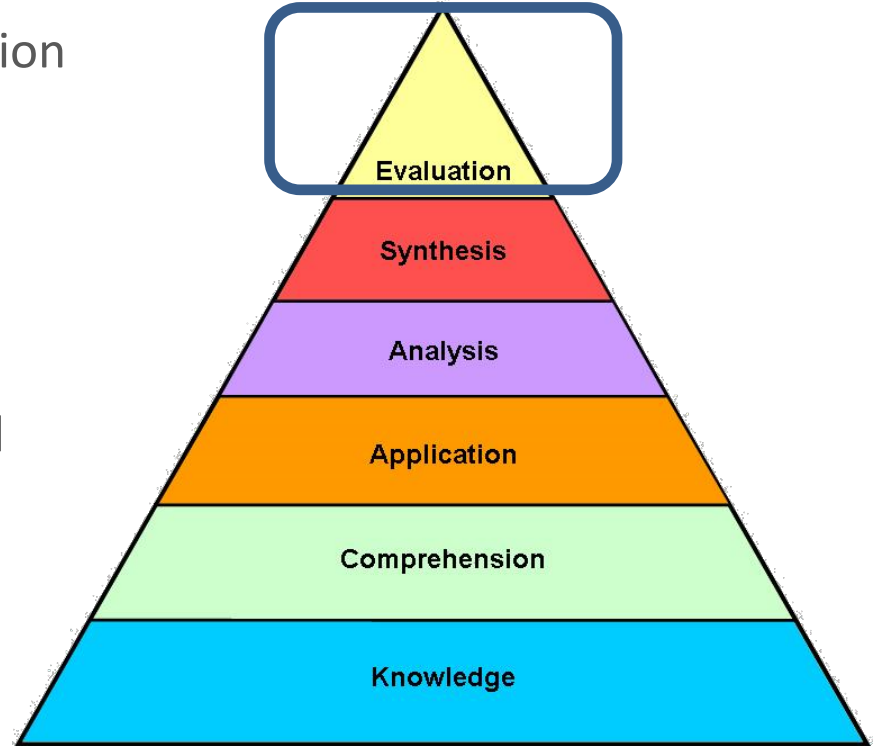
Definition of Action Verbs — Level 5

Verb	Definition	Example
Interpret	Decide on the meaning or significance of something when there is a choice.	Interpret ILS facility performance categories.

Evaluation

Being able to judge the value of information for a specific purpose against stated criteria or standards.

Evaluation refers to experts who can decide which of the new systems created can better serve the criteria aimed for a particular function



Determine the level of the objectives

Workshop 1

Recap

- Name **6 stages of learning** according to **Bloom**.
- Name **2 action verbs** for each of **first 4 stages**

Human Information Processing System

Lesson 3

Lesson Objectives

After this lesson you will be able to:

- Identify and consider individual **stages of information processing systems** in humans
- Explain **possible limitations** of the information processing system in the context of our **working environment**

Human Information Processing System

What does the term
"Human Information Processing System"
mean?

Human Information Processing System

Information processing is the process of **receiving information** through our senses, **analyzing** and giving that information **meaning**.

Human Information Processing System

Please try to put the following 5 elements in the correct order to get a logical sequence:
Short term memory – Perception – Long term memory – Sensory buffer - Attention



Sensory Buffer

- There are a **multitude** of audio and visual signals around us that we are unable to consider, so we must **be selective**
- The things we are **interested** in are often **hidden** in the „**noise**“ around us
- Signals must first be **detected** through our **senses**

Receiving information through the senses



VISION



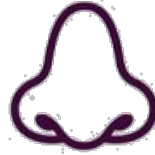
75%



HEARING



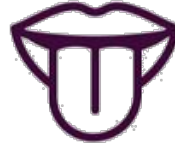
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SMELL



3%



TASTE



3%



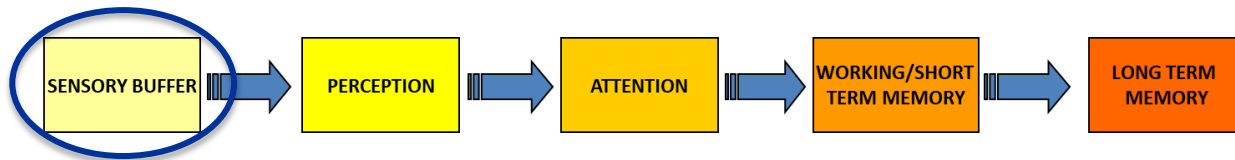
TOUCH



6%

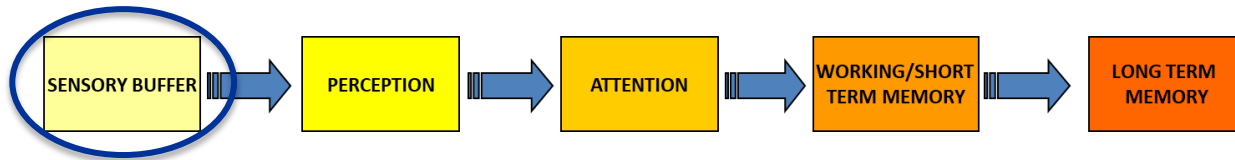
Sensory Buffer and Perception

- **Sensory Buffer** has a possibility to keep the information **briefly** (1-2 sec.), until we **decide** whether to transfer it to the **next stage** of processing
- If this is not done, the **next signal** will **occupy** the previous position
- Detection of **important signals** is called **perception** and it allows us to sort the signals, i.e. **determine** the usefulness / **importance**



Sensory Buffer and Perception

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Perception

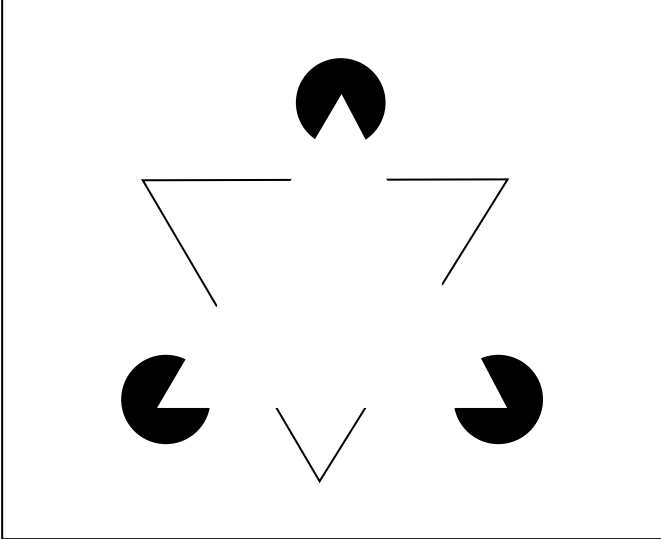
What does the term „**Perception**“ mean to you?

Perception

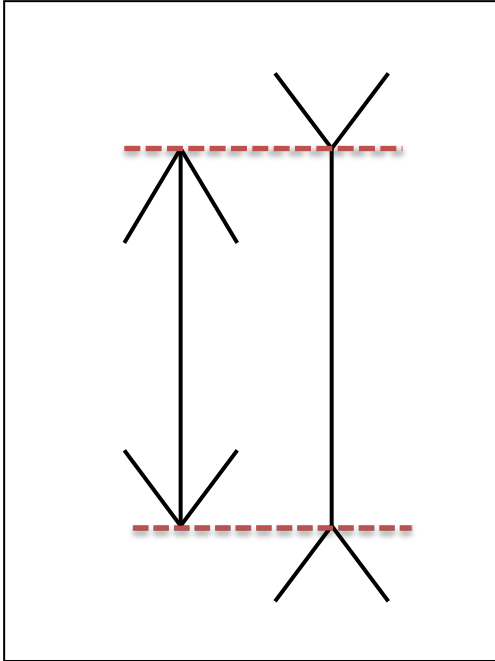
- Perception is the process of **giving meaning** to information obtained through our senses, or
- Perception is a **dynamic search** for the best **interpretation** of available data
- What we perceive is **not the information** but its **interpretation**
- We do **not perceive** things **always the same way** as other people
- **Differences** in interpretation and **confusion** - are the common results of our **visual perception**



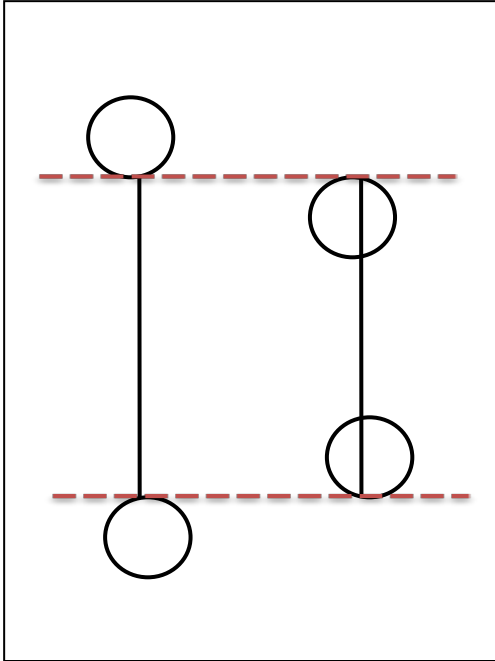
Invisible Triangle



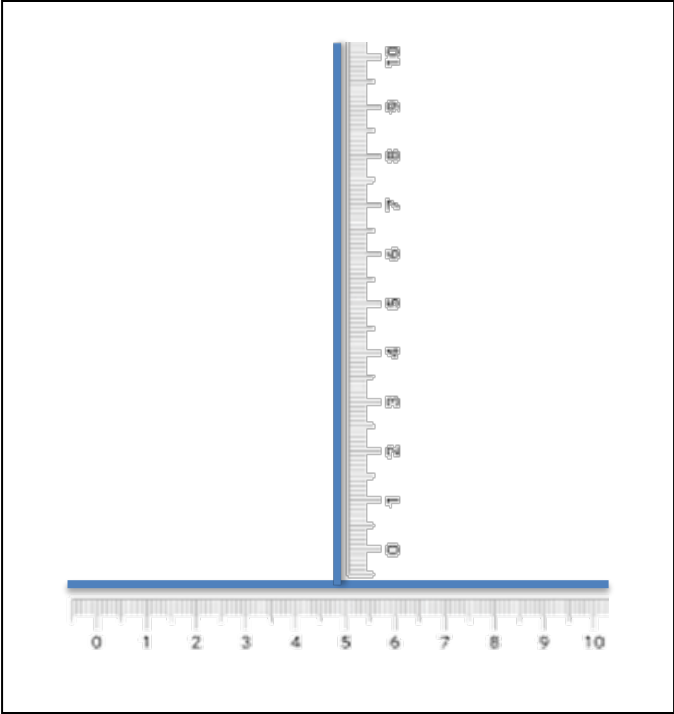
Muller-Lyer Illusion



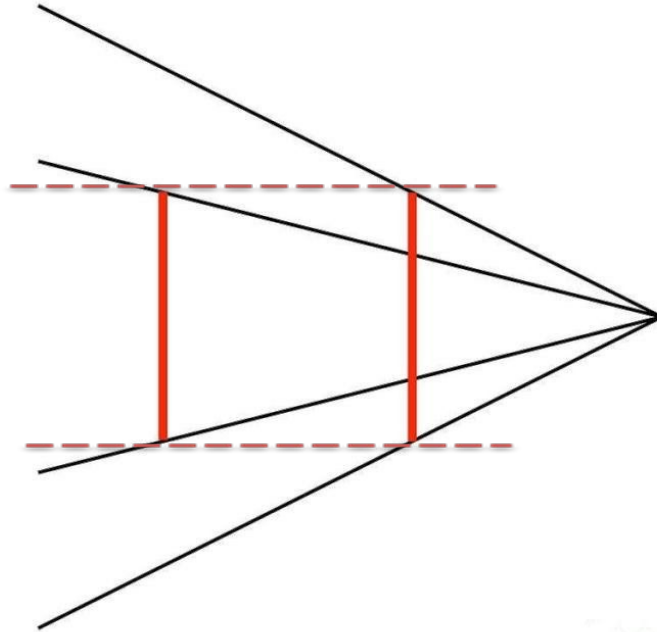
Muller-Lyer Illusion



Horizontal / Vertical Illusion

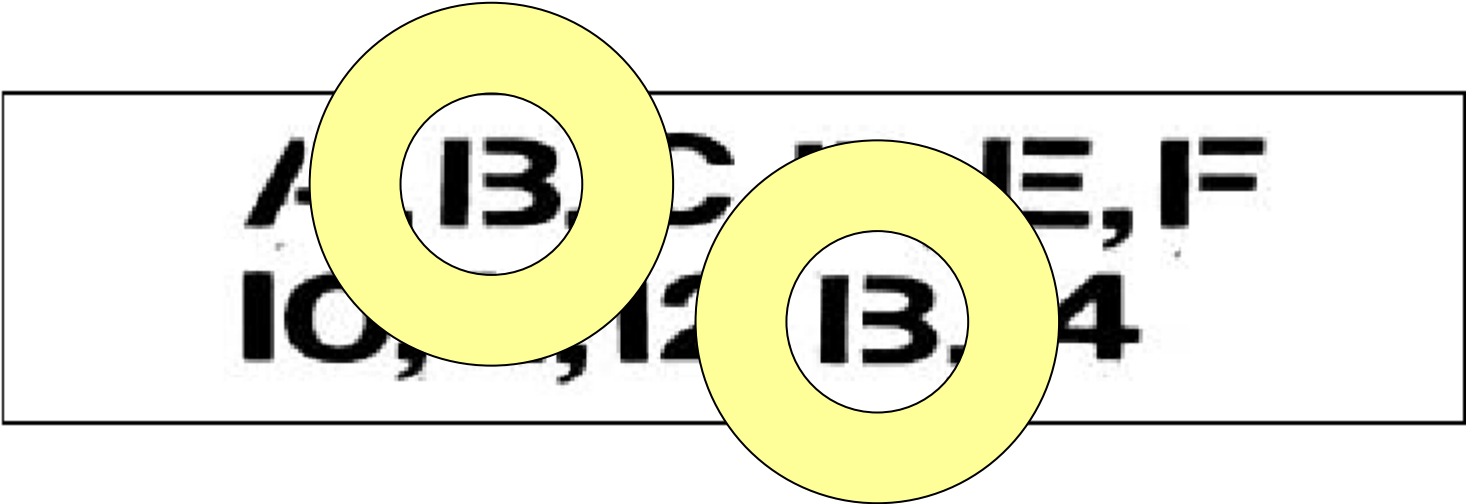


“Ponzo” Illusion



OpticalIllusionsPortal.com

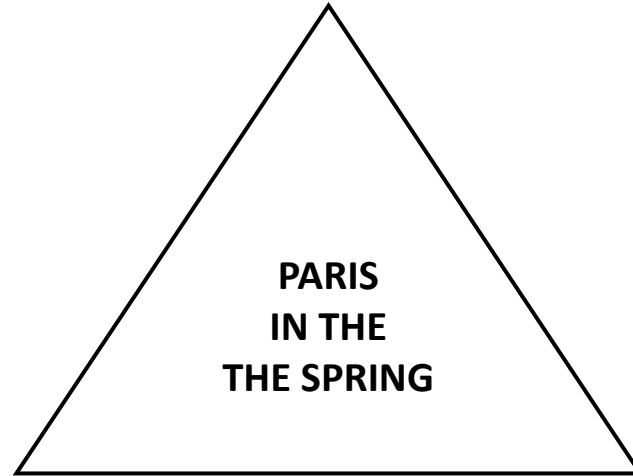
Contextual Perception



Perception and Processing

- The **human brain** has 2 **perception mechanisms**:
 - 1. "**Bottom-up Processing**" - inherited inheritance
 - 2. "**Top-down processing**" - learned after birth
- Hard-wired routines in the brain can sometimes **fool us** so we hear or **see what we expect**
- Our **expectations lead** us to making **mistakes** or making the wrong decisions, which can be dangerous in aviation.

Top Down Processing



Top Down Processing

Try to read the scrambled text below:

"It deosn't mttar in waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteer be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe."

Unobjective Perception

→ **Expectations** - we see what we expect (or want to) see

Expectations can strongly **influence perceptions** and thus affect our actions and consequences

→ **Attitudes** - Our **assumptions** can distort the perception of events (e.g. opposing fans in football : deliberate or unintentional or a casual offense ...)

→ **Preliminary information** - if we **receive** certain information **before** an event, our **perception** of the event is **different**, then in the event that we did not have this information

→ **Personal beliefs** - we perceive only in a way that supports our original beliefs, no matter what we get the opposite information

Attention

- The **great majority** of what comes to our senses is **never perceived**
- The human **brain** has **limited** possibilities of **processing** and interpreting sensory information
- There would be a **chaos** in our heads if would be were **aware of all the things** that come to our senses
- **Internal control** mechanisms are trying to track all the processes we are involved in and **focus attention** where is needed most



Attention

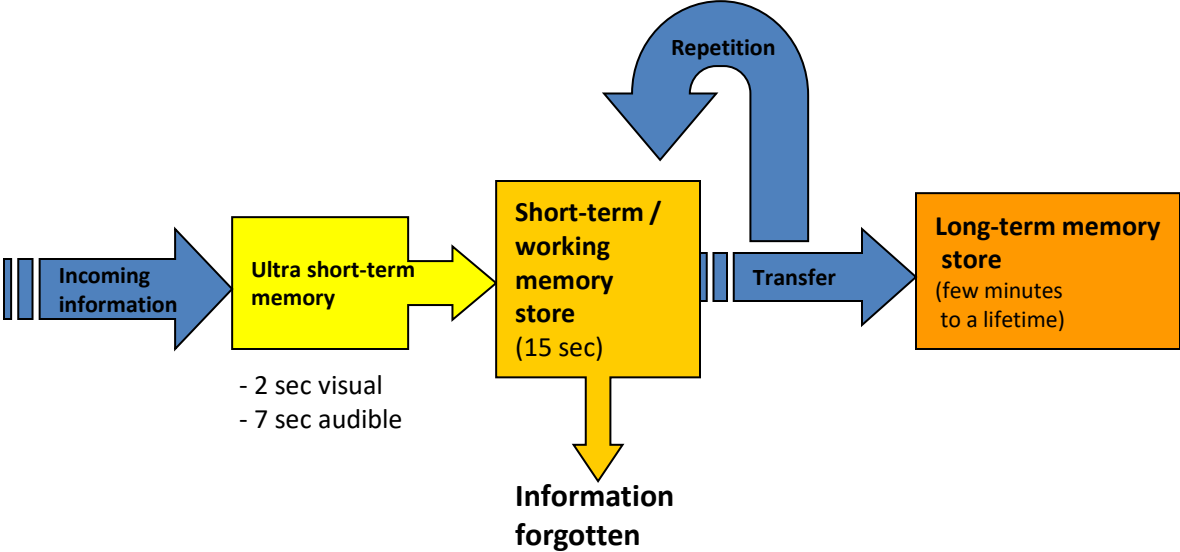
- **Focused** attention requires **monitoring some** sources of information and **ignoring others**
- **Selective attention** is a process in which we **choose** from the multitude of stimuli the **ones we need**
- **Hindering** is unwanted attraction from one impulse **to another** (often because it is more relevant or interesting)
- Attention is **selective**, but we **continue to follow the other** input signals („Cocktail Party Phenomenon“)

Divided Attention

Divided attention is only possible when **one of the actions** is performed with **little mental processing**, for example:

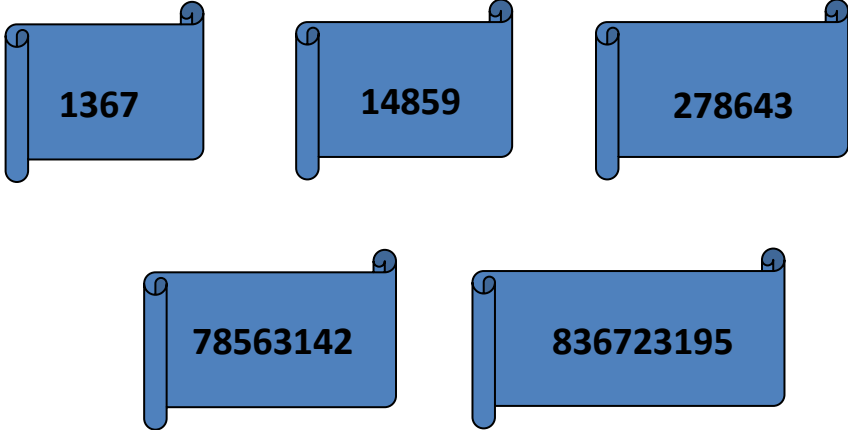
- **Learning to drive** a car requires **focused attention** and any obstruction reduces the quality of performance.
- But when we learn driving skills we do this "**automatically**" with little mental processing, then it is possible to relax chatting on a telephone, singing with a radio, and so on.

The Three-Stage Model of Memory



Short-term (Working) Memory

Repeat following numbers:



Short-term (Working) Memory

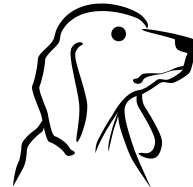
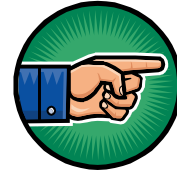
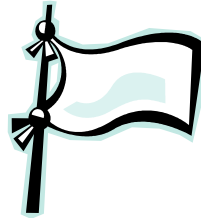
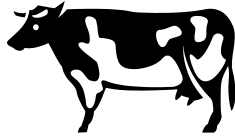
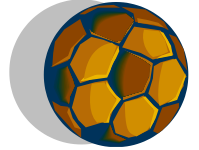
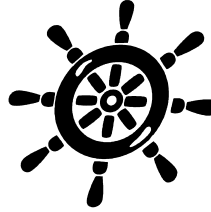
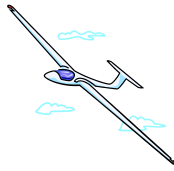
Q: Which methods can we use to enhance our working memory?

- Continuous Repetition - This method is more suitable for voice information than the information given in visual form.
- Chunking - suitable for telephone numbers - 385 1 62 65 466
- Grouping information in a schematic or logical sequence, eg:

918273645546372819099108

Memory Game

Workshop 2



Long-term Memory

2 types:

→ **SEMANTIC** (Semantic Memory)

→ **EPIODIC** (Episodic Memory)



Semantic Memory

- Memorising **the sense**, e.g. **understanding** a word, or knowing the **meaning** of items from the check list
- Information is located in a **network of interrelated ideas** (linked in hypothetical structure - scheme)
- Once successfully stored information is **never lost**

If we **can not remember** some words, that is because we are **not currently able to find** the place where that word is stored in our memory, i.e. it does not mean that we permanently lost it from memory

Episodic Memory

- It contains our knowledge of a **specific event**
- For example, the **memory of a particular** flight or aircraft incident is kept in our episodic memory.
- Memories of episodic memory are **influenced by our expectations** (similar to our perception)

Difference Semantic and Episodic Memory

	Semantic	Episodic
Content and structure	Connected facts w/o learning context	Rich chronological episode recollections
Scale	Limited succinct knowledge	Comprehensive but not accessible
Example	Road routes, vacation dates	Vivid recollection of road trip vacation
Learning process	Multiple exposures	Immediate with exposure
Access	Association	Contextual cues

Human Information Processing System



Which are the **weakest points** of each stage of this process (where errors occur)?

Communication Skills

Lesson 4

Lesson Objectives

After this lesson you will be able to:

- Explain importance of **communication skills** for instructor.
- Name different **communication channels** used in the classroom.
- Explain what to do and what to avoid in **Verbal Communication**.
- Explain how instructor should use „**Body Language**”.
- Describe „**Active listening**”

Communication Skills

Communication is the most **fundamental tool** of transferring ideas and messages, an **ongoing process** in the classroom.

People exchanging messages do **not necessarily understand** the same thing!

The more **successful** you are at **communicating**, the more **competent an instructor** you are going to be.

Verbal and Body Language Communication

There are some different communication channels used in the classroom:

Verbal: e.g. voice communication

Written: e.g. reports, handouts, training documents

Body Language: e.g. body expressions

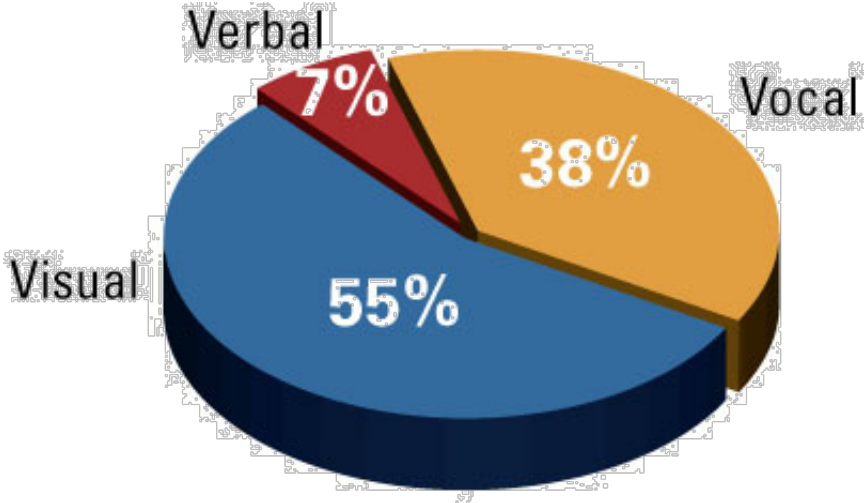
Visual: e.g. slides, posters, pictures

Tactile (touch): e.g. models, specimens

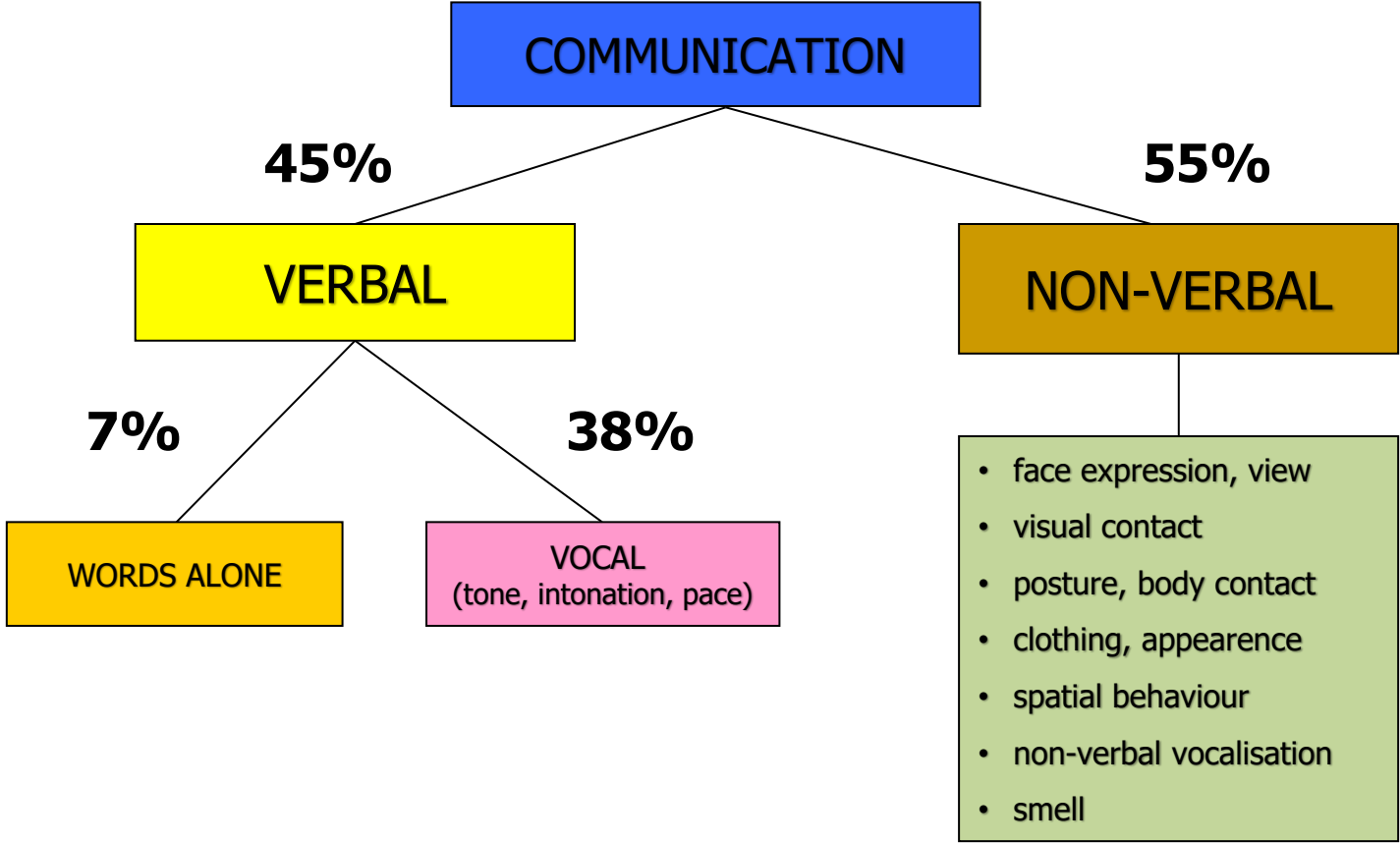
Aromatic (smell): e.g. perfume, body odors

Verbal and Body Language Communication

The **Verbal** is considered as the most often used but words alone transmit a mere **7%** while it is the voice tone and pace variations that ‘highlight’ the verbal message adding **another 38%**. The rest is mainly the **Body Language**



Verbal and Body Language Communication



Verbal and Body Language Communication

Interpretation of a message with emphasis on a single word from a sentence:

1. **I** THINK YOU ARE EFFICIENT
2. I **THINK** YOU ARE EFFICIENT
3. I THINK **YOU** ARE EFFICIENT
4. I THINK YOU **ARE** EFFICIENT
5. I THINK YOU ARE **EFFICIENT**

What to do and what to avoid (Verbal Communication)

- Keep your messages **short**
- **Avoid** the ‘**uuumm**’s and ‘**eeerrr**’s (buzzwords)
- **Speak up** , do not drop your voice
- Use **tone and pace variations** to highlight **important points**
- Speak **more slowly** when explaining **complicated issues**
- Avoid ‘**jargon**’

What to do and what to avoid with the Body Language

Body language is unconsciously transmitting emotions.

These emotions may or **may not accord** with the **verbal message**.

- Be **relaxed** and **smile** at your audience
- Nervousness is **not as obvious** to the audience as to the presenter
- **Use hands and arms** to add emphasis, but **do not over-exaggerate**.
Be aware of, and avoid distracting mannerisms
- Maintain **good eye contact** with the group and with individuals, but **don't stare**

What to do and what to avoid with the Body Language

DO

- Have an open posture
- Smile
- Maintain eye contact
- Have a relaxed appearance
- Have hands at sides
- Have open palms
- Have legs uncrossed

DO NOT

- Cross your arms
- Scowl or frown
- Look away or stare at one person
- Hide behind the desk
- Appear tense and anxious
- Clench your fists
- Put hands in pockets

Communication – Active and Passive Listening

- A **Passive Communication** Circuit does **not include interaction** with the audience, is easier to handle in time and requires no discipline.
- To **control the understanding** of people we need to ‘close’ the loop and turn the passive listening into an ‘**Active**’ one.

Active listening - “2-way communication”

The **steps** in **active listening** are:

1. A **sends** a message
2. B **receives** the message.
3. B **states back** what has been understood, but makes no evaluation
4. A either **agrees** with B's interpretation or, if not, sends the message again
5. The process is **repeated until understanding** has been achieved

Active listening - “2-way communication”

The Active listening :

- **Verifies** the **understanding** or lack of it
- **Clarifies** misunderstanding
- Breaks down learner resistance and gets students **more involved**
- Encourages **improvement in communication** that can only benefit learning

Recap

- Explain why are **communication skills important** for instructor.
- List 5 different **communication channels** used in the classroom.
- What must be avoided when using **Verbal Communication**?
- Describe how instructor can use „**Body Language**”.
- List 5 steps in „**Active listening**”.

Questioning Techniques

Lesson 5

Lesson Objectives

After this lesson you will be able to:

- List **three basic types of questions** and describe their limitations.
- Use **appropriate question technique** in your lesson
- Analyze different ways of dealing with **student answers**

Questioning Techniques

We ask questions for **three main reasons**:

- 1. Promote** two-way communication
- 2. Reinforce** subject-material
- 3. Motivate** the class

Testing Questions

Used to **check** that the student has in fact **learned** what he has been taught.

They can be **used in**:

- 1. Introduction**
- 2. Development**
- 3. Consolidation**

Testing Questions

Involve the student in the development of **new ideas**

Creates a "**Reasoning Situation**".

It has 4 elements:

1. **Lead-in**
2. **Problem**
3. **Solution**
4. **Keypoint**

Questions Categories

- **Open questions** ("What do you think of Satellite Navigation?,,")
- **Closed questions** (require short "yes" or "no" answer which the trainee can guess)
- **Probing questions** (best)
They make the trainee follow a **line of thought** through to a **logical conclusion**. They should not be so 'open' that the trainee misses the purpose of the questions but also not so closed that the answer can be guessed at.

Question types

Workshop 3

Probing Questions

Ask **directly** (avoiding delays) starting questions with :

Why, How, When, Who, Where and What?

- Phrase them **clearly** - ambiguous questions get incorrect answers
- Questions should relate to the essential **teaching points**
- **Decide** on the answer you want

Distributing Questions

Do not always use the same order, ask **randomly**.

Avoid naming the “**victim**” before posing the question.

- **Pose** the question clearly to **all** the students
- **Pause** by giving the students time to **think** of an answer
- **Pounce** by nominating a student by **name** and at random
- **Pose - Pause – Pounce**

Distributing Questions

A **bad question** will render a **bad answer** that will destroy the point you want to make and eventually the learning effect!

Avoid Questions:

- that have an obvious answer
- which require a YES or NO answer
- beyond the knowledge or ability of the students
- that lead to guessing
- tricky questions

Dealing with Answers

If correct, **say so**

- let student **repeat** / reinforce
- use graded **praise** as appropriate

If incorrect, **say so**

- **repeat** or **rephrase** the question
- if still incorrect, say so and **redirect** the student's thought process

Dealing with Answers

Common Instructor **errors**:

- **Not Listening**
- **No Acknowledgement**
- **Answering for the student**
- **Reinforcing Wrong Answers**

How to handle the replies from the students

- no sarcasm if wrong / incomplete
- do not ignore student's effort
- if incomplete pass it to another

- At the end make sure the **correct answer** is given

How to handle the replies from the students

If there is silence:

- Ask if **understood**, if not **rephrase**
- If **complex**, **break down** to steps
- If **incomplete** pass it to another
- At the end make sure the **correct answer** is given

How to handle the replies from the students

If opinions are asked:

Avoid **positive-negative** comment

Your **opinion** will 'kill' discussion

Do not '**take sides**'

Ask another **student to comment** on expressed opinions

How to handle the questions from the students

Listen carefully and **ask yourself** :

- *Do I understand a question from a student?*
- *Why is he asking this question?*
- *Have others understood?*
- *How far can I go on with replies ?*

Recap

- List **three basic types of questions**.
- Describe the limitations of **open questions**.
- Explain what to do if you want important data **to be remembered**
- Explain **Pose, Pause & Pounce**.
- Explain what to do if an answer is **incomplete** ?

Teaching Aids

Lesson 6

Lesson Objectives

After this lesson you will be able to:

- Describe the **purpose** of teaching aids.
- Select teaching aids **appropriate to** a specific **lesson**
- Use teaching aids to **aid learning** and **promote understanding**
- List **main points** you must **take care off** when using teaching aids in a **classroom**.

Definition of a Teaching Aid

Any device, piece of equipment, graphic representation or illustration which helps the student to learn and the instructor to teach more effectively

Teaching Aids

Well prepared audio-visual teaching aids:

- **Supplement** verbal information and highlight key teaching points
- **Illustrate** easily relationships and concepts
- **Consolidate** student learning
- **Arouse** student interest

Audio-Visual Aids

Audio-visual aids should:

- Enhance the message
- Support the teaching point in the most effective way.

Audio-visual aids **are not gimmicks** and excuses for your lack of preparation and **should never become distractions.**

Audio-Visual Aids

The Vision and hearing are 85% of the human input to the brain.

Visual teaching aids must be:

- **Relevant** (to the subject and to the audience)
- **Short** (not too long)
- **Concise** (to the point)
- **Simple** (at the level of your audience)
- **Easy to read/ hear/ see**

The **fatal mistake** with visual aids is **congestion !**

Visual Aids

Visual aids:

- Chalkboards / White boards
- Flip charts
- Flannel boards (Felt boards)
- Posters, Photographs, Maps
- Diagrams
- Magnetic boards
- Overhead projectors (OHP)
- Models, actual objects
- Training notes and handouts

Audio-visual aids:

- Films, video tapes
- Slides/Filmstrips
- Television
- Video camera

Audio-Visual Aids

→ Interactive aids:

Computer based training (CBT)

Simulators

Skills trainers

Interactive e.g. CD ROM, video discs

→ Audio aids:

Language laboratories

Radio recordings

Audio tapes/cassettes e.g R/T tapes

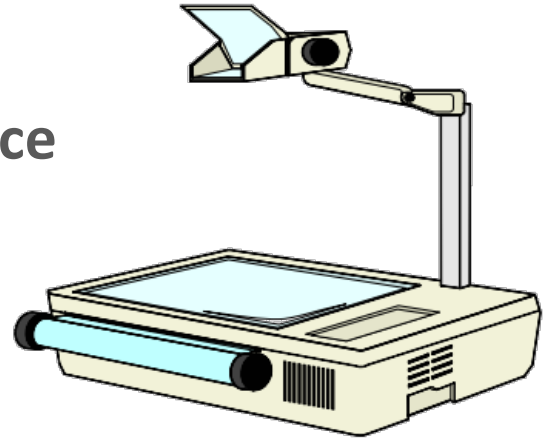
General Rules for the use of Teaching Aids

1. Select the **appropriate aid** to support your **teaching points**
2. Visual aids should be **clean, uncluttered** and **visible** to all
3. Before the lesson **check** that equipment is in **working order**
4. Ensure that you **know how to operate** the equipment
5. Use **color** to emphasize main **teaching points**

The Overhead Projector / Beamer

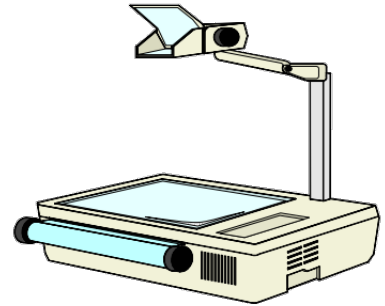
Practical hints

- Check the OHP and that a **spare bulb** is available
- Ensure that OHP is **not blocking** the view of students
- Have transparencies in the **correct sequence**
- **Face the class**, not the screen
- **Turn off** the OHP when not in use
- Use the '**revelation**' technique



Handling Transparencies

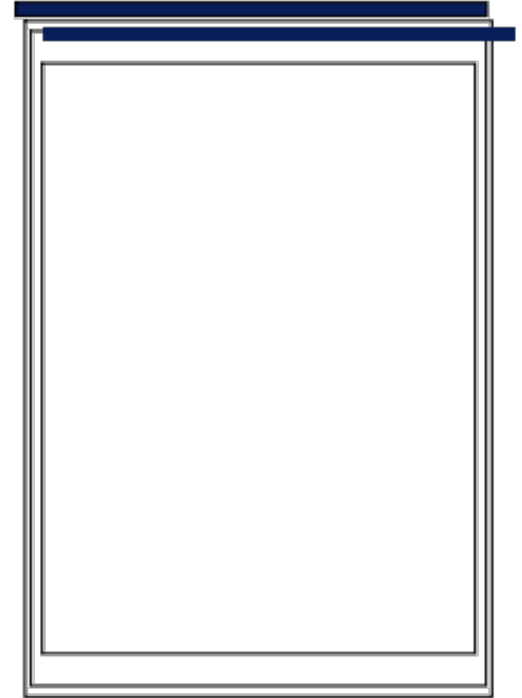
- Use **large type** or capital letters e.g. a font of 16 points
- Write no more than **4/5 words per line**
- Use no more than **5/6 lines per page (A4)**
- Restrict your use of colour to 3 or 4 (red, blue, green and black)
- Keep diagrams and charts **as simple as possible**



Boards - Flip, Chalk, White

When working with boards:

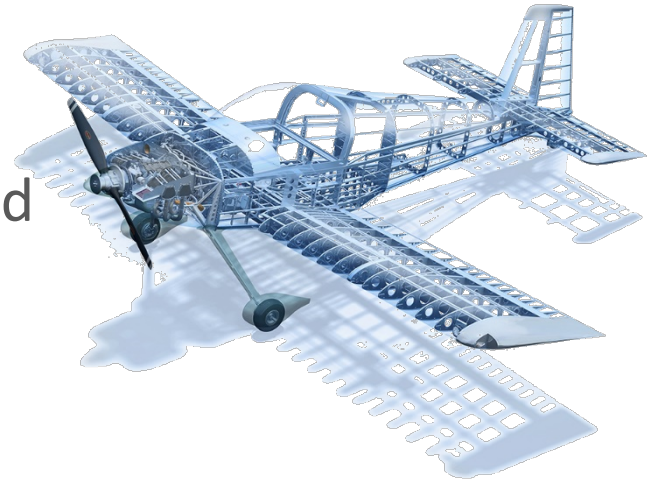
- Write neatly **in large letters**
- Use either *UPPER* or *lower* case letters
- **Plan the layout** to avoid overcrowding
- **Position yourself** to one side of the board
- **Do not 'talk'** to the board
- Introduce **color variation**
- **Prepare** before the lesson if you can
- **Clean** boards at the end of the lesson



Models and Samples

Must be **relevant** and **practical**.

- Keep models **out of sight** until needed
- Have **sufficient examples**
available to keep all students interested
- With large groups - **form sub-groups**
- Student participation is increased and
a **sense of reality** imparted



Films, Videos & AVI (Audio-Visual) Files

Use a film to:

- Introduce a subject
- Summarize a teaching point
- As consolidation
- Give an overview
- Illustrate relationships
- Obtain another point of view
- Bring the **outside world** into the classroom



Films, Videos & AVI (Audio-Visual) Files

The film can be shown:

- First completely, then **selected parts** followed by **discussion**
- **Selected parts only**, to support teaching points
- **At the end** of a lesson as a summary



Handouts

When to distribute them?

Before: offers a **structure** for the students, but if the students read the handout during the lesson, they may fail to follow the instructor.

After: The handout does not distract from the instructor, but the students may **not bother to read it** because they have heard it before



Slide-Show Software (PowerPoint)

Advantages:

- very **easy to change** and/or update your slides
- external objects **can be inserted** in your slides like pictures, other clipart, sounds, movies, etc ...
- **links to** any type of other software



Slide-Show Software (PowerPoint)

Disadvantages:

- **overuse** show features and animations
- **congestion** of text or drawings
- use as the **unique teaching aid** for all occasions (**not correct**)



CBT (Computer Based Training)

The screenshot shows a CBT interface with a teal border. At the top, it says "BITE TEST OF THE ILS". On the left is a "TOOL BOX" with icons for "COCKPIT ACTION", "A/C ACTION", and "AMM". The main area features a white airplane on a blue background with ground support equipment. A text box on the left lists the aircraft status: "The A/C status is: - on ground, - with wheel chocks, - with landing gear safety devices, - grounded, - electrical ground cart available." Below the airplane, a note provides instructions: "Note: - in order to perform the task, please open your documentation at the corresponding page, - if you need to know how the module works, select ? in the TOOL BOX (on the top left side of the screen). - when you are ready, select the arrow just below." At the bottom, there are buttons for "EXIT", "RESET", "BROWSE", "LOGOUT", "HELP", "AUDIO", and "GLOSSARY".

TOOL BOX ?

COCKPIT ACTION

A/C ACTION

AMM

REMINDER HELP

EXIT RESET

BROWSE LOGOUT HELP AUDIO GLOSSARY

BITE TEST OF THE ILS

The A/C status is:

- on ground,
- with wheel chocks,
- with landing gear safety devices,
- grounded,
- electrical ground cart available.

Note:

- in order to perform the task, please open your documentation at the corresponding page,
- if you need to know how the module works, select ? in the TOOL BOX (on the top left side of the screen).
- when you are ready, select the arrow just below.



CBT (Computer Based Training)

→ Advantages:

- **saves instructor time** – reduction in classroom hours
- the student proceeds in its **own pace**
- the student and the instructor receive **useful feedback** and decide to adjust or expedite training

→ Disadvantages:

- Very **expensive**
- **Not applicable** for for all types of training

What about new training methods/technologies?

- Virtual Reality
- Augmented Reality
- Embedded Training
- MSTD – Maintenance Simulation Training Devices
- Simulators (fixed based/full flight)
- Distance Learning (synchronous/asynchronous)
- Multimedia-Based Training (MBT)
- Blended Training

Conclusion

- **Practice** using your aids.
- If you plan to use equipment **make sure**:
 - a) It is **available and working**.
 - b) You **know how to** operate it.
- Make sure **you have all** your aids with you or in the classroom; slides in the **correct order** etc.
- Maintain **eye-contact** with your audience, avoid turning your back

Recap

- What is the purpose of teaching aids?
- List audio-visual aids used in a classroom.
- List possible usages of film in a classroom.
- What are the advantages of using CBT?
- List main points you must take care off when using teaching aids in a classroom.

Theory Lessons

Lesson 7

Lesson Objectives

After this lesson you will be able to:

- Explain **when** to use theory lessons.
- List main parts of the „**Introduction phase**”.
- Explain „**Development phase**” purpose
- List key parameters of „**Consolidation phase**”
- Explain „**Discovery learning**” teaching strategies.

Theory Lessons

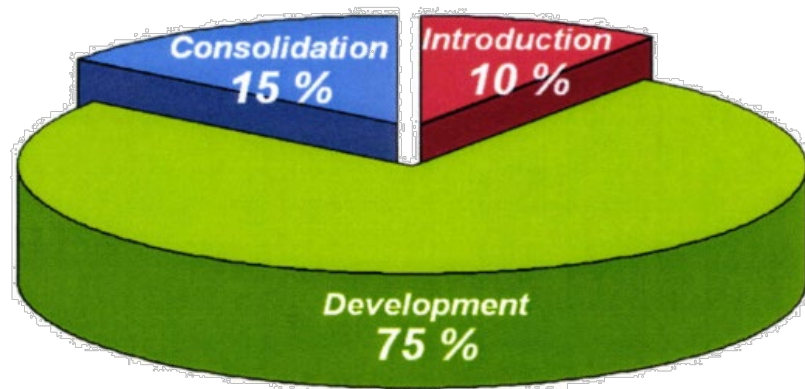
Theory lessons are used to teach material of a "**theoretical nature**", where the performance of the student involves the following activities:

- a) Recall of **facts**.
- b) Descriptions of **procedures or systems**.
- c) Explanations of **cause-effect** relationships.
- d) Analysis and synthesis of **concepts**.

Theory Lessons

Theory lessons are divided into **three parts**:

- Introduction
- Development
- Consolidation



The Introduction

10 % of the total lesson time.

The main parts of the **introduction** are :

- The Need
- Lesson Title
- Lesson objectives
- Revision
- Scope
- Handouts

The Development Phase

- The subject matter broken into a logical sequence of **keypoints**
- Appropriate **teaching strategy** selected
- **75 - 80 %** of the total time of the lesson

The Consolidation Phase

10 - 15 % of the total lesson time

- Recap
- Application
- Handouts

Flexibility

The **instructor** must be **flexible** and deal with problem as they arise.

If students may find the material **difficult** to understand in time:

1. Change the **amount** of material
2. Reduce student **participation**
3. Extend the **lesson**

Teaching Strategies

Two general methods:

- „Discovery learning” (preferred)
- simply "tell" students (sometimes necessary)

Discovery learning strategies

- Known to Unknown
- Simple to Complex
- General to Specific
- Whole to Part
- Reinforcement
- Recap

Recap

- Explain **when** to use **theory lessons**.
- List 3 parts of **theory lesson**.
- List 6 parts of the „**Introduction phase**“.
- Explain what is happening in „**Development phase**“ ?
- List key parameters of „**Consolidation phase**“
- List **Discovery learning** strategies.

Lesson Preparation

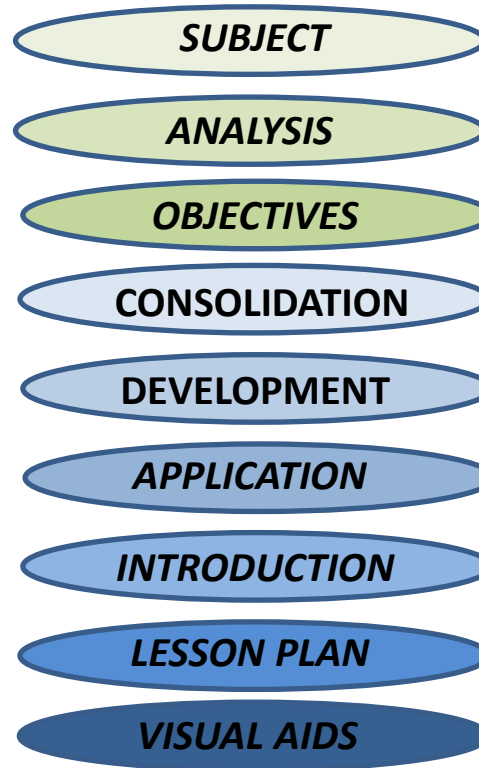
Lesson 8

Lesson Objectives

After this lesson you will be able to:

- State the **sequence of steps** in lesson preparation
- **Prepare a lesson** following the steps and using a lesson preparation sheet

Lesson Preparation



Lesson Preparation

Subject and General Objectives

- Decide on a **subject** and the **main areas** that you wish to cover.

SUBJECT

ANALYSIS

Analysis

- Break down the subject material into **Key Points**
- Ask yourself **WHY** each KP exists, **purpose/function**
- Determine the "**LOGICAL**" teaching **sequence**

Lesson Preparation

Detail the Objectives

→ What the students **will be able to "DO"**

Consolidation

→ Devise **testing type question** on the **Key Point** to meet the **OBJECTIVES**

SUBJECT

ANALYSIS

OBJECTIVES

CONSOLIDATION

Lesson Preparation

Development

- a. Plan the **METHOD** of participation
- b. **Methods** concerning the **Key Points** (specific question, visual aids, method of conducting the final summary)
- c. **Round-off** the development
- d. Check that the **sequence** of Key Points in the Development and Recapitulation are the same

SUBJECT

ANALYSIS

OBJECTIVES

CONSOLIDATION

DEVELOPMENT

Lesson Preparation

Application

- Set question to test for **understanding** in relation to your "**work situation**" experience.

SUBJECT

ANALYSIS

OBJECTIVES

CONSOLIDATION

DEVELOPMENT

APPLICATION

Lesson Preparation

Introduction

- a) Determine the **NEED** for the subject
- b) Choose the **TITLE** of the lesson.
- c) Phrase the **OBJECTIVES**.
- d) **REVISE** any relevant material from previous lessons
- e) If the lesson does not follow the normal format, then give the lesson **SCOPE**.
- f) **HANDOUTS**, do you hand out lesson notes?

SUBJECT

ANALYSIS

OBJECTIVES

CONSOLIDATION

DEVELOPMENT

APPLICATION

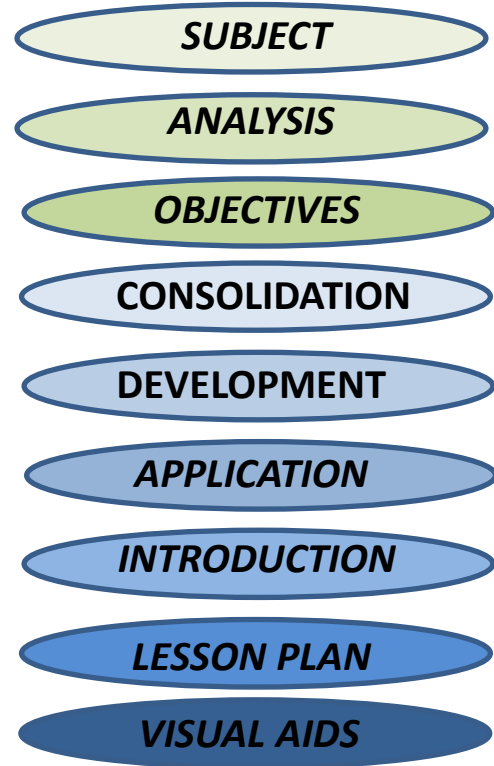
INTRODUCTION

Lesson Preparation

Write Lesson Plan / Notes

- **Keywords** to aid your memory when delivering the lesson
- **Bold** writing or printing
- **Color** to emphasize and distinguish questions

Prepare visual aids



Lesson Preparation Check Sheet

Demonstrate Lesson Preparation Check Sheets to student
(PDF - „Lesson Preparation Check Sheet - Example”)

Homework

→ Watch the video on You Tube

“You’ll soon get the hang of it”

<https://www.youtube.com/watch?v=im1pltiau8M>

Instructor and Students

Lesson 9

Lesson Objectives

After this lesson you will be able to:

- Explain the **5 characteristics** the instructor should use to his advantage.
- State **positive and negative behaviors** the instructor must consider when teaching students.
- Explain how you can deal with a **problematic situation** during class.
- Explain how **motivation** affects training **performance**

The Instructor

The **personality** and **manner** of the instructor influence **effectiveness** of student learning.

There are **five characteristics** which must be adjusted or tempered to avoid impeding student learning.

The Instructor

- Body Language
- Voice
- Attitude
- Confidence
- Appearance

The Instructor

If you are uncertain or don't know the answer:

1. say you **don't know**
2. say you will **find out**
3. pass the answer on **later**

Instructor Behavior

DO:

- be enthusiastic
- be sympathetic and considerate
- be patient
- listen to the students
- retain your sense of humor
- avoid mannerisms
- have professional attitude

DO NOT:

- be sarcastic or ridiculous
- be cynical
- embarrass or humiliate students
- be authoritarian
- be under-prepared
- bluff to cover lack of knowledge
- throw things across the classroom
- blame the "system"

Instructor (Self)improvement

- Instructor (self)improvement is a constant effort
- The fact that an instructor has taught for some time does not mean that he/she has made significant improvement
- As an instructor you must always seek to improve:
 - Knowledge of teaching techniques
 - Positive personality
 - Leadership ability
 - Professional attitude

Instructor (Self)improvement

- To improve yourself as an instructor you should always...:
 - know (and keep in mind) what makes good instructors,
 - observe other instructors,
 - analyse your own characteristics,
 - concentrate on specific elements (techniques, systematic plan,...),
 - seek help of associates,
 - develop good relationships with students,
 - make constant effort to improve.

Students

AMT students are **usually adults**.

They have following characteristics:

- They are **responsible, independent** and **resourceful** individuals
- They have the potential to learn their profession, they are **tested and selected**

Student Types

Instructor must be able to handle **different types** of students:

- a) The "**uninterested**" student
- b) The "**slow**" student
- c) The "**sleeper**"
- d) The "**bright**" student
- e) The "**Joker**"
- f) The "**know-all**"

Handling Interruptions

- Stay **calm and factual**
- Decide on the **objective** of your lesson
- **Acknowledge** participants' contributions
- Formulate clear **rules**
- No one participant **can dominate** your lesson

Handling Interruptions

- **Sum up** what has been said
- Give people regular breaks
- **Use visual aids**
- Ask **probing questions**
- Keep **eye contact**

Handling Interruptions

- If there is something that bothers you - **address** it
- **Postpone** answering very **advanced questions** until after your lesson
- If interruptions from one person persist talk to him **one to one** or use **reporter** technique.

What students expect from Instructor

- **Knowledge** from the fields he teaches
- Good **instructor skills**
- To be treated **as equal**

Student Internal Motivational Factors

- **Desire** to learn
- Self-**fulfillment**
- Self-**confidence**
- Feeling of **achievement**
- Feeling a **contribution**
- Feeling **belonging to a group**
- etc.

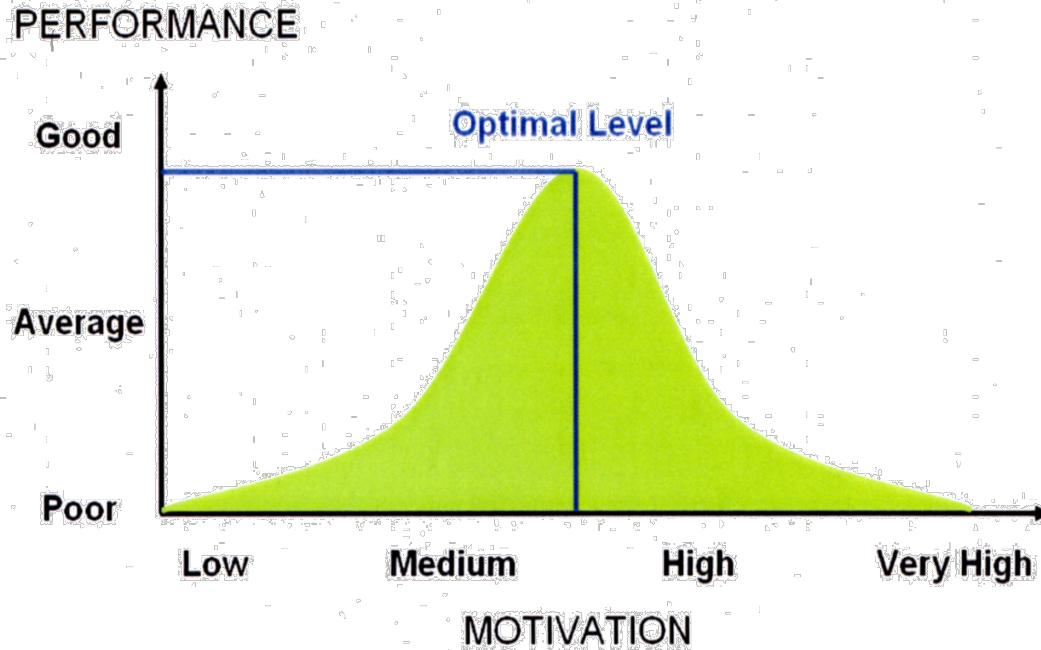
Student External Motivational Factors

- Instructor's **style**
- Training **environment**
- Training **methods**
- **Group** support
- **Praise**
- **Recognition**
- etc.

Instructor Influence On Student Motivation

- Emphasize the **importance** of the subject of the lecture **for students**
- **Involve** students and **accept** their **experiences**
- Give examples of your **own experience**
- Show **enthusiasm**
- etc.

Motivation and performance



Recap

- Explain the **5 characteristics** the instructor should use to his advantage.
- State **3 positive and 3 negative behaviors** the instructor must consider when teaching students.
- State **5 methods for handling interruptions** from students
- Explain how you can handle **constant interruptions from one student** during lesson
- Explain how **motivation** affects training **performance**

The Classroom

Lesson 10

Lesson Objectives

After this lesson you will be able to:

- Describe **elements** of teaching **environment** that are **conducive** to learning.
- Choose right **classroom layout** for your class.

The Classroom

Ensure that the teaching environment is **conducive** to learning.

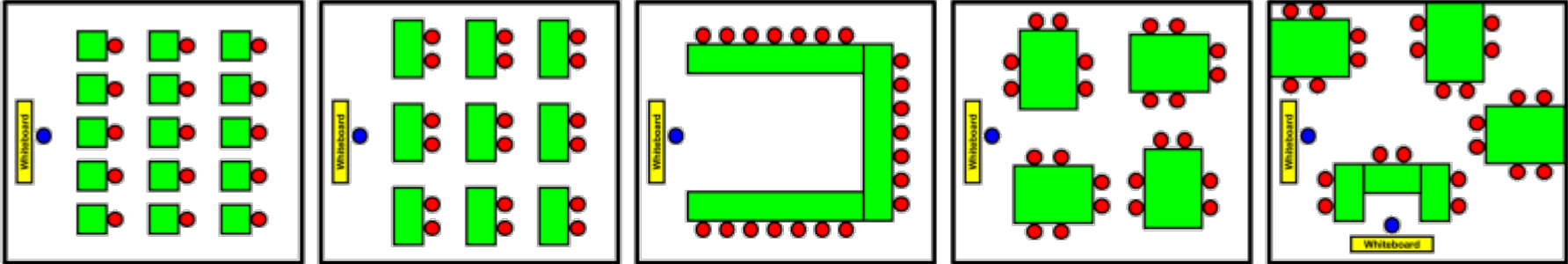
The environment:

- **Lighting**
- **Heating/Cooling**
- **Ventilation**
- **Distractions**

The Classroom

Students should be able to see and hear the instructor as well as all of the training aids:

Possible layouts:



promotes individual learning

promotes collaborative learning

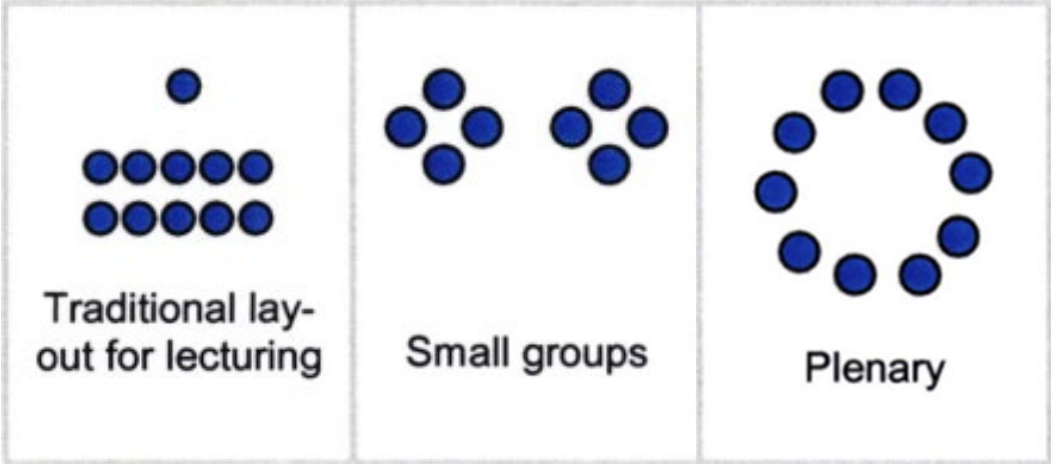
less off-task behaviour

more off-task behaviour

The Classroom

Students should be able to see and hear the instructor as well as all of the training aids:

Possible layouts:



Recap

- State 4 elements you need to take care of to **ensure teaching environment** that are **conducive to learning**.
- Name 5 possible **classroom layouts**.
- Describe **collaborative learning environment**.

Tests and Assessments

Lesson 11

Tests and Assessments

Assessment is defined as any attempt to describe or categorize someone or something in relation to any chosen criterion or criteria.

A test is defined as a specific measure of a student's achievement following a period of training.

Assessment of a student's **progress** through a training course may consist of a **number of tests**.

Formative Assessment

- **Formative assessment** is assessment of the **student's progress** as the course proceeds
- Performed **after a particular phase** in training
- The main purpose of this method is to **identify** areas of weakness so that **remedial action** can be taken.
- Formative assessment is a **diagnostic tool**.

Summative Assessment

- **Summative assessment** is represented by **terminal tests** and examinations that come **at the end** of a formal course.
- It is the assessment of the student's **level of achievement**, at the **end of a course**
- An attempt to reach an **overall description** of the student in terms of an end of course **report or grade**.

Norm-Referenced Assessment

- **Norm-referenced assessment** is designed to determine an individual's achievement with respect **to the group** or class in which he/she belongs.
- The basic purpose of a norm-reference assessment is to **discriminate between individuals**.
- One question sums it up "*Has X scored greater than Y*"?

Norm-Referenced Assessment

- **Criterion-referenced assessment** is designed to determine an individual's performance with reference to a set of **predetermined standards**.
- It is **not concerned** with how an **individual's** test result compares with other members of his group
- The question to ask here is "***Can X do it? can Y do it?***"?

The Purpose of Testing

1. **Instruction** - confirms whether or not an individual has mastered certain knowledge or skills is ready to move on to new material
2. **Diagnosis** - designed to identify where the individual or the methods of instruction are going wrong so that action can be taken to rectify the situation
3. **Selection** - used to determine who is to be admitted or excluded, employed or rejected, passed or failed.
4. **Placement** - used to determine the job to which an individual is most suited or, which program of training will best suit an individual.
5. **Motivation** - Students are motivated to learn when faced with a test of that learning. Assessment is for learning rather than of learning. It is undesirable that students are motivated to learn more out of fear of failure than out of the desire to learn.

Training System Assessment

- Both students and the training system must be **continually assessed** to ensure that the desired **standard is maintained**.
- Training **management** must **evaluate training** by using the **results** from the assessments.
- **Low pass rates** are not just caused by the students.
- Poor instruction, inadequate resources, lack of practice, insufficient feedback , poor time-planning are **usual causes**

Objective Tests

The main types of **objective questions** are:

1. **Multiple choice objective questions (MCOQ)**
2. **True-false questions**
3. **Multiple completion questions**
4. **Matching pairs questions**
5. **Short answer questions**

Writing Multiple choice objective questions

There are a number of **simple rules**:

- Question statement should be **meaningful** and should present a **definite problem**.
- Question should be **concise** and only include as much relevant **material** about the problem **as is necessary**.
- The use of **negative** questions should be **avoided**. Where they are necessary, they should be **highlighted**.
- There should be **grammatical consistency** between the question and the answers.

Writing Multiple choice objective questions

- A question must have **only one correct answer**.
- All of the answers should be as **equally plausible** as possible.
- Question should **not give a hint** or clue to the answer by its content.
- The **length of the answers** should not provide a clue to the answer
- The **correct answer** should not appear in the **same position** in each question.

How NOT to write Multi-Choice Questions?

Workshop number 4

Bad Questions/Bad Answers:

Precise levelling is carried out by using a ...:

- a) ruler and inclinometer at the cargo door sill between FR14 and FR17.
- b) plumb bob attached to the cargo door sill between FR14 and FR17.
- c) sight tube and inclinometer.

Answer C is too short.

***All answers should be of the similar length**

Bad Questions/Bad Answers:

The ATR family is fitted with the engines manufactured by ...:

- a) CFM.
- b) Pratt & Whitney.
- c) Rolls Royce.

Bad question. Probably not following course objectives

Bad Questions/Bad Answers:

To fully open and secure the cargo door ...:

- a) Open the lock handle, the latch handle and press the door up selector switch until door has stopped.
- b) Open the lock handle, the latch handle and press the door up selector switch until door has stopped and engage the door hold open rod.
- c) Open the lock handle, the latch handle and press the door up selector switch until door has stopped and remove external power from the aircraft.

Bad answers:

Repeated words in the answers should be stated in the question

Bad Questions/Bad Answers:

Take off alert inhibit is automatically activated by the FWA when the following conditions are met:

- a) Aircraft on ground, PWR MGT in TO, Both PL at or above T/O Position, both NH above 60% and no LOP on either engine
- b) Aircraft on ground, PWR MGT in TO, either one PL at or above T/O Position, either NH above 60% and No LOP on either engine
- c) Aircraft in AIR, PWR MGT in TO, both PL at or above T/O Position, both NH above 60% and no LOP on either engine.

Bad question/answers:

Too many acronyms

Bad Questions/Bad Answers:

What is the purpose of the MFC Bite loaded magnetic indicator?

- a) Shows faults and is located on the Left Maintenance Panel
- b) Indicates at least one fault recorded located on Right Maintenance Panel
- c) Shows a fault code display on the Right Maintenance Panel

Bad answers:

Answers have double objectives.

Each question should address 1 objective and each answer should address 1 objective

Bad Questions/Bad Answers:

What is the voltage and capacity of the main and EMER battery?

- a) Main 28 V 42 AH / EMER 28V 15AH
- b) Main 24V 42 AH / EMER 24V 15AH
- c) Main 28V 15AH / EMAR 28V 42AH

Bad question/answer:

Both the question and answers is trying to address quadruaple objectives:

- **Voltage**
- **Ampere**
- **Main battery**
- **EMER battery**

Bad Questions/Bad Answers:

A connection screw can be installed in two different positions. Which location is correct from safety point of view?

a) The nut must be installed at the bottom.

b) The nut must always be installed at the top.

c) The nut may be installed as desired.

Bad answer:

Absolute terms such as “never”, “always”, „only”, should not be used in order to make statements clearly false. Such absolutes often enable false answers to be identified intuitively.

Bad Questions/Bad Answers:

How often can a locknut with fibre ring be used?

a) twice

b) always once only

c) three times

Bad answer:

Answer B stands-out. Author was obviously focused on the correct answer and tried to phrase this as precisely as possible. Little attention was paid to the false answer, which was perceived as a mere “background noise”. Candidates who are experienced in tests would have a good chance of success by selecting answer “b)”.

Writing True/False Questions

- Each question should contain only **one statement** to be judged
- **Negative** statements should be **avoided**
- Words such as **never or always** should be **avoided**
- Statements should be **short** so as to be clear and easily **understood**.

Short Answer Questions

Less **objective** than other types of objective questions

Short answer questions can **require**:

- a. **calculation** to be performed
- b. **answer** in the form of a short statement or **definition**
- c. **drawing** to made

Subjective Tests

Assessor has to apply his **judgement, knowledge and experience** of the subject in order to decide if the candidate has reached the **required standard**.

Such tests include:

- **essay** examinations
- **oral** tests
- assessment of **performance**

Essay Questions

Essay examinations are good for testing:

- the degree of **understanding**
- powers of **recall**
- **communication** skills

Essay Questions

Disadvantages of Essay Questions:

- They test **knowledge** not skill
- They are **unreliable** due to subjective marking and poor sampling
- They depend heavily on **literacy skills**
- **Marking** is unreliable

Oral Testing

Oral testing may be used **on its own** , or it may be used **as part** of an overall assessment.

It gives a **more accurate** reflection of the **ability** of those students who do not perform well in written tests

Oral testing should take the form of a **structured interview** based upon a **criterion-referenced checklist**.

Course Contents

COURSE OBJECTIVES

1

THE STAGES OF LEARNING
(ACTION VERBS)

2

HUMAN INFORMATION
PROCESSING SYSTEM

3

COMMUNICATION SKILLS

4

QUESTIONING TECHNIQUES

5

TEACHING AIDS

6

THEORY LESSON

7

LESSON PREPARATION

8

INSTRUCTOR AND
STUDENTS

9

CLASSROOM

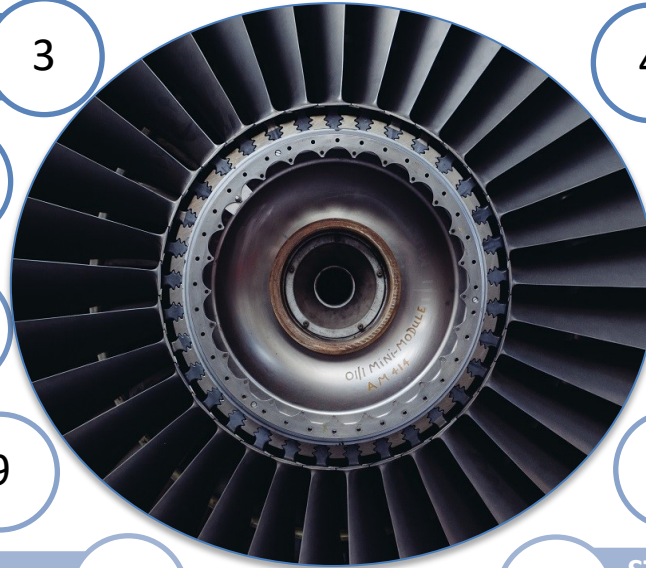
10

TESTS AND ASSESSMENTS

11

STUDENT'S
PRESENTATIONS

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Practical exercise: Prepare 15-minute lesson by using the principles learned

Assessment of the lesson

Workshop 5

THE END

Thank you for your participation

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