

# sky4.0



## ANALYTICAL THINKING

*Sky4.0 curriculum*



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CURRICULUM PLAN .....	4
<b>1 INTRODUCTION .....</b>	<b>6</b>
1.1 Come and know Sky 4.0 project .....	7
1.2 Reflexion, relation and action .....	7
1.3 Who is sitting next to us? .....	8
1.4 Planning the training .....	9
<b>2 DEFINITION OF THE CONCEPT .....</b>	<b>9</b>
2.1 What is analytical thinking? What characterise people with analytical thinking? .....	13
2.2 Harry, Ron and Hermione .....	13
2.3 Three mini-cases about analytical thinking: First part.....	16
2.4 The thermometer of the analytical thinking.....	17
<b>3 THE 3 MAIN ASPECTS TO WORK THE ANALYTICAL THINKING .....</b>	<b>17</b>
3.1 Relevance and inference. How many piano tuners are in New York City? .....	21
3.2 Decisiveness and serenity. Analytical thinking under time pressure.....	22
3.3 “Use the Pensieve “. What Harry Potter teaches us .....	22
3.4 Developing the self-observation muscle .....	23
<b>4 BREAKS AND OBSTACLES.....</b>	<b>23</b>
4.1 Identifying your own being human and people related cognitive biases and common thinking errors 30	
4.2 Activities for bias awareness.....	30
4.3 Fighting against people related thinking errors or fallacies. Role play.....	31
<b>5 IMPROVEMENT (CHANGE) .....</b>	<b>32</b>
5.1 We don’t want to think. Irrational beliefs behind deficient analytical thinking behaviours .....	39
5.2 What were Harry, Ron and Hermione afraid of? The Irrational Beliefs .....	40
5.3 Irrational beliefs behind deficient analytical thinking behaviours. Revisiting the three mini-cases: Second part.....	41
5.4 Changing behaviours: When you feel offended .....	42
5.5 Exercising self-regulation. Inside or outside. Imagine and visualize.....	42
5.6 A Decalogue: 10 things to change .....	42
5.7 The bidding contract for change.....	43
<b>6 GRADUATION .....</b>	<b>44</b>
6.1 “Houston, we’ve had a problem”. Role play.....	44
<b>ANNEXES .....</b>	<b>46</b>
ANNEX 0 – Harry, Ron and Hermione .....	46
ANNEX I - Three mini-cases about analytical thinking: First part .....	47
ANNEX II – The thermometer of the analytical thinking .....	49
ANNEX III – Relevance and inference. How many piano tuners are in New York City? .....	51

ANNEX IV – “Use the Pensieve “. What Harry Potter teaches us .....	52
ANNEX V – Developing the self-observation muscle .....	53
ANNEX VI – Activities for bias awareness.....	54
ANNEX VII – Fighting against people related thinking errors or fallacies. Role play.....	57
ANNEX VIII – We don’t want to think. Irrational beliefs behind deficient analytical thinking behaviours .....	62
ANNEX IX – What were Harry, Ron and Hermione afraid of? The Irrational Beliefs .....	63
ANNEX X – Irrational beliefs behind deficient analytical thinking behaviours. Revisiting the three mini-cases: Second part.....	64
ANNEX XI – Exercising self-regulation. Inside or outside. Imagine and visualize .....	66

## CURRICULUM PLAN

<i>Didactic Unit</i>	<i>Time</i>	<i>#</i>	<i>Effects of Didactic Unit</i>
<b>Introduction (60')</b>	10'	1.1	<b>Come and know Sky 4.0 project</b> Awaken the interest in the participants for the topic to be presented;
	20'	1.2	<b>Reflexion, relation and action</b> Check through the behaviour of the participants their abilities for analytical thinking and their levels.
	20'	1.3	<b>Who is sitting next to us?</b> Participants will have to put in practice its empathetic listening and communications abilities to get to know the person that is sitting next to them and introduce that person to the group.
	10'	1.4	<b>Planning the training</b> Presentation of the training program and objectives.
<b>Definition of the concept (210')</b>	60'	2.1	<b>What is analytical thinking? What characterise people with analytical thinking?</b> Build the definition and characteristics of analytical thinking with the interaction of the participants. The trainees will be acquainted with the theoretical basis of analytical thinking and, skills and attitudes of a person with this competence.
	60'	2.2	<b>Harry, Ron and Hermione</b> The participants will be presented an extract of the book to illustrate the valour of the analytical thinking. Discuss how analytical thinking helps Harry, Hermione and Ron to solve the situation.
	60'	2.3	<b>Three mini-cases about analytical thinking: First part</b> The participants will be presented with the first part of three different mini-cases that illustrate different degrees of analytical thinking.
	30'	2.4	<b>The thermometer of the analytical thinking</b> Participants will evaluate what is their starting point in terms of analytical thinking characteristics and behaviours.
<b>The 3 main aspects to work the analytical thinking (120')</b>	30'	3.1	<b>Relevance and inference. How many piano tuners are in New York City?</b> Being able to determine what is relevant and inference conclusions from information are two essential conditions for analytical thinking. The instructor will ask participants to test their relevance and inference by discussion in groups the question: <i>How many piano tuners are in New York City?</i>
	40'	3.2	<b>Decisiveness and serenity. Analytical thinking under time pressure</b> Participants will watch a video and discuss the process of analytical thinking, how external pressures affect that process and what are the traits of the pilot that make his decision making process reliable even under pressure. Discuss how he exhibits serenity and decisiveness.
	20'	3.3	<b>"Use the Penseive ". What Harry Potter teaches us</b> Reflection is a process of recalling an event with a view to analysing and evaluating that experience.

	30'	3.4	<b>Developing the self-observation muscle</b> Self-observation never becomes habitual, it requires continuing practice. Participants will exercise and develop the self observation capacity.
<b>Breaks and obstacles (275')</b>	30'	4.1	<b>Identifying your own being human and people related cognitive biases and common thinking errors</b> Explanation of the most important human biases.
	60'	4.2	<b>Activities for bias awareness</b> Participants will discover their biases in a non-confrontational manner.
	185'	4.3	<b>Fighting against people related thinking errors or fallacies. Role play</b> Explanation of the most common fallacies. This role play is designed to get to grips with logical fallacies, by using them in the discourse and by identifying them in the discourse of an opponent.
<b>Improvement (change) (255')</b>	30'	5.1	<b>We don't want to think. Irrational beliefs behind deficient analytical thinking behaviours</b> Participants will understand the barriers that prevent them for proper thinking and how their behaviour seems to be habitually influenced by an irrational assumption about living well.
	30'	5.2	<b>What were Harry, Ron and Hermione afraid of? The Irrational Beliefs</b> Reinforce the idea that we need to overcome our fears and irrational beliefs.
	45'	5.3	<b>Irrational beliefs behind deficient analytical thinking behaviours. Revisiting the three mini-cases: Second part</b> The participants will be presented with the second part of the three mini-cases and will have to identify which of the prejudices are or might be present for each case.
	30'	5.4	<b>Changing behaviours: When you feel offended</b> Explanation of REBT's healing process.
	30'	5.5	<b>Exercising self-regulation. Inside or outside. Imagine and visualize</b> Participants will exercise self-regulation.
	40'	5.6	<b>A Decalogue: 10 things to change</b> Participant will reflect on their behaviour in different areas of their lives: work, personal and social, then perform a "Decalogue" that allows them to have a commitment to it.
	50'	5.7	<b>The biding contract for change</b> Participant will write in a folio a "contract" whereby the participant acquires a greater commitment to change in relation to analytical thinking.
<b>Graduation (120')</b>	120'	6.1	<b>"Houston, we've had a problem". Role play</b> Participant will exercise all the concepts learned during the course.

# 1 INTRODUCTION

## DIDACTIC UNIT 1 - INTRODUCTION

**Theoretical context:**

### Learning activity 1.1

In Sky 4.0, we propose an innovative and solid system of training of soft skills to help the aviation personnel, future or existing to overcome the challenge that the changes of the industry 4.0 suppose.

Within the detected soft skills that contribute to the optimal development of human aviation capital, we have the analytical thinking, which we will develop next.

### Learning activity 1.2

*"Analytical thinking is to reflect on what you reflect, while you reflect, so that your reflection is less."* Richard Paul Although it may seem like a tongue twister, this definition reflects the essence of analytical thinking.

### Learning activity 1.3

Icebreakers are widely used techniques that consist of fostering a good atmosphere in the group that shares a common space. These techniques help reduce tension and initial embarrassment, help develop a feeling of well-being, favour collaborative processes, and help group members get to know each other and integrate.

Among these techniques there is a style, called in English as get-to-know-you (let us meet you), which is focused on making the group members know each other better. One of the issues that should be taken into account is the profile of the group and the function of the activity that they should perform.

Empathic listening is about really understanding the person who is talking to you. That means it goes beyond active listening, for which the listener uses nods, listening posture and listening sounds like *"yeah, yeah"* and *"hmm"* to encourage the person speaking to continue talking.

### Learning activity 1.4

The training will be divided in several stages. The first one will be centred to understanding what analytical thinking is and what characteristics and behaviours exhibits the people with this soft skill.

The training will highlight, trough practice exercises, other skills that become effective tools to improve analytical thinking, in particular emphatic listening, decisiveness and inference, decision and serenity.

The student will understand the role of human cognitive nature and our social aspect in analytical thinking; and how our behaviours and acts can be affected by biases and common thinking error and fallacies. Biases and fallacies conform the way we think and might be impending or misleading our analytical thinking. Observation and self-observation will be presented as the main tool to monitor, identify and mitigate our own biases and the thinking errors.

The third part of the course will be dedicated to the main enemy of analytical thinking: we don't want to think. Student will learn about the irrational beliefs behind deficient analytical thinking behaviours; and how these behaviours can be changed trough the analysis of thoughts and emotions.

The training will increase the understanding of your emotions and reactions give you the knowledge of importance of analytical thinking in work environment and show how to increase personal abilities concerning analytical thinking.

## 1.1 Come and know Sky 4.0 project

LEARNING ACTIVITY 1.1 – COME AND KNOW SKY 4.0 PROJECT	
<b>Duration</b>	10 minutes
<b>Objectives</b>	<ul style="list-style-type: none"> <li>-Awaken the interest in the participants for the topic to be presented.</li> <li>-Acknowledge the existence of sky 4.0 project and its objectives, and understand why soft skills are relevant for the future of aviation.</li> <li>-Introduce and strengthen the soft skills necessary for the implementation of industry 4.0 in the aviation sector.</li> </ul>
<b>Guidance for the correct development</b>	
<b>Materials required</b>	Video developed by the project
<b>Methodology to implement and develop</b>	<p>Visualization of the video: Sky 4.0.</p> <p>Group reflection: What do you think about?</p>
<b>Evaluation</b>	Each participant will present their perception of the topic.

## 1.2 Reflexion, relation and action

LEARNING ACTIVITY 1.2 – REFEXION, RELATION AND ACTION	
<b>Duration</b>	20 minutes
<b>Objectives</b>	<ul style="list-style-type: none"> <li>-Detect the characteristics of analytical thinking in each participant.</li> <li>-Check through the behaviour of the participants their abilities for analytical thinking and their levels.</li> <li>-Evaluate in the behaviour and arguments of the participants the level of analytical thinking present at the beginning of the training.</li> </ul>
<b>Guidance for the correct development</b>	
<b>Materials required</b>	<ul style="list-style-type: none"> <li>-Blackboard or flipchart</li> <li>-Coloured markers</li> </ul>
<b>Methodology to implement and develop</b>	<p>The trainer will place three pages on the floor with the words "Reflection", "Relationship" and "Action" in the form of a triangle.</p> <p>Participants, in relation to analytical thinking, should place themselves on one of the pages and then the teacher will ask them about the reason for their choice.</p> <p>The trainer will use the dynamics to identify what actions, reflections or relationships can be done in relation to analytical thinking. The teacher will write on the flipchart those key words mentioned by the student that help to identify characteristics, behaviours, thoughts and feelings about the analytical thinking.</p>



	<p>This first contact will be used to identify what personal characteristics and brakes each student can bring in relation to analytical thinking.</p> <p>The ultimate purpose of this dynamic is for participants to mention what they expect from the training and how they believe they can contribute to the development of the course objectives through the observation of behaviours.</p>
<b>Evaluation</b>	<p>To carry out the observation of behaviours.</p> <p>The trainer could provide feedback about the main characteristics associated to the analytical thinking: such as logical, objective, sequential, rational, focused, deductive, linear, convergent, systematic, etc... (See supporting slides).</p> <p>The trainer could also provide feedback about the main steps in the analytical thinking process:</p> <ul style="list-style-type: none"> <li>● Gathering relevant information.</li> <li>● Focussing on facts and evidences.</li> <li>● Examining chunks of data and information.</li> <li>● Identifying key issues.</li> <li>● Using logic and reasoning to process information.</li> <li>● Separating more complex information into simpler parts.</li> <li>● Sub diving information into manageable sizes.</li> <li>● Finding patterns and recognising trends.</li> <li>● Identifying cause and effect.</li> <li>● Understating connections and relationships.</li> <li>● Eliminating extraneous information.</li> <li>● Organising information.</li> <li>● Drawing appropriate conclusions.</li> </ul>

### 1.3 Who is sitting next to us?

LEARNING ACTIVITY 1.3 – WHO IS SITTING NEXT TO US?	
Duration	20 minutes
Objectives	Put in practice its empathetic listening and communications abilities to get to know the person that is sitting next to them and introduce that person to the group.
Guidance for the correct development	
Materials required	-Blackboard or flipchart -Coloured markers
Methodology to implement and develop	<p>The teacher will ask students to sit in pairs and get acquaintance of each other using its empathetic listening and communications abilities. Students will be asked to pay special attention to the <b>analytical thinking</b> characteristic of their peers.</p> <p>They could ask each other questions such as :</p> <ul style="list-style-type: none"> <li>Why this soft skill (<b>analytical thinking</b>) might be important for his academic and professional live.</li> </ul>

	<ul style="list-style-type: none"> <li>• What they expect from the course.</li> <li>• How they think they can contribute to the development of the course objectives.</li> <li>• What the student is going to do to make the course successful.</li> </ul> <p>After 10 minutes of discussion, each student will have to introduce his/her colleague to the group. Introducing will include the name of the person and very basic information, but more important than that, it should be focussed specifically on the reasons why the student thinks that his/her new colleague exhibits or not analytical thinning.</p>
<b>Evaluation</b>	During the presentation the teacher might right in a blackboard or flipchart the characteristics mentioned by the student to be used in the following activates. Those characteristics will be put in relation with the ones written down by students in the previous activity.

## 1.4 Planning the training

LEARNING ACTIVITY 1.4 – PLANNING THE TRAINING	
<b>Duration</b>	10 minutes
<b>Objectives</b>	Present the structure of the training and intended outcomes.
Guidance for the correct development	
<b>Materials required</b>	Supporting slides
<b>Methodology to implement and develop</b>	The teacher will present the main contents and steps in the training and will answer the student questions if any.
<b>Evaluation</b>	N/A

## 2 DEFINITION OF THE CONCEPT

DIDACTIC UNIT 2 - DEFINITION OF THE CONCEPT
<p><b>Theoretical context:</b></p> <p><b>Learning activity 2.1</b></p> <p>In the context of Aviation Industry and the future Industry 4.0, analytical thinking is defined as <i>“the ability to understand a situation, disaggregating it into small parts or identifying its implications step by step. It includes the ability to systematically organize the parts of a problem or situation, make comparisons between different elements or aspects and establish rational priorities. It also includes the understanding of temporal sequences and the cause-effect relationships of actions”</i>.</p> <p>The results of a survey develop by the Sky4.0 project say that it can help to coordinate and plan tasks and thus, by understanding a process, the trainee can gain more independence and responsibilities. It is important</p>

to optimize solutions and keep high the expertise levels within the employees. It stands out the expertise level recommended for engineers, above any other group. It is also important how technicians are recommended by more participants to be the next, following engineers, on level of expertise in this matter, even though it is at a basic level.

Characteristics of the analytical thinking process:

- Analytical thinking is based on evidences and not emotions. By default, it is questioning. The question "Why?" Is always present in the analysis.
- It is detailed and methodical. It develops the ability to investigate and allows organizing thoughts with precision and clarity.
- It implies being able to decompose the parts of a problem to understand its structure and how they interrelate, being able to identify the relevant and irrelevant.
- As the name implies, it is analytical, since it disintegrates the parts of a whole to analyse the meaning of each one, being more interested in the elements than in the relationships
- It is sequential: since it follows steps in sequence for the analysis, studying linearly, without jumps or alterations each of the parts and increases them until reaching or approaching the solution.
- It is resolute: because at all times it is focused on the search for a solution. Analytical thinking is little given to go through the branches or to investigate alternative scenarios.

There are different types of analytical thinking, which are present in people; these depend on the behaviours and characteristics they present in front of problems or their daily life.

High Analytical Thinking

- Understands the situation and problems perfectly.
- It anticipates possible obstacles and plans steps to follow according to all the elements analysed.
- Is able to develop alternative solutions for quick action in the face of the possible results of the problems that occur in a company.

Medium Analytical Thought

- Analyse situations and problems of medium complexity.
- Recognizes the relationships between the different elements in a problem of medium complexity.
- Identify the advantages and disadvantages of decisions prioritizing according to their importance.

Low Analytical Thinking

- It is not able to recognize any problem and when it does it is not able to identify its causes or generate solutions.
- It does not identify the components of a situation to establish its cause and effect relationship.
- Does not analyse all the possible consequences that the problem would produce.

Good analytical thinking seldom comes naturally. It involves both cognitive resources and personal motivation. Analytical thinking is a controlled and purposeful reflective process. Employees who remember a lot of factual knowledge are not necessarily good analytical thinkers. Several authors have identified characteristics, skills or abilities that are common to those exhibiting analytical thinking. The following information is provided as background information for the teacher, so he could drive the discussion on the class. **The ones in grey are the one covered the student will work though this course:**

- **Observation and self-observation:** Observation is one of the earliest analytical thinking skills we learn as children -- it's our ability to perceive and understand the world around us. Careful observation includes our ability to document details, and to collect data through our senses. Our observations will eventually lead to insight and a deeper understanding of the world.
- **Curiosity:** Curiosity is a core trait of many successful leaders. Being inherently inquisitive and interested in the world and people around you is a hallmark of analytical thinkers. Instead of taking everything at face value, a curious person will wonder why something is the way it is. As we get older, it's easier to put aside what may seem like childish curiosity. Curiosity forces you to keep an open mind and propels you to gain deeper knowledge -- all of which are also fundamental to being a lifelong learner.
- **Objectivity:** Analytical thinkers are able to stay as objective as possible when looking at information or a situation. They focus on facts, and on the scientific evaluation of the information at hand. They seek to keep their emotions (and those of others) from affecting their judgment. However, it's impossible for people to remain completely objective, because we're all shaped by our points of view, our life experiences and our perspectives. Being aware of our biases is the first step to being objective and looking at an issue dispassionately. Once you're able to remove yourself from the situation, you can more thoroughly analyse it.
- **Introspection:** This is the art of being aware of your thinking -- or, to put it another way, thinking about how you think about things. Analytical thinkers need introspection so they're aware of their own degree of alertness and attentiveness, as well as their biases. This is your ability to examine your innermost thoughts, feelings and sensations. Introspection is closely related to self-reflection, which gives you insight into your emotional and mental state.
- **Identifying biases:** They thinkers challenge themselves to identify the evidence that forms their beliefs and assess whether or not those sources are credible. Doing this helps you understand your own biases and question your preconceived notions. This is an important step in becoming aware of how biases intrude on your thinking and recognizing when information may be skewed. When looking at information, ask yourself who the information benefits. Does the source of this information have an agenda? Does the source overlook or leave out information that doesn't support its claims or beliefs?
- **Determining relevance.** One of the most difficult parts of thinking analytically is figuring out what information is the most relevant, meaningful and important for your consideration. In many scenarios, you'll be presented with information that may seem valuable, but it may turn out to be only a minor data point to consider. Consider if a source of information is logically relevant to the issue being discussed. Is it truly useful and unbiased, or is it merely distracting from a more pertinent point?
- **Inference.** Information doesn't always come with a summary that spells out exactly what it means. Critical thinkers need to assess the information and draw conclusions based on raw data. Inference is the ability to extrapolate meaning from data and discover potential outcomes when assessing a scenario. It is also important to understand the difference between inference and assumptions. For example, if you see data that someone weighs 260 pounds, you might assume they are overweight or unhealthy. However, other data points like height and body composition may alter that conclusion.
- **Compassion and empathy.** Having compassion and empathy may seem like a negative for analytical thinkers. After all, being sentimental and emotional can skew our perception of a situation. But the point of having compassion is to have concern for others and to value the welfare of other people. Without compassion, we would view all information and situations from the viewpoint of cold, heartless scientific facts and data. It would be easy to allow our cynicism to become toxic, and to be suspicious of everything we look at. But to be a good analytical thinker, we must always take into

account the human element. Not everything we do is about detached data and information -- it's also about people.

- **Humility.** Humility is the willingness to acknowledge one's shortcomings and see one's positive attributes in an accurate way. When you have humility, you are aware of your flaws, but also your strengths, and this is an important element in analytical thinking and being willing to stretch and open your mind. When you have intellectual humility, you're open to other people's viewpoints, you recognize when you're wrong and you're willing to challenge your own beliefs when necessary.
- **Willing to challenge the status quo.** Analytical thinking means questioning long-established business practices and refusing to adhere to traditional methods simply because that's the way it's always been done. Analytical thinkers are looking for smart, thoughtful answers and methods that take into account all the current and relevant information and practices available. Their willingness to challenge the status quo may seem **controversial**, but it's an essential part of the creative and innovative mind of a analytical thinker.
- **Research.** You must learn more about a problem before solving it. You will have to first collect data or information before analysing it. Therefore, an important analytical skill is being able to collect data and research a topic.
- **Open-mindedness.** Being able to step back from a situation and not become embroiled helps analytical thinkers see the broader view. Analytical thinkers avoid launching into a frenzied argument or taking sides -- they want to hear all perspectives. Analytical thinkers don't jump to conclusions. They approach a question or situation with an open mind and embrace other opinions and views.
- **Aware of common thinking errors.** Analytical thinkers don't allow their logic and reasoning to become clouded by illusions and misconceptions. They are aware of common logical fallacies, which are errors in reasoning that often creep into arguments and debates. Some common errors in thinking include:
  - Circular reasoning, in which the premise of an argument or a conclusion is used as support for the argument itself.
  - Cognitive shortcut bias, in which you stubbornly stick to a favoured view or argument when other more effective possibilities or explanations exist.
  - Confusing correlation with causation. In other words, asserting that when two things happen together, one causes the other. Without direct evidence, this assumption isn't justified.
- **Creative thinking.** Effective analytical thinkers are also largely creative thinkers. Creative thinkers reject standardized formats for problem solving -- they think outside the box. They have a wide range of interests and adopt multiple perspectives on a problem. They're also open to experimenting with different methods and considering different viewpoints. The biggest difference between analytical thinkers and creative thinkers is that creativity is associated with generating ideas, while analytical thinking is associated with analyzing and appraising those ideas. Creativity is important to bringing in novel ideas; analytical thinking can bring those ideas into clearer focus.
- **Effective communicators.** In many cases, problems with communication are based on an inability to think analytically about a situation or see it from different perspectives. Effective communication starts with a clear thought process. Analytical thinking is the tool we use to coherently build our thoughts and express them. Analytical thinking relies on following another person's thought process and line of reasoning. An effective analytical thinker must be able to relay his or her ideas in a compelling way and then absorb the responses of others.
- **Active listeners.** Analytical thinkers don't just want to get their point across to others; they are also careful to engage in active listening and really hear others' points of view. Instead of being a passive

listener during a conversation or discussion, they actively try to participate. They ask questions to help them distinguish facts from assumptions. They gather information and seek to gain insight by asking open-ended questions that probe deeper into the issue.

## 2.1 What is analytical thinking? What characterise people with analytical thinking?

LEARNING ACTIVITY 2.1 – WHAT IS ANALYTICAL THINKING? WHAT CHARACTERISE PEOPLE WITH ANALYTICAL THINKING?	
<b>Duration</b>	60 minutes
<b>Objectives</b>	Build the definition and characteristics of analytical thinking with the interaction of the participants.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	-Flipcharts -Red and green markers
<b>Methodology to implement and develop</b>	<p>The participants are divided in groups and given flipcharts and markers so that they define in their own words what is analytical thinking, and its characteristics, qualities and attributes, by answering the following questions:</p> <ul style="list-style-type: none"> <li>• What does each group understand by analytical thinking?</li> <li>• And what characteristics must we have in order to acquire this competence?</li> </ul> <p>Next, through a discussion between groups, the definition of analytical thinking will be documented on the flipchart. Skills and attitudes of an aeronautical professional with this competence will be highlighted, with the proper collaboration of the trainer, emphasizing decisiveness and serenity as an additional feature.</p> <p>The facilitator will underline in the flipchart with coloured markers, the skills and attitudes that he wishes to highlight, in order to build the definition of analytical thinking according to Sky 4.0.</p> <p>To mark the skills the facilitator will use red, which are those characteristics that reflect knowledge (know-how); and green attitudes, which are those characteristics related to behaviour (how to do it, flexibility, temperance...).</p>
<b>Evaluation</b>	<p>If necessary, the facilitator will remember that personal skills are inherent to the person but can also be acquired.</p> <p>Then, the slides corresponding to the definition of analytical thinking will be presented in context and their similarities with the exercise performed by the participants previously.</p>

## 2.2 Harry, Ron and Hermione

LEARNING ACTIVITY 2.2 – HARRY, RON AND HERMIONE	
<b>Duration</b>	60 minutes

<b>Objectives</b>	Build the definition and characteristics of analytical thinking with the interaction of the participants and through the observation of Harry Potter characters.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	-Paper -ANNEX 0
<b>Methodology to implement and develop</b>	<p>Are you a fan of Harry, Hermione and Ron? At <i>"Harry Potter and the Philosopher's stone"</i>, the first book of the saga, our three friends tried to get to the philosopher's stone chamber and they have to pass through different challenges.</p> <p>The students will be presented an extract of the book to illustrate the valour of the analytical thinking. This is a simple but good example of how our heroes applied analytical thinking through their adventures.</p> <p>After individual reflection, the teacher will ask the students to discuss how analytical thinking helps Harry, Hermione and Ron to solve the situation. They should also have to identify what are the personal characteristics of these three characters that make them good at analytical thinking.</p> <p>The teacher could focus the attention in the analysis of Hermione character, which probably stands as the epitome of the analytical thinking. Here after you will find some keys about her character.</p> <p>While working the case the teacher will have present the psychological principles that are behind behaviours.</p> <ul style="list-style-type: none"> <li>• Identify a conduct as a set of behaviours.</li> <li>• Identify soft skills as a behaviour / set of behaviours.</li> <li>• Behaviours manifest through what <i>"we do"</i> and what <i>"we say"</i>.</li> <li>• Behaviours are the sum of <i>"thoughts"</i> and <i>"emotions"</i>.</li> <li>• Acting on thoughts we control emotions and we can change behaviour.</li> <li>• To modify behaviour, both thoughts and emotions must be worked on.</li> </ul>
<b>Evaluation</b>	<p><b>Analysis of Hermione character:</b></p> <ul style="list-style-type: none"> <li>• We admire Hermione for her unabashed intelligence, for never downplaying it to impress anyone. We love her for her pursuit of knowledge, her critical thinking, and how she applies those things to aid in the greater good for which the trio is always fighting. She showed us there's nothing wrong with expressing our thoughts, feelings, and ourselves in general, and that we should be proud of who we are.</li> <li>• Hermione Granger is the quintessential overachiever, always pushing herself and those around her to be at the top of their game, because she wants to be the best and you can only achieve that when you compete against everyone else's best.</li> <li>• While Hermione is definitely smart and great at magic, she also has intellectual skills that she gained in the Muggle world. These skills in analytical thinking and logic are essential in the book when she uses them to solve the potions riddle that is guarding the Sorcerer's Stone.</li> </ul>



- Hermione is a hero because she decides to be a hero; she's brave, she's principled, she works hard, and she never apologizes for the fact that her goal is to be very, extremely good at this whole "wizard" deal. Hermione saves the day, over and over; in every book, there is a moment where her classmates need to be saved, and they need a plan that is going to save them, and they inevitably turn to Hermione, "*the brightest witch of her age*." Hermione always comes through; she has the plans, she saves them all. That's why her name is on the cover of every book.
- She is the one who generally makes the plans and thinks rationally before proceeding to do something dangerous.
- Hermione warns Harry from the first year that he and Ron wanted to duel at midnight with Malfoy and have been responsible for Harry and Ron not making stupid decisions multiple times.
- She has an introverted personality: they support themselves most of the time and are quite good at analytical and abstract thinking. He likes to spend time acquiring knowledge
- Hermione is known to be sceptical about anything that cannot be proved by research, and advances the trio of friends through many quests using the knowledge she gained from a book. Her critical thinking skills are a powerful weapon to navigate through the overwhelming quantities of information available in today's world to separate the wheat from the chaff.
- Empathy is another strength of Hermione Granger, and it is this ability that enables her to be the strongest communicator in her group of friends. She defends and becomes the spokesperson for the besieged house elves, gathers together Dumbledore's Army, and creates a charm to enchant coins as a method of communication for the Army members (the Wizarding World's form of the instant message). In a place where the slightest communication misstep can result in instant paralysis or being turned into a toad, Hermione excels – though she did make a few mistakes, herself.
- She rightly judges when rules need to be broken, and that is what creativity is all about. Creative thinkers recognize when rules should be bent and broken, whereas less divergent minds continue to adhere to the "way it's always been." Hermione routinely uses spells in creative ways, such as the Protean Charm to turn coins into communication tools and the Undetectable Extension Charm to fit everything she could possibly need into a small bag (though she may have stolen that idea from Mary Poppins).
- Armed with cunning, ingenuity and a lot of intelligence, Harry, Ron and Hermione (especially Hermione, why are we going to cheat ourselves) managed to deal with countless dangers. Whether deciphering puzzles, playing magic chess or finding out how to destroy them, the protagonist trio fought to the end with the most powerful weapon they had in their hands: magic? No. Wisdom.



## 2.3 Three mini-cases about analytical thinking: First part

LEARNING ACTIVITY 2.3 – THREE MINI-CASES ABOUT ANALYTICAL THINKING: FIRST PART	
<b>Duration</b>	60 minutes
<b>Objectives</b>	Identify the different types of analytical thinking.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	ANNEX I
<b>Methodology to implement and develop</b>	<p>The students will be presented with the first part of three different mini-cases that illustrate different degrees of analytical thinking (high, medium and low). They will be asked to identify behaviours and personal characteristics of the protagonists in relation to analytical thinking.</p> <p>Participants will have to recognize the behaviours that characterize the type of analytical thinking for each case.</p> <p>For each case, students will have 25 minutes to read and work individually on the case, followed by 35 minutes to put findings in common. The teacher will use the flipchart from the previous activities to emphasize key concepts.</p> <p>The three mini-cases are divided into parts. The first one illustrates behaviours and personal characteristics. The second part illustrates brakes and barriers and will be used in further steps into the training.</p> <p>The facilitator will help the discussion by asking what the characters' behaviours were for each mini-case, identifying which are the behaviours, behaviours, and emotions or thoughts that are behind the characters.</p> <p>After the analysis the identified behaviours will be returned to the facilitator and then discuss the actions of the cases between the students and the facilitator.</p>
<b>Evaluation</b>	The facilitator will briefly explain and reinforce the concepts of thoughts.

## 2.4 The thermometer of the analytical thinking

LEARNING ACTIVITY 2.4 – THE THERMOMETER OF THE ANALYTICAL THINKING	
Duration	30 minutes
Objectives	Evaluate what is their starting point in terms of analytical thinking characteristics and behaviours.
Guidance for the correct development	
Materials required	ANNEX II
Methodology to implement and develop	The student will be given two questionnaires, the first one to reflect and evaluate its behaviours, and the second one his characteristics.
Evaluation	The more questions the students answer always or sometimes the higher his level of analytical thinking will be.

## 3 THE 3 MAIN ASPECTS TO WORK THE ANALYTICAL THINKING

DIDACTIC UNIT 3 – THE 3 MAIN ASPECTS TO WORK THE ANALYTICAL THINKING
<p>Theoretical context:</p> <p>Learning activity 3.1</p> <p>Being able to determine what is relevant and inference conclusions from information are two essential conditions for analytical thinking, particularly in situation in which you do not have access to sources of information or in which you are under pressure to provide a solution.</p> <ul style="list-style-type: none"> <li> <b>Determining relevance.</b> One of the most difficult parts of analytical thinking is figuring out what is important and discern the most relevant, meaningful and important for your consideration. Determining relevance is important to “<i>identify the key problem</i>” to be tackle and also to “<i>not become overwhelming</i>” by the tremendous amount of data and information that might be available to us even if it is not key for our problem. In many occasion you have to solve situation that present problems of different nature and level, and sometimes is not easy to identify which one really requires our attention. We might risk losing focus and diver our attention to irrelevant issues. In many scenarios, you’ll be presented with information that may seem valuable, but it may turn out to be only a minor data point to consider. Consider if a source of information is logically relevant to the issue being discussed. Is it truly useful and unbiased, or it is it merely distracting from a more pertinent point? </li> <li> <b>Inference.</b> Information doesn’t always come with a summary that spells out exactly what it means. Analytical thinkers need to assess the information and draw conclusions based on raw data. Inference is the ability to extrapolate meaning from data and discover potential outcomes when assessing a scenario. It is also important to understand the difference between inference and assumptions. For </li> </ul>

example, if you see data that someone weighs 260 pounds, you might assume they are overweight or unhealthy. However, other data points like height and body composition may alter that conclusion.

### Learning activity 3.2

Many jobs, particularly in aviation, come with demanding deadlines and high stakes. Recruiters prize candidates who show a decisive attitude, an unfaltering ability to think clearly, and a capacity to compartmentalise and set stress aside. Being able to perform analytical thinking in a critical situation, particularly under time constraints and other type of pressures is of paramount relevance for aviation, no matter if it is during the design or aircraft or aerospace vehicle or during its operation.

To learn how to success in these situations let's look in the past and learn some lessons from ancient samurais. One of the clearest intellectual precedents of the coach, the new gurus of the immediate success society, is the samurai. The mental techniques they used to keep calm under the pressure of war, as well as the strategies aimed at obtaining maximum performance and winning victory, are still exploited today. According to samurais two human traits are relevant to think analytically in this type of situation: **serenity and decisiveness**.

The writer and columnist in the New York Times and Wall Street Journal Eric Barker has revisited some of the most representative bedside books of the warriors of ancient Japan. The clarity of ideas is essential to make the right decisions, without improvising and looking at the horizon.

The main objective that all of them seek is none other than to remain calm. Serenity is a quality that in the maelstrom of contemporary life, as in war, hides the key to success and victory. That is, having enough serenity to be able to read the context in which we move and set the objectives in the long term. Clarity of ideas to make the right decisions, without improvising and looking at the horizon. **Keep calm and carry on**. The samurais expressed it this way:

**Shiba Yoshimasa (1349-1410):** *"The most important quality of a good warrior is to calm the mind to discern what he thinks and how he is the rival we face".* In *"Training the Samurai Mind: A Bushido Sourcebook"*, the historian Thomas Cleary, emphasizes that Yoshimasa highlighted the benefits that can be obtained from the analysis of reality, to prepare the best attack or defence, according to what is most convenient.

**Suzuki Shosan (1579-1655):** *"When one is overwhelmed, stressed and overcome by the many concerns that our thoughts occupy, then we will be unable to do things right and move forward. The mind is man's best ally, but it can also be his worst nightmare. We must get above the worries so as not to give in to the deceptions of the mind, which confuse and neutralize us."*

**Kaibara Ekken (1630-1714):** *"A noble man waits for the most appropriate moment to give the best thrust, in a state of absolute calm."* To make the right decisions, at the right time and in the most appropriate place, the mood must be serene, without any excitement or distraction. The secret of war, Ekken trusts, *"is to keep the mindless."*

**Miyamoto Musashi (1584-1645):** *"Both in the fight and in everyday life you have to have the ability to decide. To do this, we must be aware of the reality that surrounds us, with a determined spirit and without negative tensions. Haste is not a good advisor"*, Musashi concludes in *"The Book of Five Rings"* (Start Publishing LLC).

The second key factor for samurais is **decisiveness**, or the ability to decide. However, knowing the distinction between decisiveness and recklessness implies a soft skill in itself. Decisiveness combines a number of different abilities: the ability to put things into perspective, to weigh up the options, to assess all relevant information and, crucially, to anticipate the consequences, good and bad. When you're decisive, you:

- Can make decisions even in ambiguous and time-pressed situations.

- Are able to select a course of action despite lack of full information.
- Understand that making no decision still has consequences.

Decisiveness comes into play in every arena of life. For example, say you're about to graduate from university, and after a round of interviews with company recruiters you've received three equally attractive job offers. You need to decide quickly which offer you'll accept. You could conduct extensive analyses of how the three offers compare on numerous different criteria. But you realize that you simply don't have the time to gather every bit of detailed information you would need to carry out such an analysis. What to do? You select the small handful of criteria that are most important to you – such as geographical location, opportunity for professional advancement, and company reputation for social and environmental responsibility. You do a bit more research to gauge how the three potential employers stack up on these criteria. Then – after reviewing your analysis and listening closely to your gut instinct – you take the plunge and accept the offer that, on balance, seems best. As you ease into the new job, you pronounce yourself pleased with your choice.

### Learning activity 3.3

**Reflection** is a complex set of processes which can empower an individual to recognise their learning opportunities and make the most of them. In its simplest form, reflection is the ability to look back over one's experiences and identify significant aspects, such as reasons for success and failure. The important thing, of course, is to then learn from these reflections, by using them to inform practice and future learning.

*“Reflection is a process of recalling an event with a view to analysing and evaluating that experience”.*

### Learning activity 3.4

**Self-observation** is the ability to know ourselves from the inside-out. In each of us, we have an “*Inner Observer*,” that part of our self that observes what is happening inside of us – our thoughts, feelings, bodily sensations – at any given moment. While the Inner Observer is always noticing, we often are not tuned in and miss the inner cues and signals that can make or break an interaction with another, our response to a situation, or an outcome that we want. The Oxford Dictionary defines self-observation thus: “*the objective observation of one's own attitudes, reactions or thought process*”.

- Why is self-observation important for analytical thinking?

Self observation is important for improving your analytical thinking abilities for two main reasons. First reason is because “*Observing yourself is the necessary starting point for any real change.*” James Flaherty, author of “*Coaching: Evoking Excellence in Others*” (Routledge) describes self-observation as this, “*To self-observe means to not become attached to or to identify with any content of our experience, but to watch alertly, openly, passively.*” You need to be able to watch or be aware alertly and openly of your thoughts, emotions and moods in order to see them for what they are.

The second reason is because although we like to think we're rational human beings, we are prone to hundreds of proven biases that cause us to think and act irrationally, and self-observation is the key ability to identify and combat these irrational biases.

When it comes to analytical thinking we like to think we're rational human beings — but in reality, we are prone to hundreds of proven biases that cause us to think and act irrationally.

We all have influences in our lives that can interfere to analytical thinking, some are external related with other people and others are related while some are within ourselves. For example if I'm going to select the team that will probably win a football world champion competition based on the a single player I like (internal

influence) or based on the favourite team of the president (external), I'm not thinking analytically on the team having the best chances of winning.

David Daniels says *"Self-observation never becomes habitual; it requires continuing practice"* (pg.73, The Essential Enneagram). Developing self-observation skills is like developing a muscle. When you want to build a muscle, what do you do? You work out with some level of frequency with the goal of increasing the weight – the poundage – as your muscles get stronger. Well, it's very similar with self-observation. You need to build the "muscle" of self-observation to identify your cognitive biases and how they affect you in your analytical thinking and decision making processes.

You can practice the **3-Centered Awareness**; it will can take less than one minute to do. What I know to be true is increasing our self-observation skills raises our self-awareness enabling us to be more present in the moment, able to handle whatever comes our way in any given moment, more intentional in our interactions with others, and finally, more grounded in who we are and what we want for our life.

Each of us has 3 centres of intelligence – the head, heart and body. The head is logical; develops strategies, goals and plans; thinks through alternatives, options; and engages in comparing, making judgments and assumptions, obsesses over little (and sometimes, big) things, and is very active. The heart holds our emotions and feelings; it informs our thinking yet often overwhelms us or is not accessed because it is just *"too much"*. The body is the centre of instincts and sensations. The body is the vehicle through which we move and operate in the world and it is sending us information all the time yet too often we don't listen to the body (our gut instincts), rather we let our head and/or heart rule. The goal is to access and be in alignment with all 3 Centres.

Whether it's a daily practice of checking in with all three centres or a more intentional practice when making a decision or planning an interaction with a co-worker or client, the practice is as follows:

Check in with your head: what are you thinking about? Where is your attention right now and what thoughts are active in your mind? Are your thoughts about the past (what you could/should have done?) or about the future (what you need, want, have to do?) Notice the presence of worry, judgments, assumptions, or comparisons. These can get you into trouble!

Check in with your heart: what's going on in your heart? What feelings or emotions are active or do you not want to let in? How are these feelings/emotions impacting you right now?

Check in with your body: what is going on in your body? Is your body tense, achy, energized, tired, etc.? See if you can scan your body and tune into what's going on. Check in with your gut. Take a few minutes to listen to what, in this moment, is going on for you.

To initiate the process of self observation you can help you of a strong applause, at the same time say the word *"Stop"* out loud and immediately after remain still (as a statue) and become your own observer, paying attention to different points of observation, without judging. This exercise is not to explain anything. It is a space for generate self-awareness, a space for the observer.

This exercise can be directed to a whole group or to a single person and according to the circumstances some focus of self-observation can be emphasized. For example, if what you want is for the person to self-observe their body posture, you can start by saying *"look at your body"*.

Whoever marks the Stop must be clear about the objective when marking it, which can be to self-observe favourable aspects or unfavourable.

Self-observation must be exercised over and over again for the purpose of self-regulation, that is, the person must be able to stop not to speak where he does not have to do it, not to be impatient, not to respond impulsively, to realize when he is judging, in short, and to stop to think before acting.

### 3.1 Relevance and inference. How many piano tuners are in New York City?

LEARNING ACTIVITY 3.1 – RELEVANCE AND INFERENCE. HOW MANY PIANO TUNERS ARE IN NEW YORK CITY?	
Duration	30 minutes
Objectives	<ul style="list-style-type: none"> <li>- Decision making.</li> <li>- Learn to draw conclusions with little data.</li> </ul>
Guidance for the correct development	
Materials required	ANNEX III
Methodology to implement and develop	<p>The instructor will illustrate the value of these two skills (determining relevance and inference) by telling the story of ANNEX 3 in first person.</p> <p>Then, the instructor will ask participants to test their relevance and inference by discussion in groups the question: <i>“how many piano tuners are in New York City?”</i> Participants will be asked to provide an answer through a logical and reasoning process. They will be given 15 minutes for discussion in groups. They will not be allowed to use internet to answer the question. The instructor will help participants if needed with the following advice.</p> <p>It might seem like magic, but it’s actually relatively simple. Take a deep breath and try to answer these questions using the following method:</p> <ol style="list-style-type: none"> <li>Break it down into a series of smaller questions.</li> <li>Use common-sense and make educated guesses.</li> <li>Use your assumptions to calculate the answer.</li> </ol> <p>After working in groups, each will present its estimates and the logic they have followed. The different approaches will be discussed.</p>
Evaluation	<p>As support for the instructor, an example of solution is provided here after. The instructor can also use the following video, which shows how to solve this situation, and presented to the participants as an example.</p> <p><a href="https://www.youtube.com/watch?v=D5Oeajtbg0Y">https://www.youtube.com/watch?v=D5Oeajtbg0Y</a></p> <p>Example of solution:</p> <ol style="list-style-type: none"> <li>1. Roughly how many people live in New York City? —<b>8,000,000</b></li> <li>2. Does every person own a piano? —<b>no</b></li> <li>3. Can we assume that families own pianos, not individuals? —<b>yes</b></li> <li>4. How large is the average family? —<b>5 people</b></li> <li>5. So how many families are there in NYC? —<b>1,600,000</b></li> <li>6. Does every family own a piano? —<b>no... perhaps one in ten does</b></li> <li>7. So how many pianos are there in NYC? —<b>160,000</b></li> <li>8. How often per year do pianos need to be tuned? —<b>once per year</b></li> <li>9. How many piano tunings can one piano tuner do? — <b>let’s say 4 per day, so if there’s 200 working days in a year, that’s 800 per year</b></li> <li>10. So how many piano tuners could NYC support?— <b>160,000/800 = 200 piano tuners</b></li> </ol>

### 3.2 Decisiveness and serenity. Analytical thinking under time pressure

LEARNING ACTIVITY 3.2 – DECISIVENESS AND SERENITY. ANALYTICAL THINKING UNDER TIME PRESSURE	
Duration	40 minutes
Objectives	Check how external pressures affect the process of analytical thinking.
Guidance for the correct development	
Materials required	Link to the video of the film scene ( <a href="https://www.youtube.com/watch?v=nhxm5QEbYI">https://www.youtube.com/watch?v=nhxm5QEbYI</a> )
Methodology to implement and develop	<p>Next case illustrates the process of analytical thinking, by an aviation professional, in a very demanding situation. We might consider the pilot in the next video as a modern samurai. Watch the video and discuss the process of analytical thinking, how external pressures affect that process and what are the traits of the pilot that make his decision making process reliable even under pressure. Discuss how he exhibits serenity and decisiveness.</p> <p>Visualization of the scene of the movie <i>"The flight"</i>, where the pilot performs the inverted flight to save the lives of passengers. This scene is used in order to visually show the analysis and behaviour that the captain follows at a critical moment.</p> <p>Once the scene is visualized, the participants will express the behaviours and behaviours identified by the captain in the video with the help of the facilitator.</p>
Evaluation	Each participant will suggest, with respect, what he/she wants. Without forcing participation and freely.

### 3.3 “Use the Penseive “. What Harry Potter teaches us

LEARNING ACTIVITY 3.3 - “USE THE PENSEIVE”. WHAT HARRY POTTER TEACHES US	
Duration	20 minutes
Objectives	Understand the relevance of the reflection for a good analytical thinking.
Guidance for the correct development	
Materials required	ANNEX IV
Methodology to implement and develop	<p>In their explanation of reflection, Watton, Collings and Moon (2001) use this wonderful bit from the Harry Potter novel <i>“The Goblet of Fire”</i> to describe reflection. In the following extract Dumbledore the chief wizard and head teacher is talking to Harry about having excess thoughts!</p> <p>Teacher will give time to the student to read this short text and think about it. Interpretations will be put in common afterwards.</p>
Evaluation	Each participant will suggest, with respect, what he/she wants. Without forcing participation and freely.



### 3.4 Developing the self-observation muscle

LEARNING ACTIVITY 3.4 – DEVELOPING THE SELF-OBSERVATION MUSCLE	
Duration	30 minutes
Objectives	Exercise and develop the self observation capacity.
Guidance for the correct development	
Materials required	ANNEX V
Methodology to implement and develop	<p>Self-observation is like a muscle that we want to train and strengthen so that later it becomes part of our day-to-day without effort and becomes a way of being that empowers us in our lives.</p> <p>The teacher will give time to the student to complete the activity and then think about it.</p>
Evaluation	<p>During the day, make a habit of watching your emotions, impulses, thoughts and reactions move energetically. Just watch. You will soon be able to see clearly the repeating patterns, the changing emotional dynamics and our internal resistances and impulses.</p> <p>Then, see if you are able to act differently after you have been able to self-observe yourself more closely.</p>

## 4 BREAKS AND OBSTACLES

DIDACTIC UNIT 4 - BREAKS AND OBSTACLES
<p><b>Theoretical context:</b></p> <p><b>Learning activity 4.1</b></p> <p>When people hear the word bias, many if not most will think of either racial prejudice or news organizations that slant their coverage to favour one political position over another. However cognitive biases are a collection of faulty ways of thinking that are apparently hardwired into the human brain.</p> <p>The collection is large. Wikipedia's <i>"List of cognitive biases"</i> contains 185 entries, from <b>actor-observer bias</b> (<i>"the tendency for explanations of other individuals' behaviours to overemphasize the influence of their personality and underemphasize the influence of their situation ... and for explanations of one's own behaviours to do the opposite"</i>) to the <b>Zeigarnik effect</b> (<i>"uncompleted or interrupted tasks are remembered better than completed ones"</i>).</p> <p>Some of the 185 are dubious or trivial. The <b>ikea effect</b>, for instance, is defined as <i>"the tendency for people to place a disproportionately high value on objects that they partially assembled themselves."</i> And others closely resemble one another to the point of redundancy. But a solid group of 100 or so biases has been repeatedly shown to exist, and can make a hash of our lives.</p> <p>The <b>gambler's fallacy</b> makes us absolutely certain that, if a coin has landed heads up five times in a row, it's more likely to land tails up the sixth time. In fact, the odds are still 50-50. Optimism bias leads us to consistently <b>underestimate the costs and the duration of basically every project we undertake</b>. Availability bias</p>



makes us think that, say; travelling by plane is more dangerous than travelling by car, (images of plane crashes are more vivid and dramatic in our memory and imagination, and hence more available to our consciousness).

The **anchoring effect** is our tendency to rely too heavily on the first piece of information offered, particularly if that information is presented in numeric form, when making decisions, estimates, or predictions. This is the reason negotiators start with a number that is deliberately too low or too high: they know that number will “*anchor*” the subsequent dealings.

The effects of biases do not play out just on an individual level. Last year, President Donald Trump decided to send more troops to Afghanistan, and thereby walked right into the sunk-cost fallacy. He said, “*our nation must seek an honourable and enduring outcome worthy of the tremendous sacrifices that have been made, especially the sacrifices of lives.*” **Sunk-cost thinking** tells us to stick with a bad investment because of the money we have already lost on it; to finish an unappetizing restaurant meal because, after all, we’re paying for it; to prosecute an unwinnable war because of the investment of blood and treasure. In all cases, this way of thinking is rubbish.

A cognitive bias refers to a “*systematic error*” in the thinking process. Such biases are often connected to a heuristic, which is essentially a mental shortcut – heuristics allow one to make an inference without extensive deliberation and/or reflective judgment, given that they are essentially schemas for such solutions (West, Toplak, & Stanovich, 2008).

If I had to single out a particular bias as **the most pervasive** and damaging, it would probably be **confirmation bias**. That’s the effect that leads us to look for evidence confirming what we already think or suspect, to view facts and ideas we encounter as further confirmation, and to discount or ignore any piece of evidence that seems to support an alternate view. We all favour ideas that confirm our existing beliefs and what we think we know. Likewise, when we conduct research, we all suffer from trying to find sources that justify what we believe about the subject. This bias brings to light **the importance of playing “Devil’s Advocate”**. That is, we must overcome confirmation bias and consider all sides of the story. Remember, **we are cognitively lazy** – we don’t like changing our knowledge (schema) structures and how we think about things.

Here after you have some other common biases that affect how we make everyday decisions and think analytically.

**Self-Serving Bias.** Ever fail an exam because your teacher hates you? Ever go in the following week and ace the next one because you studied extra hard despite that teacher? Congratulations, you’ve engaged the self-serving bias! We attribute successes and positive outcomes to our doing, basking in our own glory when things go right; but, when we face failure and negative outcomes, we tend to attribute these events to other people or contextual factors outside ourselves.

**The Dunning-Kruger Effect.** The Dunning-Kruger Effect refers to a cognitive bias in which individuals with a low level of knowledge in a particular subject mistakenly assess their knowledge or ability as greater than it is. Similarly, it also refers to experts underestimating their own level of knowledge or ability.

**The Curse of Knowledge and Hindsight Bias.** Once you (truly) understand a new piece of information, that piece of information is now available to you and often becomes seemingly obvious. It might be easy to forget that there was ever a time you didn’t know this information and so, you assume that others, like yourself, also know this information: the “*Curse of Knowledge*”. However, it is often an unfair assumption that others share the same knowledge. “*The Hindsight Bias*” is similar to the Curse of Knowledge in that once we have information about an event; it then seems obvious that it was going to happen all along. “*I should have seen it coming!*”

**Optimism/Pessimism Bias.** Humans have a tendency to overestimate the likelihood of positive outcomes, particularly if we are in good humour, and to overestimate the likelihood of negative outcomes if we are

feeling down or have a pessimistic attitude. In either the case of optimism or pessimism, be aware that emotions can make thinking irrational.

**Negativity Bias.** We like to win, but we hate to lose even more. So, when we make a decision, we generally think in terms of outcomes – either positive or negative. The bias comes into play when we irrationally weigh the potential for a negative outcome as more important than that of the positive outcome.

**Decline Bias** (a.k.a. Declinism) refers to bias in favour of the past over and above “*how things are going*”. Similarly, you might know a member of an older generation who prefaces grievances with “*well, back in my day*” before following up with how things are supposedly getting worse. The Decline Bias may result from the fact that people don’t like change. People like their worlds to make sense, they like things wrapped up in nice, neat little packages.

**Fundamental Attribution Error.** “*The Fundamental Attribution Error*” is similar to the “*Self-Serving Bias*”, in that we look for contextual excuses for our failures, but generally blame other people or their characteristics for their failures.

**In-Group Bias** refers to the unfair favouring of someone from one’s own group. You might think that you’re unbiased, impartial and fair, but we all succumb to this bias, having evolved to be this way. That is, from an evolutionary perspective, this bias can be considered an advantage – favouring and protecting those similar to you, particularly with respect to kinship and the promotion of one’s own line.

**Forer Effect** refers to the tendency for people to accept vague and general personality descriptions as uniquely applicable to themselves without realizing that the same description could be applied to just about everyone else. For example, when people read their horoscope, even vague, general information can seem like it’s advising something relevant and specific to them.

**Overconfidence.** Psychologies suggest that we are usually overconfident in our judgement: examples are credit card borrowing, estimating a task. Confidence is good, overconfidence can be tricky.

**Recency effect.** We assign higher weight to most recent information. Example. Trial lawyers present their most important witness last.

**Illusory correlation.** The phenomenon of seeing the relationship one expects in a set of data even when no such relationship exists. Example. Stereotypes. All people in Switzerland must be happy. All people from this place are violent.

## Learning activity 4.2

Unconscious or implicit bias refers to beliefs or attitudes that are activated automatically and without an individual’s awareness. These hidden biases are different from beliefs and attitudes that individuals are aware they hold but choose to conceal for the purposes of complying with social or legal norms.

Our unconscious social biases form involuntarily from our experiences. For example, as we are repeatedly exposed to actual incidences or media portrayals of females as collaborative, nurturing and homemakers, and men as assertive, competitive, and bread-winners, those associations become automated in our long-term memory. These biases are reinforced on a daily basis without us knowing, or thinking consciously about it. Stereotypes reflect what we see and hear every day, not what we consciously believe about what we see and hear. It is possible for us to hold unconscious stereotypes that we consciously oppose.

Because we are, by definition, unaware of our automatic, unconscious beliefs and attitudes, we believe we are acting in accordance with our conscious intentions, when in fact our unconscious is in the driver’s seat. It is possible for us to treat others unfairly even when we believe it is wrong to do so. Cognitive neuroscience

research has taught us that most decisions we make, especially regarding people, are “alarmingly contaminated” by our biases. Our assessments of others are never as objective as we believe them to be.

Unconscious bias at work has profound implications—when we make decisions on who gets a job, who gets disciplined or promoted, who we chose to develop, or who we see as a confidant or as a suitable mentee, whose ideas we give consideration to, we may be adding our own subliminal and emotional criteria to that decision. Criteria we might not even be aware of and which may have no basis in facts. Bias can also contribute to hostile workplaces, bullying, and discrimination. Unconscious bias in recruitment, selection, promotion, development, and everyday workplace interaction limits the strategic potential that can flow from a diverse workforce for higher-quality problem solving and decision making, innovation and creativity, accessing diverse customers and suppliers, and attracting and energising top global talent.

**Effective unconscious bias training activities “show” rather than “tell”.** Incorporating “a-ha” activities that allow individuals to discover their biases in a non-confrontational manner is more powerful than presenting evidence of bias in employment or laboratory studies. Stereotypes and prejudices are maintained and reinforced by powerful cognitive and motivational biases that act to filter out information that contradicts or challenges our pre-existing beliefs or attitudes. We all see bias vested in others but rarely see or admit our own biases. A-ha activities help participants to see how their subconscious preferences and beliefs drive their responses.

Cognitive dissonance refers to the uncomfortable emotional state experienced when individuals are made aware of an inconsistency in their beliefs, attitudes, or behaviours. Research indicates that when egalitarian values are central to an individual’s self-concept, highlighting an inconsistency between the individual’s anti-prejudice values and their biased responses is effective at evoking dissonance. In turn, dissonance motivates the individual to make conscious adjustments to their attitudes (reduction in prejudice) and behaviours (less discrimination) such that they better align with their explicit values of tolerance and equality.

### Learning activity 4.3

A fallacy is a logical error: something went wrong, or is missing from, a chain of reasoning. It’s important for improving your analytical thinking to learn to recognize them in one’s own and other’s arguments. To be able to infer and argument effectively, in write and debate, we need to know what a fallacy is. Analytical thinking skills are therefore improved in the ability to take apart an argument and look for the fallacies. The best defensive strategy against fallacies is to get to know them and being able to identify them. And what would be better to identify them than acquiring the ability to use fallacies in argumentation and debate through a role play exercise?

There are two major categories of logical fallacies, which in turn break down into a wide range of types of fallacies, each with their own unique ways of trying to trick you into agreement.

A **Formal Fallacy** is a breakdown in how you say something. The ideas are somehow sequenced incorrectly. Their form is wrong, rendering the argument as noise and nonsense.

An **Informal Fallacy** denotes an error in what you are saying, that is, the content of your argument. The ideas might be arranged correctly, but something you said isn’t quite right. The content is wrong or off-kilter.

Following is a list of the **15 types of logical fallacies you are most likely to encounter in discussion and debate.**

1. **Ad Hominem Fallacy.** When people think of “arguments,” often their first thought is of shouting matches riddled with personal attacks. Ironically, personal attacks run contrary to rational arguments. In logic and rhetoric, a personal attack is called an ad hominem. Instead of advancing good sound reasoning, an ad hominem replaces logical argumentation with attack-language unrelated to the truth of the matter. More specifically, the ad hominem is a fallacy of relevance where someone rejects or

criticizes another person's view on the basis of personal characteristics, background, physical appearance, or other features irrelevant to the argument at issue. An ad hominem is more than just an insult. It's an insult used as if it were an argument or evidence in support of a conclusion. Verbally attacking people proves nothing about the truth or falsity of their claims. **Example 1:** *"MacDougal roots for a British football team. Clearly he's unfit to be a police chief in Ireland."* **Example 2:** *"All people from Crete are liars".*

VIDEO: <https://www.youtube.com/watch?v=FD50OTR3arY&feature=youtu.be>

2. **Straw man Argument.** In the straw man argument, someone attacks a position the opponent doesn't really hold. Instead of contending with the actual argument, he or she attacks the equivalent of a lifeless bundle of straw, an easily defeated effigy, which the opponent never intended upon defending anyway. **Example 1:** *"The Senator thinks we can solve all our ecological problems by driving a Prius."* **Example 2:** *"Quite the contrary, the Senator thinks the environment is such a wreck that no one's car choice or driving habits would make the slightest difference."*

VIDEO: <https://youtu.be/hfil34ayaEU>

3. **Appeal to Ignorance (argumentum ad ignorantiam).** Any time ignorance is used as a major premise in support of an argument, it's liable to be a fallacious appeal to ignorance. Naturally, we are all ignorant of many things, but it is cheap and manipulative to allow this unfortunate aspect of the human condition to do most of our heavy lifting in an argument. An appeal to ignorance isn't proof of anything except that you don't know something. **Example 1:** *"No one has ever been able to prove definitively that extra-terrestrials exist, so they must not be real."* **Example 2:** *"No one has ever been able to prove definitively that extra-terrestrials do not exist, so they must be real."* **Example 3:** *"We have no evidence that the Illuminati ever existed. They must have been so clever they destroyed all the evidence."*

VIDEO: [https://youtu.be/p9ezNBBcg\\_g](https://youtu.be/p9ezNBBcg_g)

4. **False Dilemma/False Dichotomy.** This line of reasoning fails by limiting the options to two when there are in fact more options to choose from. Sometimes the choices are between one thing, the other thing, or both things together (they don't exclude each other). Sometimes there is a whole range of options, three, four, five, or a hundred and forty-five. However it may happen, the false dichotomy fallacy errs by oversimplifying the range of options. Dilemma-based arguments are only fallacious when, in fact, there are more than the stated options. It's not a fallacy however if there really are only two options. **Example 1:** *"There are only two kinds of people in the world: people who love Led Zeppelin, and people who hate music."* Some people are indifferent about that music. Some sort of like it, or sort of dislike it, but don't have strong feelings either way. **Example 2:** *"Either we go to war, or we appear weak."* **Example 3:** *"Either you love me, or you hate me."*

VIDEO: <https://youtu.be/Dln3DJEcgY>

5. **Slippery Slope Fallacy.** The slippery slope fallacy works by moving from a seemingly benign premise or starting point and working through a number of small steps to an improbable extreme. This fallacy is not just a long series of causes. Some causal chains are perfectly reasonable. There could be a complicated series of causes that are all related, and we have good reason for expecting the first cause to generate the last outcome. The slippery slope fallacy, however, suggests that unlikely or ridiculous outcomes are likely when there is just not enough evidence to think so. **Example1:** *"But, you have to let me go to the party! If I don't go to the party, I'll be a loser with no friends. Next thing you know I'll end up alone and jobless living in your basement when I'm 30!"* **Example 2:** *"If America doesn't send weapons to the Syrian rebels, they won't be able to defend themselves against their warring dictator."*

*They'll lose their civil war, and that dictator will oppress them, and the Soviets will consequently carve out a sphere of influence that spreads across the entire Middle East."*

VIDEO: <https://youtu.be/klv3m2gMgUU>

6. **Circular Argument (petitio principii).** When a person's argument is just repeating what they already assumed beforehand, it's not arriving at any new conclusion. This fallacy is a kind of presumptuous argument where it only appears to be an argument. It's really just restating one's assumptions in a way that looks like an argument. You can recognize a circular argument when the conclusion also appears as one of the premises in the argument. Another way to explain circular arguments is that they start where they finish, and finish where they started. **Example 1:** *"The Bible is true; it says so in the Bible"*— It is a claim using its own conclusion as its premise, and vice versa, in the form of "If A is true because B is true; B is true because A is true". **Example 2:** *"According to my brain, my brain is reliable."* **Example 3:** *"Smoking pot is against the law because it's wrong; I know it's wrong because it is against the law."*

VIDEO: [https://youtu.be/c\\_fOyxk7DdU](https://youtu.be/c_fOyxk7DdU)

7. **Hasty Generalization.** A hasty generalization is a general statement without sufficient evidence to support it. A hasty generalization is made out of a rush to have a conclusion, leading the arguer to commit some sort of illicit assumption, stereotyping, unwarranted conclusion, overstatement, or exaggeration. Hasty generalization may be the most common logical fallacy because there's no single agreed-upon measure for "sufficient" evidence. A simple way to avoid hasty generalizations is to add qualifiers like "sometimes," "maybe," "often," or "it seems to be the case that . . .". When we don't guard against hasty generalization, we risk stereotyping, sexism, racism, or simple incorrectness. But with the right qualifiers, we can often make a hasty generalization into a responsible and credible claim. **Example 1:** *"Apple computers are the most expensive computer brand?"* What about 12 examples? What about if 37 out of 50 apple computers were more expensive than comparable models from other brands? **Example 2:** *"People nowadays only vote with their emotions instead of their brains."*

VIDEO: <https://youtu.be/KqeqTWD2Ymg>

8. **Red Herring Fallacy (ignoratio elenchi).** A "red herring fallacy" is a distraction from the argument typically with some sentiment that seems to be relevant but isn't really on-topic. This tactic is common when someone doesn't like the current topic and wants to detour into something else instead, something easier or safer to address. A red herring fallacy is typically related to the issue in question but isn't quite relevant enough to be helpful. Instead of clarifying and focusing, it confuses and distracts. We can guard against the red herring fallacy by clarifying how our part of the conversation is relevant to the core topic. **Example 1:** *"My wife wants to talk about cleaning out the garage, so I asked her what she wants to do with the patio furniture, because it's just sitting in the garage taking up space."*

VIDEO: <https://youtu.be/DrnZdFFovBE>

9. **Tu Quoque Fallacy.** It distracts from the argument by pointing out hypocrisy in the opponent. This tactic doesn't solve the problem, or prove one's point, because even hypocrites can tell the truth. Focusing on the other person's hypocrisy is a diversionary tactic. In this way, using the tu quoque typically deflects criticism away from you by accusing the other person of the same problem or something comparable. The tu quoque fallacy is an attempt to divert blame, but it really only distracts from the initial problem. **Example 1:** *"Maybe I committed a little adultery, but so did you Jason!"* **Example 2:** *"But, Dad, I know you smoked when you were my age, so how can you tell me not to do it?"*



VIDEO: <https://youtu.be/Pu57QqzNOHQ>

- 10. Causal Fallacy.** One causal fallacy is the false cause or non causa pro causa (*"not the-cause for a cause"*) fallacy, which is when you conclude about a cause without enough evidence to do so. **Example 1:** *"Since your parents named you 'Harvest,' they must be farmers."* Another causal fallacy is the post hoc fallacy. Post hoc is short for post hoc ergo propter hoc (*"after this, therefore because of this"*). This fallacy happens when you mistake something for the cause just because it came first. **Example 2:** *"Yesterday, I walked under a ladder with an open umbrella indoors while spilling salt in front of a black cat. And I forgot to knock on wood with my lucky dice. That must be why I'm having such a bad day today. It's bad luck."* **Example 3:** *"Every time Joe goes swimming he is wearing his Speedos. Something about wearing that Speedo must make him want to go swimming."*

VIDEO: <https://youtu.be/vRJUvFG8gbE>

- 11. Appeal to Authority (argumentum ad verecundiam).** This fallacy happens when we misuse an authority. We can cite only authorities — steering conveniently away from other testable and concrete evidence as if expert opinion is always correct. Or we can cite irrelevant authorities, poor authorities, or false authorities. **Example 1:** *"Four out of five dentists agree that brushing your teeth makes your life meaningful."* **Example 2:** *"I'm the most handsome man in the world because my mommy says so."* **Example 3:** *"This internet news site said that the candidate punches babies. We know that's true because it's on the internet."*

VIDEO: <https://youtu.be/lwltkwJk6KM>

- 12. Equivocation (ambiguity).** Equivocation happens when a word, phrase, or sentence is used deliberately to confuse, deceive, or mislead by sounding like it's saying one thing but actually saying something else. Equivocation comes from the roots *"equal"* and *"voice"* and refers to two-voices; a single word can *"say"* two different things. Another word for this is ambiguity. When it's poetic or comical, we call it a *"play on words."* But when it's done in a political speech, an ethics debate, or in an economics report, for example, and it's done to make the audience think you're saying something you're not, that's when it becomes a fallacy. Sometimes, this is not a *"fallacy"* per se, but just a miscommunication. **Example 1:** *"I don't understand why you're saying I broke a promise. I said I'd never speak again to my ex-girlfriend. And I didn't. I just sent her some pictures and text messages."*

VIDEO: <https://www.youtube.com/watch?v=pX7yr94mDCs>

- 13. Appeal to Pity (argumentum ad misericordiam).** The fallacy appeals to the compassion and emotional sensitivity of others when these factors are not strictly relevant to the argument. Appeals to pity often appear as emotional manipulation. **Example 1:** *"How can you eat that innocent little carrot? He was plucked from his home in the ground at a young age and violently skinned, chemically treated, and packaged, and shipped to your local grocer, and now you are going to eat him into oblivion when he did nothing to you. You really should reconsider what you put into your body."* **Example 2:** *"Professor, you have to give me an A on this paper. I know I only turned in a sentence and some clip art, but you have to understand, my grandmother suddenly died while travelling in the Northern Yukon, and her funeral was there so I had to travel, and my parents got divorced in the middle of the ceremony, and all the stress caused me to become catatonic for two weeks. Have some pity; my grandmother's last wish was that I'd get an A in this class."*

VIDEO: <https://youtu.be/RybNI0KB1bg>

- 14. Bandwagon Fallacy.** The bandwagon fallacy assumes something is true (or right, or good) because other people agree with it. A couple different fallacies can be included under this label, since they are often indistinguishable in practice. The ad populum fallacy (Lat., *"to the populous/popularity"*) is when

something is accepted because it's popular. The consensus gentium (Lat., "*consensus of the people*") is when something is accepted because the relevant authorities or people all agree on it. **Example 1:** "If you want to be like Mike (Jordan), you'd better eat your Wheaties." **Example 2:** "Drink Gatorade because that's what all the professional athletes do to stay hydrated." **Example 3:** "McDonald's has served over 99 billion, so you should let them serve you too." **Example 4:** "Almost everyone at my school will be at the party Friday night. It must be the right thing to do."

VIDEO : <https://youtu.be/VnTzn9AFWLo>

## 4.1 Identifying your own being human and people related cognitive biases and common thinking errors

LEARNING ACTIVITY 4.1 – IDENTIFYING YOUR OWN BEING HUMAN AND PEOPLE RELATED COGNITIVE BIASES AND COMMON THINKING ERRORS	
Duration	30 minutes
Objectives	Understand the psychological traps for analytical thinking.
Guidance for the correct development	
Materials required	-Supporting slides <a href="https://yourbias.is">-https://yourbias.is</a>
Methodology to implement and develop	Remember, we make thousands of decisions every day, some more important than others. Make sure that the ones that do matter are not made based on bias, but rather on reflective judgment and analytical thinking!  The teacher will explain the most important human biases using the supporting slides.
Evaluation	N/A

## 4.2 Activities for bias awareness

LEARNING ACTIVITY 4.2 – ACTIVITIES FOR BIAS AWARENESS	
Duration	60 minutes
Objectives	Discover individual's biases in a non-confrontational manner.
Guidance for the correct development	
Materials required	-Computer with internet connection -ANNEX VI
Methodology to implement and develop	According to the group characteristics the teacher could select among alternative activities from the ANNEX VI.
Evaluation	Depends on the chosen activity.

## 4.3 Fighting against people related thinking errors or fallacies. Role play

LEARNING ACTIVITY 4.3 – FIGHTING AGAINST PEOPLE RELATED THINKING ERRORS OR FALLACIES. ROLE PLAY	
<b>Duration</b>	185 minutes
<b>Objectives</b>	Gain experience detecting common reasoning fallacies.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	<ul style="list-style-type: none"> <li>- Supporting slides with the definition of the fallacies and videos of examples</li> <li>-ANNEX VII (cards)</li> <li>-Paper</li> </ul>
<b>Methodology to implement and develop</b>	<p>The teacher will explain the most common fallacies with the help of some videos provided as part of the supporting material. After that he will explain the rules of the role play and will organise the competition.</p> <p>This role play is designed to get to grips with logical fallacies, by using them in your discourse and by identifying them in the discus of an opponent.</p> <p>The role play is to be worked as a competition between 2 groups of students. Ideally groups should be of 3 or 4 people. If the number of students in the class is great several pairs of competing groups can be established.</p> <p>This role play is designed to further deepen student’s knowledge of 14 major fallacies in thinking. During role play it is extremely important for players to justify their choices and discuss why they may disagree with the judge’s choice.</p> <p>The goal of the game double:</p> <ul style="list-style-type: none"> <li>● To correctly use fallacies in a discourse or argumentation to defend a position about a subject given in a scenario.</li> <li>● To correctly identifying the fallacies the opponent group has use in its own discourse/ argumentation to defend the opposite position about the same topic/ scenario.</li> </ul> <p>There are two decks of cards, the Fallacies Deck and the Scenarios Deck. They should be separated and shuffled before play begins. The facilitator will act as a judge and will keep the score.</p> <p>The facilitator is provided with the following supporting materials.</p> <ul style="list-style-type: none"> <li>● A text describing what fallacies are, the main types of fallacies and some examples.</li> <li>● Slides with fallacies examples.</li> <li>● Some videos with fallacies examples.</li> <li>● Two decks of cards, the Fallacies Deck and the Scenarios Deck.</li> <li>● A pace of paper to keep the score of the competition.</li> </ul>



	<p>Then, each group is dealt 3 cards randomly from the shuffled Fallacies Deck. These cards are not shown to the other players. Each card will contain one fallacy definition with several examples.</p> <p>Then the facilitator shuffles the scenario Deck and chooses the top card. The card is read aloud by the facilitator to all the players. Each scenario will consist on the description of a topic, and two opposite hypothesis or positions regarding this topic, generally one in favour and the other one opposing the topic. The two groups will have to debate about this topic defending each one of the positions describes in the scenario. The positions will be assigned by the judge to the groups. That is, one group will play the role of <i>"in favour"</i> and the other one the role of <i>"opposing"</i>.</p> <p>The each group is given 20 minutes to construct a 5 minutes discourse to defend the assigned position, and they will have to base their argumentation in the fallacies contained in the 3 fallacies cards received. Each team will have to pursue to include as much fallacies as possible in their speech.</p> <p>After preparation each group will be given 5 minutes to present their discourse. Each group will have to pay attention to the speech of the other group to try to identify and write down as much fallacies as possible.</p> <p>After the full round is played, each team will have to explain the fallacies strategy in its discourse, and will have to justify the fallacies the group has identified in the discourse of its opponents.</p> <p>Contenders will be granted points by the judge if they correctly use or identify a fallacy. Full Scores will be tallied after a full round is played and justifications are provided by each team. Both groups should try to get as many points as possible. The group that gets more point will win the debate and receive a price.</p>
<b>Evaluation</b>	Competition winners will be awarded with some candies.

## 5 IMPROVEMENT (CHANGE)

DIDACTIC UNIT 5 - IMPROVEMENT (CHANGE)
<p><b>Theoretical context:</b></p> <p><b>Learning activity 5.1</b></p> <p>Cognitive biases and people related thinking errors there is other barrier to analytical thinking even more important. The BIG PROBLEM in thinking is:</p> <p style="text-align: center;"><i><b>"We don't want to think."</b></i></p> <p>I'm not talking about motivation. Certainly, we need motivation when we're tired or lazy. Nor am I talking about preferences. Rather, I'm talking about not wanting to think. And, when we don't want to think about certain things, we act against them, and inhibit the emergence of questions in our mind. To avoid thinking we avoid the questions. That is, there are certain questions we simply will not let surface. They regard the areas in all our lives where we feel some fear or confusion deep down, and we won't take a look. We can be puzzled by certain experiences, but we won't let ourselves think about them. We are biased against these questions.</p>

A major effect of not wanting to think is an intellectual blind spot. When we don't ask questions that are relevant, confusing situations continue to confuse us and we don't ask why. Problems remain unsolved even when everyone agrees that the problems exist.

Here are 4 typical prejudices or biases we have against thinking, each named according to excessive attention in a concern

**Obsession.** Now and then we all get highly focused on this or that, but for some of us there is some this to which we always return. It could be an abiding worry, grief, or fear. Or it could be an abiding ambition, hope, or desire. It could be a scene from the past we compulsively mull over, or a scene from the future we repeatedly rehearse. Moreover, when our attention is biased toward paying undue attention to the object of our fixation and if our attention is directed there spontaneously, not by our free choice, then we have a problem. We sit down to a task we want to finish immediately and find ourselves doing something else, with no recollection of when we changed our minds. This tendency to get fixated on certain memories or projects or fears is usually accompanied by a lack of attention to the fact that we're fixated. That is, we are biased toward thinking about the object of our fixation but against thinking whether being fixated is a problem. Moreover, our subconscious typically masks our fear of the problem with a pride about it: An argumentative man may admit he can be defensive, but prefer not to ask himself what it is that he so compulsively defends. He may go to his grave consoled by having always steadfastly held his ground and being respected for his consistency, but oblivious of an abiding fear of his father's criticisms.

This is named obsession—a compulsive attention to a specific matter. It is a habit of letting our subconscious directs our attention instead of taking charge of our attention. They powerfully inhibit the questions that could liberate us from this psychic prison, and think analytically. The bias of obsession can subconsciously drive out of mind important questions like, *“Is something more important for my life right now?”*

**Egotism.** Egotism shows when we ignore anything that might benefit others at our expense. We aren't stupid. We have the intelligence to make things better all around, but we dedicate our minds to getting whatever we can for ourselves. We suppress any thoughts about the well-being of others. Egotism is a tendency to avoid thinking about what benefits other individuals and about one's personal shortcomings. We don't listen much to others because we assume our preoccupations are more important. We set boundaries to what we'll think about: *“I'm not the sort of person who enjoys reading about handicapped people.”* We avoid thinking that our job perks may be excessive. We connive to make comments only when it will advance our reputations, and we suppress questions that would reveal our ignorance or give others a chance to look smarter. We really don't want to get involved with others, lest their needs overshadow our own. So we keep to ourselves. We are particularly careful to avoid conflict with other egotists, who are as ready to battle for supremacy as we are. We work hard at our jobs; we even cooperate with others, but mainly for our own benefit. We have no genuine commitment to the goals of our company or agency or institution or religion or even family. We won't dwell on harm we have done to others. The more frequently we obey these impulses, the more habitual our egotism becomes.

Sometimes it can be difficult to tell whether a person's dominant bias is an obsession or a deliberate egotism. They both feel need-driven impulses. But one clue about the difference lies in their perceptions of how others respond to them. Obsessive people are puzzled at people's reactions because all the clues lie in impulses they won't consider problematic. But egotists grow more confident to the extent they successfully manipulate others for personal gain. In this regard, the obsessed seem unsure of themselves, while the egotists seem quite sure.

**Groupism.** Groupism is a refusal to think of what benefits other groups and what may be irrational in one's own. People in whom groupism is dominant can appear quite selfless. Indeed, the stronger the groupism, the weaker the egotism. They set aside personal interests for the sake of others, but only to a point—the point

where another group's interests are at odds with their own group's interests. Their field of moral vision is wider than personal advantage, but it is still limited by a curtain that divides us from them.

A bias favouring the wellbeing of one's own group to the exclusion of all other groups thrives on cultural myths. We speak of these myths as *"what we all know"*: What White People Do. How Muslims Act. What the Real Problem is with Homosexuals. The simpler the picture, the stronger the myth and the more unrelated to actual lives. Plain experience doesn't undermine the myth for those with unquestioning group allegiance because they already rely on the myth to filter their plain experiences of foreigners, misfits, and eccentrics, letting in only the data that proves the myth to be true.

**Commonsensism.** Commonsensism regards common sense as capable of meeting any problem and disregards the value of anything theoretical or historical. It typically manifests itself in the assumption that it's always better to take some action than no action at all. No doubt, tackling immediate problems is often better than sitting around worrying. Common sense looks to the practical, the interpersonal, the immediate, and the palpable. However, common sense is chronically vulnerable to the Myth of the Simple—the assumption that progress must be based on simple strategies, simple principles. But dysfunctional situations among groups of any size cannot be understood without some deeper analysis based on scientific theory and deeper understanding based on learning the history of situations. When we tackle these situations without some knowledge of their complexity and their history, we raise the odds of making things worse. See some examples of how commonsensism appears in various people's worlds.

- Automobile Salesperson: *"Our Company will simply go out of business if we don't sell more cars!"* The purchase of an automobile is essentially an exchange agreement: The buyer gives the seller money in exchange for a safe and reliable car. What ensures a company's long-term viability is that it effectively and consistently meets the terms of this agreement.
- Taxpayer: *"Honey, we got a big tax refund!"* The IRS collected interest on their overpayments—money lost to the taxpayer.
- Smoker: *"Not everyone who smokes gets cancer."* Common sense assumes that statistical odds are abstract. In fact they are concrete and reliable predictors of events which, in this case, will likely bring on a host of avoidable problems, including death.
- Anybody: I can predict how well I would perform in any situation. Most people overestimate their own competence and underestimate the difficulty of complex tasks they face.

A more immediate example is your experience of following this course. You've made it this far but it's been an uphill climb. You've had to rest to get your bearings. You may be impatient to reach the end. All this is your direct experience of the bias of common sense against deep thinking. It infects everyone. It accounts for all kinds of disagreements about what to do, even among people deeply committed to doing what's really better.

#### Learning activity 5.4

Concentrate in the three musts of Irrational Thinking. The beliefs that end up in negative emotions are, according to Albert Ellis, a variation of three common irrational beliefs. Coined as the *"Three Basic Musts,"* these three common irrational beliefs are based on a demand – about ourselves, others, or the environment. They are:

1. I must do well and win others' approval or else I am no good.
2. Others must treat me fairly and kindly and in the same way I want them to treat me. If they do not treat me this way, they are not good people and deserve to be punished.

3. I must always get what I want, when I want it. Likewise, I must never get what I don't want. If I don't get what I want, I'm miserable.

If we don't realize "*Must 1*," we likely feel anxious, depressed, shameful, or guilty. If we are not treated fairly, as per "*Must 2*," we usually feel angry and may act violently. If we don't get what we want, per "*Must 3*," we may feel self-pity and procrastinate.

### The Diagnostic Step:

Based on Ellis' theory that individuals are blaming outward events on their negative emotions instead of their "*interpretation*" of the events, the ABC Model was proposed as:

A – Activating Event: an event that happens in the environment

B – Beliefs: the belief you have about the event that happened

C – Consequence: the emotional response to your belief

This model was developed to educate others of how beliefs are the cause of emotional and behavioural responses, and not that events cause our emotional reactions. Here's an example that will help you understand better:

A – Your spouse falsely accuses you of cheating on him/her.

B – You believe "*What a jerk! S/he has no right to accuse me of that!*"

C – You feel angry/upset.

If you had a different belief (B), the emotional response (C) would be different:

A – Your spouse falsely accuses you of cheating on him/her.

B – You believe, "*This cannot end our relationship – that would be too much to bear if we got a divorce.*"

C – You feel anxious that your relationship might end.

Here again, the ABC model is illustrating that it is not the event (A) that causes the emotional response, rather, it's the belief (B) about the event that causes the emotional response (C). Because people interpret and respond differently to events, we don't always have the same emotional response (C) to a given event.

### Disputing or Challenging the Irrational Beliefs and Changing our Behaviours:

The second phase of REBT's healing process is the dispute or challenge phase. That is, in order to act and feel differently, we must dispute or challenge the irrational beliefs we experience. Essentially, what we are questioning is our irrational beliefs:

- Who says if I don't win someone's approval I'm no good?
- Where is it written in the rule books that a boss always acts professionally and treats others fairly?
- Why do I have to be absolutely miserable if I don't get something I want? Why shouldn't I just feel slightly annoyed instead of downright miserable?

Once individuals undergoing REBT can work through the dispute or challenge of their irrational thoughts, they can move toward how to engage in more effective thoughts, feelings, and behaviours. Termed as an effective new philosophy on life, individuals in this phase start to recognize that there are no absolute "*musts*" – there is no evidence that suggests these "*three musts*" are the only way to think.

If you are undergoing this phase of REBT, you might start to re-evaluate your responses:

*"I don't like how my boss acted, but I can stand it."*

*"Instead of feeling enraged that my spouse accused me of cheating, I will feel annoyed and determined to make my marriage work."*

*"I think I'll go to my exercise class after work – I think more clearly after engaging in physical exercise."*

### Three Major Insights of REBT:

According to Albert Ellis, the following are the three major insights of Rational Emotive Behaviour Therapy:

1. When individuals understand and accept that the main cause of emotional reactions are their beliefs about an event instead of the event itself. That is, we don't just get upset from an event. We upset ourselves because of our irrational beliefs.
2. When people acquire irrational beliefs, if they do not deal with them, they *"hold"* onto the beliefs and it's what continues to upset them in the present. That is, these individuals still wholeheartedly believe in the *"three musts."*
3. Ellis made it clear that understanding these insights does not make us inherently *"better."* That is, understanding these beliefs and having insights into how they affect our emotional responses is not enough to *"cure"* us. In reality, the best way to get better and stay better through REBT is to continually work on recognizing our irrational beliefs, disputing them, changing our irrational *"musts,"* and transforming negative emotions into more positive ones. Simply put, the only way to get better is through the hard work of changing our beliefs. It takes time and practice.

Have a look to yourself and how do you feel, your sentiments, when you are a victim of some else irrational assumptions. Yes, you have heard correctly: you are a victim or other irrational assumptions, but at the same time they are also victims or they own irrational assumptions.

Check the how our mini case protagonist feel because their analytical thinking difficulties at work, with their bosses and colleagues.

Do you feel offended, upset, pressed, afraid or insulted in similar situations? These offenses may be challenges, insults, threats, or heavy demands. They may be the subtle rebuffs that push you away or belittle your contribution. They may be in-your-face pressure to say something or do something. Our reactions to offenses like these can differ. Some people get offensive right back: *"Since when do you tell me what to do?"* Some get defensive: *"I was just doing what I was asked to do!"* Some try to please: *"I'm terribly sorry. What can I do to make it up to you?"* Some withdraw: *"I apologize. It's won't happen again."*

You may be able to change the irrational assumption of other people. But we have just learning that we can change our own irrational behaviours. The more clearly you see how irrational assumptions work in yourself, the more likely you can deal with people who offend you.

Moreover we can change the negative feeling that other irrational behaviours cause us.

- Who's the Victim?

All of these are *"reactions"*—the spontaneous way we deal with offenses. What is needed is a *"response"*—a thoughtful, imaginative and responsible action. Moreover, if at all possible, a response should aim at *"healing"* what thinking reveals about your offender.

Consider, then, this thought:

Your offender is being offended.

Offended by what?

By his or her own bias or irrational assumptions.

A boss neurotically obsessed with cleanliness and order will bail you out for your messy desk. A self-absorbed woman will mock you for your ideas and accomplishments. People with unquestioning loyalty to their group will trash the *"other"* department, company, political party, gender, age group, faith, nationality, sexual orientation, or race. People who assume common sense is all we need will pressure to get you to act without thinking. If you mention anything about faith, secular-minded people will mockingly dismiss your concern as sheer myth—and then change the subject.

Likewise, people with irrational assumptions will offend you despite the fact that they are driven by an assumption about life that really has nothing to do with you personally.

In return, you can go on the offense, or the defence, or withdraw to the sidelines. But life isn't a football game. We can *"reframe"* the event altogether. We can say to ourselves, *"This is not a battle between people; I'm witnessing a battle inside a person. My offender is the victim!"* In other words, think of life as a sharing in the struggle against bias and irrationality. You are vulnerable, and so is your offender. But you are companions in the struggle.

- Healing Responding See the difference?

You don't need to react at all. You can *"respond."* A good first response is to really listen. Hang in there with the person. Change your stance from over-against to side-by-side. Let yourself love your offender. To charge in to people's vulnerability against their will only convinces them to build stronger defences. *"Seek first to understand"* is a habit of highly effective people. If you don't understand right away what's offending your offender, give yourself the time to wonder.

Move on, but *"bookmark"* the event for further reflection later, when you're somewhat removed from the immediate situation.

Consider what bias or irrational assumption may be victimizing your offender. Ask yourself, *"Where is my offender's heart right now?"* In most cases your insight into your offender will be provisional; sometimes it will be entirely wrong. A *"response"* here will mean simply continuing to keep company. This delivers the strong, but nonverbal message, *"I don't take your sarcasm/attacks/mockery seriously. I'm not afraid of you. I like being/working with you."* I say *"strong"* because it plants a relevant question in the mind of your offender: *"Why am I always making such nasty comments to people who care for me?"* When a question like this takes root, then healing begins from within.

- Exercise

It takes some *"exercise"* to learn this aspect of critical healing. The best exercise is quite simple. Any time you feel offended, instead of reacting, you can respond by *"reframing"* the experience.

- A response is thoughtful, so think to you, *"This isn't football. I'm not playing offense. I won't play defence. And I will not slink off to the sidelines."*
- A response is imaginative, so picture the images I've provided above. Brainstorm many options.
- A response is responsible, so be prepared to care for this person if the opportunity presents itself. To be genuinely responsible is to take responsibility for healing, as far as you can.
- A response is healing, so be prepared to help heal whatever bias or irrational assumptions about life may lie behind your offenders behaviour.

Later, reflect on the event with this question: *"What particular bias or irrational assumption has narrowed his/her outlook?"* The more attuned you are to these inner events in others, the better companion you will be on this journey of the vulnerable.



### Learning activity 5.5

Previously, we have learned that thoughts can be positive and negative; the difference is that negative thoughts can easily become limiting, and therefore turn against us. We have seen how sometimes we suffer unnecessarily because of the ideas we create about reality, with things that may not even happen. There are many attributions and assessments that we do every day, and that greatly complicate our relationships and emotional experiences.

- *"If you don't call me, you don't love me."*

- *"You should know what I feel / need."*

If the beliefs are wrong, limiting or irrational, the cognitions and feelings they will generate will cause situations of blockage and suffering.

Therefore, also emotions play an important role. When the emotion is intense there is no reasoning that is worth at that precise moment; no matter how well argued it is. In turn, the different feelings that are created for us are based on our way of thinking.

Everything we interpret from reality and what we feel depends on what we will think next, and finally we will decide to do.

Self-regulation refers to the ability to manage or channel emotions properly. The real challenge for self-regulation arises from unwanted situations and emotions, as in cases of stress; we usually reject or block it.

SELF REGULATION DOES NOT CONSIST IN CONTAINING OR REPRESSING THE EMOTION, BUT IT IMPLIES TO GET WHAT WE FEEL, AND EXPRESS IT IN THE RIGHT MODE

If we *"manage"* emotions by containing, we are blocking their expression, and denying their permission and right to appear. If this response is habitual and repeated, over time this expression will be diverted through another behaviour or reaction.

It is true that sometimes it will be necessary to know how to *"manage"* the inadequate expression of emotion, but in order to reach that capacity, this ability must first be worked on, in addition to recognizing the tendencies and qualities of a person.

In this way, the key to regulation is to tune in with ourselves. This way we can understand each other and anticipate to properly managing what we feel and how we are going to behave.

Thanks to the Self-regulation, when the emotions we want to reject arise, in addition to making room for them, we will be able to decide what we will do with that situation.

Self-regulation implies:

1. Realize and recognize the emotion.
2. Allow us to feel that way; it's for something; give us permission.
3. Look at what we think and how we understand the situation.
4. Decide what we are going to do, as needed in that situation.

The breathing. It is a vital and automatic function of our organism; it works even if we do not pay conscious attention to make it take its course. It has the great advantage of being one of the vital functions that IF WE CAN CONTROL.

When we are in a state of anxiety and stress, we are very likely to breathe improperly - with a short distance and a fast pace; This generates a double damage:

- When we breathe badly, with an accelerated rhythm, with a short distance, and low air volume, our body does not receive enough oxygen; the blood and our organs are forced to work "*under minimum*" - worse concentration, feeling dizzy or dull ... - and therefore our performance worsens, along with the feeling of anxiety and stress.
- We miss the possibility of relaxing through proper breathing, thanks to which, in addition to relaxing, we restore the oxygenated functioning of our blood, brain and organs.

There are various ways of working the breath; This can be thoracic, short-haul, or abdominal, the most recommended, with pauses marking rhythms, or continued. Everything depends on the habit and training of the person, in any, the most effective and beneficial technique to work breathing should be based on the following:

It is important to influence the appearance of expiration. Our body works better the more oxygenated it is. This is even more fundamental when it is working under pressure, anxiety or stress. If we do not empty well when we expire, our diaphragm will not be completely empty, and the new air that enters will be mixed with what we had left as "*waste*" but has not been expelled.

## 5.1 We don't want to think. Irrational beliefs behind deficient analytical thinking behaviours

LEARNING ACTIVITY 5.1 – WE DON'T WANT TO THINK. IRRATIONAL BELIEFS BEHIND DEFICIENT ANALYTICAL THINKING BEHAVIOURS	
<b>Duration</b>	30 minutes
<b>Objectives</b>	Understand the barriers that prevent us for proper thinking and how our behaviour seems to be habitually influenced by an irrational assumption about living well.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	-Supporting slides -ANNEX VIII
<b>Methodology to implement and develop</b>	<p>If you would like to discover your unnoticed assumptions, then do not think about what you think. These assumptions have already diverted your thinking to other concerns. Instead, watch how you behave. Monitor your everyday actions as if you were someone else watching you day and night. So think critically about this one issue:</p> <p><i>"Does my behaviour seem to be habitually influenced by an irrational assumption about living well?"</i></p> <p>First, read over all 12 assumptions.</p> <p>Then see which of these statements comes closest to describing your behaviours that may be evidence of one spontaneous assumption you have about life.</p> <p>Notice that each of these assumptions is expressed as an assumption about life itself. It is not a conscious conviction about how you should behave but rather an unnoticed assumption about life that subconsciously affects how you behave.</p> <p>Then, in light of how you behave, express your main irrational assumption about life along the lines of those shown in the first column below.</p>



	<p>Next, to grow beyond these unnoticed but irrational assumptions, express a more deliberate and rational conviction about life that is opposed to the irrational assumption you identified.</p> <p>Once we identify an irrational assumption, an effective next step is to formulate a more accurate and more reasoned conviction about life. For example, instead of assuming that <i>"It is important for everyone to be as competent as possible."</i></p>
<b>Evaluation</b>	<p>Consider how your new rational conviction would affect what you do and say. What behaviours do you need to stop? What behaviours should you learn? This last step will not be final. It is meant to be open-ended as you develop the habit of noticing your behaviours, identifying any irrational assumptions they demonstrate, and then adapting and strengthening your rational convictions regarding life.</p>

## 5.2 What were Harry, Ron and Hermione afraid of? The Irrational Beliefs

LEARNING ACTIVITY 5.2 – WHAT WERE HARRY, RON AND HERMIONE AFRAID OF? THE IRRATIONAL BELIEFS	
<b>Duration</b>	30 minutes
<b>Objectives</b>	Reinforce the idea that we need to overcome our fears and irrational beliefs.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	ANNEX IX
<b>Methodology to implement and develop</b>	<p>The teacher will use the following examples of the Harry Potter stories to reinforce the idea that we need to overcome our fears and irrational beliefs.</p> <p>He will ask the students to discuss on the lessons learned from the book in this regards. The text is provided as support in the ANNEX.</p> <p><b>Harry Potter stories teach us to overcome your fears.</b></p>
<b>Evaluation</b>	<ul style="list-style-type: none"> <li>The professor of Defence against the Dark Arts in <i>"Harry Potter and the Prisoner of Azkaban"</i>, Remus Lupine, taught his students a very valuable lesson: overcoming one's fears is essential to grow. A teaching valid for magicians and Muggles, although we never have to face a Boggart as did the students of Hogwarts: a magical creature that takes the form of what the person closest to you fears most. Ron also knew how to face one of his greatest terrors to save his friends: spiders.</li> <li>Hermione ambition and drive is to be admired, but it would be a mistake to think Hermione's desire for perfection is completely healthy—there is such a thing as pushing yourself too far, and this is one area in which Hermione hardly budes. She is unapologetic in the face of her flaws, but striving for perfection can be harmful (as we see in Prisoner of Azkaban when she has a panic attack when faced with her Boggart—Professor McGonagall, telling her she'd failed everything): fail.</li> <li>There is so much good in Hermione that has nothing to do with being perfect. The whole point of Hermione is that it's okay not to be flawless, but rather we should</li> </ul>

	embrace our flaws in order to better understand ourselves, and then we can make those flaws work for us (in Hermione's case, she might bristle when unprovoked, but she can also bring out the big guns when Rufus Scrimgeour gets under her skin in Deathly Hallows): improvement.
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### 5.3 Irrational beliefs behind deficient analytical thinking behaviours. Revisiting the three mini-cases: Second part

LEARNING ACTIVITY 5.3 – IRRATIONAL BELIEFS BEHIND DEFICIENT ANALYTICAL THINKING BEHAVIOURS. REVISITING THE THREE MINI-CASES: SECOND PART	
Duration	45 minutes
Objectives	Identify irrational beliefs that influence the way we behave.
Guidance for the correct development	
Materials required	ANNEX X
Methodology to implement and develop	<p>We considered how analytical thinking involves scrutiny of areas where we do not want to think. Now we can consider how both obsession and commonsensism typically rationalize their stands by certain irrational assumptions about life itself.</p> <p>The 12 ideas (presented in activity 5.1) represent irrational ideas that many adults have about how they should conduct their lives. They are taken from the work of Albert Ellis, psychologist and founder of what is called "<i>Rational-Emotive Therapy</i>." A key part of Ellis' theory is that psychological difficulties and self-defeating behaviours are very often supported by our irrational ideas about life. The root of many behavioural and emotional problems is nourished by what we think life is about and only subsequently in our feelings and actions.</p> <p>The path to change is to identify irrational views about life itself. From that self-revelation, a patient can discover and avoid all sorts of dysfunctional feelings and behaviours rooted in that irrational view about life.</p> <p>Most people would find that at least one of these 12 ideas represents their own irrational thinking. These are "<i>assumptions</i>" behind everyday spontaneous impulses that often get ordinary people into messes they could have avoided but didn't know how. Come back to our mini-case studies and figure out which of these 12 assumptions are driven our protagonist behaviours. Discuss this in group.</p> <p><b>Exercise:</b> Look to the second part of our 3 mini-cases and identify which of these prejudice are or might be present for each of our protagonist.</p>
Evaluation	<ul style="list-style-type: none"> <li>• The real work is now focused on working on the positive aspects, and the constructive thoughts that help us move forward, precisely in those complicated situations from which we must be able to extract some teaching.</li> <li>• The so-called "<i>Constructive Thoughts</i>", offer an attitude, way of thinking and acting to redirect that limiting situation that has stuck us.</li> <li>• The development of this attitude requires a commitment to the attitude on our part. The new thought is created, the approach of the different factors that influence the situation,</li> </ul>

	their personal assessment, and the contact with the situation from a committed attitude is sought.
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## 5.4 Changing behaviours: When you feel offended

LEARNING ACTIVITY 5.4 – CHANGING BEHAVIOURS: WHEN YOU FEEL OFFENDED	
Duration	30 minutes
Objectives	Change behaviours.
Guidance for the correct development	
Materials required	N/A
Methodology to implement and develop	The teacher will explain the REBT's healing process.
Evaluation	Each participant will suggest, with respect, what he / she wants. Without forcing participation and freely.

## 5.5 Exercising self-regulation. Inside or outside. Imagine and visualize

LEARNING ACTIVITY 5.5 – EXERCISING SELF-REGULATION. INSIDE OR OUTSIDE. IMAGINE AND VISUALIZE	
Duration	30 minutes
Objectives	Exercise self-regulation.
Guidance for the correct development	
Materials required	ANNEX XI
Methodology to implement and develop	Our inexhaustible capacity to imagine and visualize, allows us the possibility of regulating the intensity of the experiences and the feelings that they generate; remember that:  THE SITUATIONS / REALITY ARE NOT MODIFICABLE, BUT YES, THE VISION WE CREATE ABOUT HER  The students will follow the steps of the ANNEX.
Evaluation	Each participant will put in common the conclusions of the exercise and the alternatives presented to them.

## 5.6 A Decalogue: 10 things to change

LEARNING ACTIVITY 5.6 – A DECALOGUE: 10 THINGS TO CHANGE
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<b>Duration</b>	40 minutes
<b>Objectives</b>	Each participant will reflect on their behaviour in different areas of their lives: work, personal, social.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	Paper
<b>Methodology to implement and develop</b>	<p>Each participant will write in a folio the 10 negative behaviours that he has and that have been damaging him in his life. With the knowledge acquired about analytical thinking, self-regulation, brakes (fears) etc.</p> <p>On another page you should write a Decalogue, a commitment for each of the behaviours you wrote in the previous page, it will be recommended not to make commitments that you cannot fulfil.</p> <p>He will then be asked to destroy the page where he wrote his 10 negative behaviours.</p>
<b>Evaluation</b>	Each participant will write their personal commitment.

## 5.7 The bidding contract for change

LEARNING ACTIVITY 5.7 – THE BIDDING CONTRACT FOR CHANGE	
<b>Duration</b>	50 minutes
<b>Objectives</b>	Acquire a compromise for change.
<b>Guidance for the correct development</b>	
<b>Materials required</b>	Paper
<b>Methodology to implement and develop</b>	<p>Continuing with the previous activity, each participant will reflect on their behaviour in different areas of their life: work, personal, social. You must complete a “contract” model, delivered by the trainer, which allows you to have a greater commitment to it. Long-term.</p> <p>The participant will write in a folio a “contract” whereby the participant acquires a greater commitment to change in relation to analytical thinking, the Decalogue described in the previous activity must be further strengthened.</p> <p>In the contract detailing the steps and deadlines that the participant must meet, the commitment will be requested to be greater.</p> <p>At the end of the contract you will be asked to sign.</p>
<b>Evaluation</b>	Each participant will write their personal commitment.

## 6 GRADUATION

### DIDACTIC UNIT 6 - GRADUATION

Theoretical context:

#### Learning activity 6.1

In a historic day, April 1970, these words marked the start of a crisis that nearly killed three astronauts in outer space. In the four days that followed, the world was transfixed as the crew of Apollo 13—Jim Lovell, Fred Haise, and Jack Swigert—fought cold, fatigue, and uncertainty to bring their crippled spacecraft home.

But the crew had an angel on their shoulders—in fact thousands of them—in the form of the flight controllers of NASA's mission control and supporting engineers scattered across the United States.

### 6.1 “Houston, we’ve had a problem”. Role play

LEARNING ACTIVITY 6.1 – “HOUSTON, WE’VE HAD A PROBLEM”. ROLEPLAY	
Duration	120 minutes
Objectives	Exercise all the concepts learned during the course.
Guidance for the correct development	
Materials required	-Paper -Pen
Methodology to implement and develop	<p>Just like the historic April 1970 “successful failure” participants in this role playing are challenged to bring a group of astronauts safely back to Earth after an explosion crippled the Apollo spacecraft on the way to the moon.</p> <p>You must use what learned during the course to bring back the astronauts home safely.</p> <p><b>“Your country is counting on you and the world is watching. Which will it be? Success, or...”</b></p> <ul style="list-style-type: none"> <li>• The teacher will make teams of six people that can embark on the mission, with three members taking on the roles of Apollo 13 astronauts Jim Lovell, Fred Haise and Jack Swigert in the command module Odyssey and lunar module Aquarius. The other three will be members staff the consoles in Mission Control.</li> <li>• All participants will be informed of the situation and the problems at the spacecraft and their role either as astronauts or staff of the Control centre.</li> <li>• Randomly two members of each team, one astronaut and one controller, will be instructed to play a specific role without the knowledge of the other participants. They will have to exhibit a very low level of analytical thinking on purpose. To elaborate this role they will have to think about: <ul style="list-style-type: none"> <li>○ Behaviours they will have to exhibit in relation to analytical thinking.</li> <li>○ Characteristics they will have to exhibit in relation to analytical thinking.</li> <li>○ Biases they will have to exhibit in relation to analytical thinking.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>○ Fallacies they will have to exhibit in relation to analytical thinking.</li> <li>○ Irrational beliefs behind observed behaviours they will have to exhibit in relation to analytical thinking.</li> <li>● To solve the situation, all participants will have to identify which of their peers have been assigned the low level analytical thinking role, help them to identify its irrational beliefs and reformulate them in a positive direction, so that they can contribute to solve the mission. To do this participants will be provided with a paper in which they have to identify for each one of the participants the following: <ul style="list-style-type: none"> <li>○ Behaviours they will have to exhibit in relation to analytical thinking</li> <li>○ Characteristics they will have to exhibit in relation to analytical thinking</li> <li>○ Biases they will have to exhibit in relation to analytical thinking</li> <li>○ Fallacies they will have to exhibit in relation to analytical thinking</li> <li>○ Irrational beliefs behind observed behaviours they will have to exhibit in relation to analytical thinking</li> <li>○ Reformulated beliefs.</li> </ul> </li> <li>● The role play will end once all participants think they have found the two persons playing the low analytical thinking role.</li> <li>● The findings of each participant will be share after that.</li> </ul> <p>Good luck and remember failure is not an option</p>
<b>Evaluation</b>	Summarise the findings of the groups, try to categorise them and use the marker to underline the most illustrating examples.

## ANNEXES

### ANNEX 0 – Harry, Ron and Hermione

Extract from “Harry Potter and the Philosopher’s stone” Chapter 16 “Trough the Trapdoor”, By J.K Rowling’s.

*“...They reached the end of the passageway and saw before them a brilliantly lit chamber, its ceiling arching high above them. It was full of small, jewel-bright birds, fluttering and tumbling all around the room. On the opposite side of the chamber was a heavy, wooden door.*

*-‘Do you think they’ll attack us if we cross the room?’ said Ron.*

*-‘Probably,’ said Harry. ‘They don’t look very vicious, but I suppose if they all swooped down at once ... Well, there’s nothing for it ... I’ll run.’*

*He took a deep breath, covered his face with his arms and sprinted across the room. He expected to feel sharp beaks and claws tearing at him any second, but nothing happened. He reached the door untouched. He pulled the handle, but it was locked. The other two followed him. They tugged and heaved at the door, but it wouldn’t budge, not even when Hermione tried her Alohomora Charm.*

*-‘Now what?’ said Ron.*

*-‘These birds ... they can’t be here just for decoration,’ said Hermione.*

*They watched the birds soaring overhead, glittering – glittering?*

*-‘They’re not birds!’ Harry said suddenly, ‘they’re keys! Winged keys – look carefully. So that must mean ...’ he looked around the chamber while the other two squinted up at the flock of keys. ‘... Yes – look! Broomsticks! We’ve got to catch the key to the door!’*

*-‘But there are hundreds of them!’ Ron examined the lock on the door.*

*-‘We’re looking for a big, old-fashioned one – probably silver, like the handle.’*

*They seized a broomstick each and kicked off into the air, soaring into the midst of the cloud of keys. They grabbed and snatched but the bewitched keys darted and dived so quickly it was almost impossible to catch one. Not for nothing, though, was Harry the youngest Seeker in a century. He had a knack for spotting things other people didn’t. After a minute’s weaving about through the whirl of rainbow feathers, he noticed a large silver key that had a bent wing, as if it had already been caught and stuffed roughly into the keyhole.*

*-‘That one!’ he called to the others. ‘That big one – there – no, there – with bright blue wings – the feathers are all crumpled on one side.’*

*Ron went speeding in the direction that Harry was pointing, crashed into the ceiling and nearly fell off his broom.*

*- ‘We’ve got to close in on it!’ Harry called, not taking his eyes off the key with the damaged wing. ‘Ron, you come at it from above – Hermione, stays below and stops it going down – and I’ll try and catch it. Right, NOW!’*

*Ron dived, Hermione rocketed upwards, the key dodged them both and Harry streaked after it; it sped towards the wall, Harry leant forward and with a nasty crunching noise, pinned it against the stone with one hand. Ron and Hermione’s cheers echoed around the high chamber. They landed quickly and Harry ran to the door, the key struggling in his hand. He rammed it into the lock and turned – it worked. The moment the lock had clicked open, the key took flight again, looking very battered now that it had been caught twice.*

*- ‘Ready?’ Harry asked the other two, his hand on the door handle. They nodded. He pulled the door open.”*



## ANNEX I - Three mini-cases about analytical thinking: First part

### Mini-case 1: part 1

Ricardo is an aeronautical engineering student and during the last course of the degree he has to do an internship. After a long admission process, he got a position at Omega Airlines, a well-known company in the aeronautical sector.

From the first day, Ricardo, shows very committed and communicative person. He quickly understands the processes related to his work and the other areas with which, sometimes, he makes reports together. This is because he has always been a very applied and thorough person, worrying about every detail related to his duties. In every activity he performs, he demonstrates passion, precision, clarity and accuracy. He can cope very well with his studies and his internship in parallel. He is also a very tidy person.

Ricardo, generally, finds himself with a lot of work and with cases that he has never seen before. The first days he asked his colleagues, older in the company, for advice, but little by little he becomes more autonomous. He analyses problems by disaggregating them into parts, using a rational approach to the situation and contrasting information. He can resolve these cases successfully at the time requested. He progressively is developing tasks of greater complexity and is taken part in some decisions. In addition, being a proactive person, he collaborates with his colleagues in their tasks.

He is a very careful practitioner and always likes to be ahead of the facts. One day in the company there was a problem about the financing of a new aircraft acquisition, which made them lose some service bids with existing aircraft. Moved by its own curiosity Ricardo decides to verify the status of the tenders in question. After his analysis, concentration and focus on the problem, he was able to reach a final solution. For that, he applied a cause-effect analysis to determine the main root that causes this situation, using available databases, information from similar past projects, and recognizing trends.

The conclusions obtained, he comments to his manager from which he receives congratulations for his commitment and commitment to his work. Ricardo's bosses, observing his performance and initiative, decide to offer them a permanent position at Omega Airlines.

### Mini-case 2: part 1

Hernán has been working for more than ten years in the well-known International Holding Elite Airlines Group; this covers the best airlines in the world. He is the Vice President of Operations of the Holding. Along with his team of technicians perform the monthly report of the analysis of the result of the air group.

As part of his work, he sometimes visits the companies that integrates the Holding to monitor the indicators, advise them and improve the system if need it. He is confident in his working routines.

During his monthly visit to Alfa Airlines, a member of the group located in Madrid, he finds out about several local problems that are not common, and need an urgent action.

Among the main problems is the pilots' strike that began the day before their visit, which forced the airline to cancel more than 1300 flights until further notice. This worsens an already complicated situation for the companies as a consequence of the rise in fuel rates, a common problem for all the world's airlines. Hernán had already faced this increase before taking measures with new commercial strategies culminating satisfactorily, but the pilot strike is something new for him.

He believes that dialogue can help to solve the problem in the coming days. However, after the analysis carried out together with his team, it was determined that it is impossible to satisfy the request for a 60% increase in pilot salaries. After studying the causes and factors of this problem, he cannot reach an agreement with the pilots' union.

Despite having observed numerous strikes by unions of other companies in the sector, Hernán did not anticipate that this situation could happen to him, and did not prepared contingency plans for these cases that would include: priority attention to passengers, reimbursements and exemption from the payment of penalties, neither a shock plan to mitigate the effects of the pilot's strike.

In view of this scenario, Hernán begins to worry about the costs and expenses generated by the reorganization of flights and the compensation to passengers, since until now he has not found the solution through mediation. The situation has become a very complex problem for Hernán and his team, which creates frustration and impatience for not achieving a satisfactory result.

In the aforementioned, the board of directors decided to make labour regulations more flexible and reorganize crew schedules to solve the problem. To not dismiss Hernán, they decided to move him to a smaller company in the group.

### Mini-case 3: part 1

Pedro is a new worker in the customer service department of Federico Fellini International Airport, in San Marino. He is currently in a trial period, is new to the aeronautical sector and feels insecure about how to relate with their peers.

During the training he was informed that the last week of each month he must present a report to Rosa, his supervisor, collecting the airport customer satisfaction measurement from the previous month.

The report consists of positive, negative values and the variation of these, from one month to another, taking into consideration the search for maximum efficiency of quality, punctuality, facilitation and accessibility to passengers.

The first Pedro report is very basic, lacking depth and difficult understanding. His supervisor asked him to improve his analysis and re-write the report.

After a few days, Pedro cannot recognize what the error is or the cause for which he has been asked to redo it, this causes him to feel doubtful and think that he does not match with the operation of the company. He begins to question the tasks he performs; however, he does it again with the suggestions given by a fellow, recently admitted, like him. Despite the recommendation of his colleague, Pedro again makes the same mistake with his report feeling more frustrated and distressed, but he does not ask his supervisor for fear of being fired. In addition, he thinks he should not ask a woman, because she cannot know more than him.

Days go by and since Pedro does not deliver his report, his supervisor goes to him to find out the causes of his delay. During the conversation Rosa could see that Pedro is not qualified for the job, because his report does not demonstrate the evaluation and extrapolation of data to discover potential results of the scenario in question. That is why Pedro decides to quit his job due to the intellectual obstacles or difficulties he considers to have.

## ANNEX II – The thermometer of the analytical thinking

Please use the scale below to indicate the degree to which these statements accurately describe you. There are no rights or wrong answers.

1 – Never | 2 – Sometimes | 3 – Always

Behaviours:		1	2	3
1.	I am able to break down a problem into smaller parts to fix it better.			
2.	I am able to relate the various components of complex problems or situations, and establish complex causal links between them.			
3.	I am able to develop alternative action plans to solve a problem.			
4.	I am able to recognize problems quickly.			
5.	I fully understand the processes related to my work and with other areas of the organization.			
6.	I am able to identify complex cause-effect relationships.			
7.	I handle superficial and simple information and provide answers learned to solve problems.			
8.	When I take an action, I analyse the consequences carefully before implementing them.			
9.	When I prepare reports, they are easy for others to understand.			
10.	I am able to find a new solution method.			
TOTAL				

Characteristics:		1	2	3
1.	Do you listen open-mindedly to opposing point of view and welcome criticisms of beliefs and assumptions?			
2.	Are you honest to yourself (or others) when you are wrong?			
3.	Are you intellectually honest with yourself, acknowledging what you don't know and recognising your limitations?			
4.	Do you have the courage and passion to take initiative and confront problems and meet challenges?			
5.	Are you passionate drive for clarity, precision, accuracy, relevance, consistency, logicalness, completeness and fairness?			
6.	Are you aware of your own biases and preconceptions that shape the way people perceive the world?			
7.	Do you welcome criticism from other people?			
8.	Do you have independent opinions and are not afraid to disagree?			

9.	Are you able to get to the heart of an issue or problem, without being distracted by details			
10.	Do you have the intellectual courage to face and assess fairly ideas that challenge even your most basic beliefs?			
11.	Do you love truth and are you curious about a wide range of issues?			
TOTAL				

## ANNEX III – Relevance and inference. How many piano tuners are in New York City?

Story in first person about the importance of relevance and inference (Fermi problem).

A few years ago, I was looking for a professional change and job improvement. After analysing several job advertisements, I focussed on one that seems perfect for me. A big and important company was looking for a young professional with “*strong reasoning, analytical and problem solving skills*”, which were invited to ask for the job with the following text:

*“Are you an analytical thinker who seeks the root cause and can analyse both qualitatively and quantitatively? Are you a creative problem-solver who simplifies problems, quickly identifies solutions, commits to a plan and then positively influences others to execute it? If so, you will have success on one of our dynamic teams.”*

This description matches my characteristics at the perfection, at least which was what I thought. So, I send my CV to the company. During the interview with the human resources department, a woman showed interest about my ability for reflection and analytical thinking, and suddenly she asks me: “*Could you please tell me: how many piano tuners are in New York City?*”

This question elicited a deer-in-the-headlights look in my face, and left me scrambling to figure out how exactly I were are supposed to know the answer. To gain time and defend myself I react with and attack: “*... is this really relevant to working for your company? How is this question related with reflection and analytical thinking?*”

Some years after that question, I’m sure most of you have been asked similar quirky interview questions that left you scratching your head. “*How much would you charge to wash all the windows in Chicago?*”, “*How much money does your local cinema make in a week?*” or “*How many cups of coffee does Starbucks serve in London each year?*”

Of course the truth is that you “*aren’t*” supposed to know the answer — the interviewer often just wants to see how you react to the question and how you handle the pressure of being put on the spot. The interviewer wants to see your reflection abilities in real time when you are faced with a problem and given no data or tools you analyse it.

These types of questions are called “*Fermi Problems*” — after the famous engineer Enrico Fermi, who used them to estimate the strength of atomic blasts, deduce the circumference of the Earth and determine the likelihood of aliens existing in our universe. Fermi was known for his ability to make good approximate calculations with little or no actual data. Fermi problems typically involve making justified guesses about quantities and their variance or lower and upper bounds. Surprisingly Fermi’s method was remarkably accurate.

## ANNEX IV – “Use the Pensieve “. What Harry Potter teaches us

Extract from “Harry Potter and the Goblet of Fire” Chapter 30 “The Pensieve”, By J.K Rowling’s.

*“Harry stared at the stone basin. The contents had returned to their original, silvery white state, swirling and rippling beneath his gaze.*

*-‘What is it?’ Harry asked shakily.*

*-‘This? It is called a Pensieve’ said Dumbledore. ‘I sometimes find, and I am sure you know the feeling, that I simply have too many thoughts and memories crammed into my mind. ’*

*-‘Err,’ said Harry who couldn’t truthfully say that he had ever felt anything of the sort.*

*-‘At these times’ said Dumbledore, indicating the stone basin, ‘I use the Pensieve. One simply siphons the excess thoughts from one’s mind, pours them into a basin, and examines them at one’s leisure. It becomes easier to spot patterns and links, you understand, when they are in this form. ’”*

## ANNEX V – Developing the self-observation muscle

Stop. Observe and record, without filter, what you perceive:

1. Thoughts I have right now:

--

2. Feelings I have right now:

--

3. Concerns I have right now:

--

4. Wishes I have right now:

--

5. Sensations that I have at the moment (smells, flavours, hot / cold, textures, etc):

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## ANNEX VI – Activities for bias awareness

Choose one of the following activities:

### (I) Implicit Association Test

A proven technique for enhancing awareness of one's unconscious bias is the Implicit Association Test (IAT). This test measures the reaction time of individuals to a series of words or pictures presented on a computer screen. For example, the individual may be asked to type a particular key if the word presented on the screen is a *"female name"* or a *"weak word"* (e.g., delicate, small, flower) and a different key if the word is a *"male name"* or a *"strong word"* (e.g., powerful, mighty, robust). This activity is repeated numerous times and the average reaction time for a correct response is recorded.

Following this, the rules are changed such that the test taker is asked to press one key if the word is a *"female name"* or a *"strong word"*, and a different key if the word is a *"male name"* or a *"weak word"*. Because gender stereotyping associates female names with weak words, and male names with strong words, reaction times on the first test are relatively faster compared to the reaction times under the conditions of the second test involving a mismatch of stereotypical categories. Differential reaction times are evidence of implicit (unconscious) gender bias, and the greater the difference in reaction times between the two tests, the greater are those implicit stereotypical associations.

Anonymous IAT tests administered by Harvard University are publicly available at <https://implicit.harvard.edu/implicit/selectatest.html>

Over a million people have taken those tests, and results confirm that participants across a range of locations, ages, genders, races, and ethnicities hold unconscious stereotypes and prejudices regarding disability, sexual orientation, race, skin tone, age, weight, gender, ethnicity, and religion.

Practitioners should be aware, however, that there have been varied results from the use of this tool in real-world settings. Problems may arise because the theory behind the IAT is difficult to understand and participants may misinterpret the results...leading to confusion, shock, anger, and defensiveness.

When the IAT is used as an intervention tool, it is important that the facilitator is knowledgeable in the mechanisms of the IAT and adequately explains to participants that bias is inevitable as a result of social conditioning and cognitive processes—the results do not show evidence or make accusations of prejudice. Rather, the facilitator must stress that exercise is undertaken to highlight the existence of hidden bias and that, contrary to our conscious intentions; we all hold hidden biases that manifest in subtle and unconscious ways.

In addition to the IAT test, there are some other activities grounded in social psychological theory that can be incorporated into unconscious bias training.

### (II) The Tag Game

In this exercise, participants stick badges, in a variety of shapes, colours, and sizes, somewhere between their waist and neck. Participants are then instructed to form groups without talking. There are no instructions given as to what criteria to use to form the groups. Once formed, the participants are instructed to break up and form into new groups. This is repeated at least four times. Participants will normally form groups based on shapes, colours, or sizes. Rarely do the participants look beyond the badges, and even less rarely do they intentionally form diverse groups in which many shapes, colours, and sizes are represented.

This powerful yet non-confrontational activity leads well into a discussion about social categorisation processes, the automaticity of *"us"* vs. *"them"* categorisations, and in group bias (also known as affinity bias). It is also an excellent exercise for introducing the concept of diversity and the potential benefits of diverse

workgroups. Group discussions following the exercise explore diversity experiences (or lack thereof) in the workplace, and prompt participants to suggest ways to improve the recognition, support, and value of diverse perspectives and experiences.

### (III) The Father-Son Activity

Another useful awareness activity for unconscious bias training taken from the social psychological literature is the Father/Son activity, adapted from Pendry, Driscoll, & Field (2007). In this activity, participants are instructed to solve the following problem:

*“A father and son were involved in a car accident in which the father was killed and the son was seriously injured. The father was pronounced dead at the scene of the accident and his body was taken to a local morgue. The son was taken by ambulance to a nearby hospital and was immediately wheeled into an emergency operating room. A surgeon was called. Upon arrival and seeing the patient, the attending surgeon exclaimed ‘oh my God, it’s my son!’ Can you explain this?”*

Around 40% of participants who are faced with this challenge do not think of the most plausible answer—being the surgeon is the boy’s mother. Rather, readers invent elaborate stories such as the boy was adopted and the surgeon was his natural father or the father in the car was a priest. As such, the exercise illustrates the powerful pull of automatic, stereotyped associations. For some individuals, the association between surgeon and men is so strong that it interferes with problem-solving and making accurate judgments.

This exercise leads well into an ensuing discussion on the automaticity of stereotypes and the distinction between explicit and implicit bias. From here, the discussion can move to explore ways of controlling or overcoming automatic bias. Also, because some of the participants will solve the problem with the most plausible reason, the exercise highlights individual differences in stereotyping and opens a discussion into why stereotypes differ across individuals.

### (IV) The Circle of Trust

The Circle of Trust is a powerful exercise for demonstrating the effect of affinity bias. In this exercise, participants are instructed to write down in a column on the left-hand side of a blank piece of paper the initials of six to ten people whom they trust the most who are not family members. The facilitator then reads out some diversity dimensions including gender, nationality, native language, accent, age, race/ ethnicity, professional background, religion, etc., and participants are instructed to place a tick beside those members of their trusted circle who are similar in that dimension to them. For example, male participants will place a tick beside all men in their trusted six, white participants will place a tick beside all white individuals in their trusted six etc. Participants discover that their trusted six often displays minimal diversity – for most participants, their inner circle include people with backgrounds similar to their own.

The facilitator explains that this tendency or preference for people like us is called affinity or in-group bias and is well-researched. Studies show that, in general, people extend not only greater trust, but also greater positive regard, cooperation, and empathy to in-group members compared with out-group members. This preference for people like us is largely instinctive and unconscious. Affinity bias manifests not only as a preference for in-group members — but it may also manifest as an aversive tendency towards out-group members. For example, we are more likely to withhold praise or rewards from out-group members.

Participants are then prompted to consider the implications of this for the workplace? For example, as leaders, when they assign responsibility for a high-profile piece of work, to whom do they entrust that responsibility? The facilitator suggests that participants will likely offer opportunities to those individuals whom they trust the most. Those people, it turns out, are people who are similar to themselves. Now, because success on high-

profile assignments is critical for emerging as a leader, a tendency to favour people like ourselves when assigning stretch assignments leads to self-cloning and promotes homogeneity in leadership. Though not intentional, people who are not like us get overlooked and left behind.

Although we believe we are making objective assessments of merit and treating people fairly, hidden preferences for people like ourselves can cause us to support the development and career progression of some people over others without us even knowing we are doing so. Regarding employment, affinity bias can compel people to favour those who are most similar to themselves, thereby leading to a tendency for leaders, people managers or recruiting managers to hire, promote, or otherwise esteem those who mirror attributes or qualities that align with their own. Moreover, we are also very good at justifying our biases. Studies show that we exhibit a systematic tendency to claim that the strengths of in-group candidates are more important selection criteria than are the strengths of candidates with backgrounds different from our own.

Affinity bias can also lead us to actively solicit, pay greater attention to and to favour the contributions of in-group members over out-group members. We are also more likely to mentor or sponsor in-group members compared with out-group members.

In some groups, there may be certain individuals with a diverse inner circle. The facilitator encourages participants to think about how an individual's experiences could disrupt affinity bias with the ensuing discussion drawing on intergroup research supporting intergroup friendship as a prejudice reduction technique.

## ANNEX VII – Fighting against people related thinking errors or fallacies. Role play

### Fallacies Deck of cards

<p><b>Ad Hominem Fallacy</b></p> <p>Example 1: “MacDougal roots for a British football team. Clearly he’s unfit to be a police chief in Ireland.”</p> <p>Example 2: “All people from Crete are liars”</p>	<p><b>Straw man Argument</b></p> <p>Example 1: “The Senator thinks we can solve all our ecological problems by driving a Prius.”</p> <p>Example 2: “Quite the contrary, the Senator thinks the environment is such a wreck that no one’s car choice or driving habits would make the slightest difference.”</p>
<p><b>Appeal to Ignorance</b></p> <p>Example 1: “No one has ever been able to prove definitively that extra-terrestrials exist, so they must not be real.”</p> <p>Example 2: “No one has ever been able to prove definitively that extra-terrestrials do not exist, so they must be real.” Example 3: “We have no evidence that the Illuminati ever existed. They must have been so clever they destroyed all the evidence.”</p>	<p><b>False Dilemma/False</b></p> <p>Example 1: “There are only two kinds of people in the world: people who love Led Zeppelin, and people who hate music.” Some people are indifferent about that music. Some sort of like it, or sort of dislike it, but don’t have strong feelings either way.</p> <p>Example 2: “Either we go to war, or we appear weak.” Example 3: “Either you love me, or you hate me.” Dichotomy</p>

<p style="text-align: center;"><b>Slippery Slope Fallacy</b></p> <p>Example 1: “But, you have to let me go to the party! If I don’t go to the party, I’ll be a loser with no friends. Next thing you know I’ll end up alone and jobless living in your basement when I’m 30!”</p> <p>Example 2: “If America doesn’t send weapons to the Syrian rebels, they won’t be able to defend themselves against their warring dictator. They’ll lose their civil war, and that dictator will oppress them, and the Soviets will consequently carve out a sphere of influence that spreads across the entire Middle East.”</p>	<p style="text-align: center;"><b>Circular Argument</b></p> <p>Example 1: “The Bible is true; it says so in the Bible”— It is a claim using its own conclusion as its premise, and vice versa, in the form of “If A is true because B is true; B is true because A is true”.</p> <p>Example 2: “According to my brain, my brain is reliable.” Example 3: “Smoking pot is against the law because it’s wrong; I know it’s wrong because it is against the law</p>
<p style="text-align: center;"><b>Hasty Generalization</b></p> <p>Example 1: "Apple computers are the most expensive computer brand?" What about 12 examples? What about if 37 out of 50 apple computers were more expensive than comparable models from other brands?</p> <p>Example 2: “People nowadays only vote with their emotions instead of their brains.”</p>	<p style="text-align: center;"><b>Red Herring Fallacy</b></p> <p>Example 1: “My wife wants to talk about cleaning out the garage, so I asked her what she wants to do with the patio furniture, because it’s just sitting in the garage taking up space.”</p>

<p style="text-align: center;"><b>Tu Quoque Fallacy</b></p> <p>Example 1: “Maybe I committed a little adultery, but so did you Jason!”</p> <p>Example 2: “But, Dad, I know you smoked when you were my age, so how can you tell me not to do it?”</p>	<p style="text-align: center;"><b>Causal Fallacy</b></p> <p>Example 1: “Since your parents named you ‘Harvest,’ they must be farmers.” Another causal fallacy is the post hoc fallacy. Post hoc is short for post hoc ergo propter hoc ("after this, therefore because of this"). This fallacy happens when you mistake something for the cause just because it came first.</p> <p>Example 2: “Yesterday, I walked under a ladder with an open umbrella indoors while spilling salt in front of a black cat. And I forgot to knock on wood with my lucky dice. That must be why I’m having such a bad day today. It’s bad luck.”</p> <p>Example 3: “Every time Joe goes swimming he is wearing his Speedos. Something about wearing that Speedo must make him want to go swimming.”</p>
<p style="text-align: center;"><b>Appeal to Authority</b></p> <p>Example 1: “Four out of five dentists agree that brushing your teeth makes your life meaningful.”</p> <p>Example2: “I’m the most handsome man in the world because my mommy says so.” Example 3:“This internet news site said that the candidate punches babies. We know that’s true because it’s on the internet.”</p>	<p style="text-align: center;"><b>Equivocation</b></p> <p>Example 1: “I don’t understand why you’re saying I broke a promise. I said I’d never speak again to my ex-girlfriend. And I didn’t. I just sent her some pictures and text messages ambiguity).</p>

Appeal to Pity	Bandwagon Fallacy
<p>Example 1: “How can you eat that innocent little carrot? He was plucked from his home in the ground at a young age and violently skinned, chemically treated, and packaged, and shipped to your local grocer, and now you are going to eat him into oblivion when he did nothing to you. You really should reconsider what you put into your body.”</p> <p>Example 2: “Professor, you have to give me an A on this paper. I know I only turned in a sentence and some clip art, but you have to understand, my grandmother suddenly died while travelling in the Northern Yukon, and her funeral was there so I had to travel, and my parents got divorced in the middle of the ceremony, and all the stress caused me to become catatonic for two weeks. Have some pity; my grandmother’s last wish was that I’d get an A in this class.”</p>	<p>Example 1: “If you want to be like Mike (Jordan), you’d better eat your Wheaties.”</p> <p>Example 2: “Drink Gatorade because that’s what all the professional athletes do to stay hydrated.”</p> <p>Example 3: “McDonald’s has served over 99 billion, so you should let them serve you too.”</p> <p>Example 4: “Almost everyone at my school will be at the party Friday night. It must be the right thing to do.”</p>



<p><b>Smoke is dangerous for health</b></p> <p>Your lungs can be very badly affected by <b>smoking</b>. Coughs, colds, wheezing and asthma are just the start. <b>Smoking</b> can cause fatal diseases such as pneumonia, emphysema and lung cancer. <b>Smoking</b> causes 84% of deaths from lung cancer and 83% of deaths from chronic obstructive pulmonary disease (COPD).</p>	<p><b>Women are better drivers than men</b></p> <p>Of the more than half a million motoring offences committed in England and Wales in 2018, a staggering 79% of them were committed by men – almost four times as many as for women.</p> <p>67% of car insurance claims in 2018 were made by men, with only 33% women.</p> <p>Male drivers also make twice as many theft claims as women, and more than twice as many 'at fault' claims.</p>
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<p><b>Greenhouse gas emissions increase as fossil fuel companies make larger profits</b></p> <p>Human activities like the burning of fossil fuels for electricity, heat, and transportation releases 30 billion tons of carbon dioxide into the atmosphere every year.</p> <p>Natural gas generates 27 percent of America's electricity and contributes half of the greenhouse gas emissions compared to coal. Petroleum is the second largest contributor of greenhouse gasses. The transportation sector of our economy alone releases about 26 percent of total pollutants in the air. Only about 13 percent of electricity is generated by renewable energies like hydroelectricity, biomass, wind, and solar. These sources release fewer pollutants, if any at all.</p>	<p><b>Immigration and crime</b></p> <p>There is no empirical evidence that either legal or illegal <b>immigration increases crime</b> rate in the United States. Most studies in the U.S. have found lower <b>crime</b> rates among <b>immigrants</b> than among non-<b>immigrants</b>, and that higher concentrations of <b>immigrants</b> are associated with lower <b>crime</b> rates.</p>
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## ANNEX VIII – We don't want to think. Irrational beliefs behind deficient analytical thinking behaviours

Irrational Assumptions	Rational Convictions
1. For adults, it is a dire necessity to be loved by significant others for almost everything they do.	To be loved by others is not as important as ____.
2. Certain acts are awful or wicked; people who perform such acts should be condemned; they deserve punishment, not help.	Certain repulsive acts and behaviours are ____ They deserve ____.
3. It is horrible when things are not the way we like them to be.	Being disappointed is _____. A mature response to being disappointed is _____.
4. Feeling miserable is always caused by external conditions, forced on us by outside people and events.	The feeling of being miserable is essentially _____. A rational response to it requires _____.
5. If something is dangerous or fearsome we should be terribly upset and worry about it continuously.	Rational responses to dangers and fears almost always involve _____.
6. It is easier to avoid life's difficulties and self-responsibilities than to face them.	The most reasonable responses to life's difficulties, including responsibilities that belong to us, involve _____.
7. Everyone absolutely needs something other or stronger or greater than themselves on which to rely.	In the face of threats, a reasonable adult will rely on his/her inner power to _____.
8. Normal adults should be thoroughly competent, intelligent, and achieving in all possible respects.	The effort to be perfect is nowhere near as important as an effort to be _____.
9. Because something once strongly affected our life, it should always affect it.	The wisest way to think about deeply influential experiences is to _____.
10. It is essential to have certain and perfect control over things.	Life is .... To meet life's challenges, it is highly important to have the habit of _____.
11. Happiness can be achieved by just relaxing and doing nothing.	Genuine happiness always has a dimension of _____.
12. We have virtually no control over our emotions, and we cannot help feeling disturbed about things.	With difficult emotions, it is healthy and helpful to _____.

## ANNEX IX – What were Harry, Ron and Hermione afraid of? The Irrational Beliefs

Extract from “Harry Potter and the Prisoner of Azkaban” Chapter 7 “The Boggart in the wardrobe”, By J.K Rowling’s.

*“-‘What scares you the most in the world?’*

*Neville moved his lips, but said nothing. Neville looked around, his eyes terrified, as if pleading for help, then he said in a whisper:*

*-‘Professor Snape.’*

## ANNEX X – Irrational beliefs behind deficient analytical thinking behaviours. Revisiting the three mini-cases: Second part

### Mini-case 1: part 2

Ricardo receives a special responsibility to guide a new fellow who will join his department, Juan, the son of one of the owners of Omega Airlines, in its adaptation to the company. Juan is a distracted boy; and he doesn't want to learn nor strive, as he is used to easy money and easy life. He is not willing to work at this father's company, but he needs this internship to finish his studies.

First Monday of the month, Ricardo meet Juan, take him for a tour of the company's facilities, and realizes the little interest Juan has in the operation of the company. Ricardo feels it is a new challenge of which he has to be victorious. Ricardo assigns Juan its first activity and gives him all the tools to perform it successfully. Juan must develop a chart showing the routes of the company, sorted in ascending order according to its profitability. Ricardo realizes that Juan feels insecure when he receives the instructions. During the follow-up process, Juan states that he has not yet completed it, to which Ricardo decides to collaborate in the task so as not to delay the delivery of the report. Thanks to team working, they successfully deliver it.

After the presentation of the report, Juan thanks Ricardo for his help, and comments that he will do his best in the next assignment. Likewise, he receives from Ricardo the feedback of what happened and suggests a change of attitude towards the responsibilities granted, since it can affect the work of the entire department. With the commitment to change demonstrated by Juan, they develop a friendship that positively influences teamwork positively. That is why Ricardo believes that Juan needed an opportunity and confidence to demonstrate his skills.

### Mini-case 2: part 2

After accepting the change of position, due to the mistakes made during the pilot strike, Hermán meets with its new staff and all those responsible for the areas that make up the company, in order to receive reports on the current situation of the company and plan the working plan.

At this meeting, he proposes to restructure functions, since he observes deficiencies in some key areas within the organization, overlapping activities, differences and disagreements that affect effective decision making.

Herman, does not want to make the mistakes of the past, is afraid to repeat them to a greater or lesser extent and that this leads him to lose his job, that is why he decides to obtain all the information that is possible from the company, methodologies used, rumours , among others.

After having at hand all the data that he considers elementary for the excellent performance of his management, he considers that nothing out of the planned will happen because he has covered all areas and all issues without the possibility of experiencing negative events, with the firm conviction that any inconvenience will be caused by factors beyond its responsibility.

### Mini-case 3: part 3

Rosa upon learning of Pedro's resignation request, decides to meet with him to discuss how he felt during the time he was working in the company. When the meeting takes place, she informs him that she has decided not to accept his resignation, since she considers that he is a very capable and intelligent person and that it is understandable that when he is on probation he has difficulties, but with time and experience he will improve. Pedro acknowledges that he believed not to be up to his obligations and responsibilities in the company because he couldn't perform the job correctly. In addition, he also adds that he feels very bad about what his colleagues might think when he makes mistakes.

Rosa listens carefully to Pedro's motives, sensitizing her pessimism to what she responds with denial of his resignation. Subsequently, she reminds him of his strengths and skills, informing him that we all have weaknesses and that in them we must work with perseverance, dedication and effort to improve daily the activities to be carried out personally and personally. For this, it is necessary to learn to identify the internal and external factors that influence each of the tasks to be performed.

Finally Rosa informs him that the team is satisfied with him, since he is a great help and support for the team, they understand that you are in the learning process and are willing to provide all the support you need.

Given this, Pedro understood that he must make an introspection and self-reflection in order to recognize his deficiencies and positive attributes.

## ANNEX XI – Exercising self-regulation. Inside or outside. Imagine and visualize

Follow the steps to do the exercise of self-regulation:

1. This time you are asked to select from your experiences two situations, one pleasant and the other not pleasant or as unpleasant as you prefer. Once selected, disconnect from them, counting down, from 15 to 1, and naming only odd numbers.
2. Now remember and visualize the nice image, being in it. How do you visualize yourself, how if you lived it live, while you were inside your body, or as if you were seeing it from outside, from the cinema seats and seeing your own body from the outside? Tune in to the pleasant feeling that image and that moment produce (From 1 to 10).
3. While still in connection with the pleasant sensation, if you saw the image while you were inside - that is, in a way that you saw the contour of your nose, your chest or abdomen -, we will assume that by an effect of magic you are able to cross the screen and leave the scene. Now, once in the armchair you see the scenes where you are represented by “another you”, and you see yourself from outside. How is your pleasant feeling now? (Rate it from 1 to 10)
4. Now let's get out of that situation. What is the capital of Switzerland? And that of Sweden?
5. Now we are going to reconstruct the unpleasant scene in the imagination. Rebuild who you are with, how are you, what happens, what do you feel ... How did you create it, being inside or being outside? (That is, being inside the screen, or seeing it from the armchair). Rate from 1 to 10 the level of unpleasant sensation you feel.
6. If you looked inside the image, now turn it in reverse; that is, get out of the screen, or if you were out of the picture, and you saw "another you" in the scene, enter the live scene. Focus now on the level of unpleasant feeling you have once the change is made. Has anything changed?