CPL Theory
Human Factors (CHUF)

CHUF 8 – Crew Resource Management

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3. Disclaimer

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CREW RESOURCE MANAGEMENT

Crew Resource Management

- The common definition of CRM is:

"The effective use of all available resources by an individual or crew to safely and successfully accomplish a flight operation."

- According to CASA, CRM and Human Factors fall under the category of Non-Technical Skills Training (NTST) which is defined as:

- "The mental, social and personal-management abilities that complement the technical skills of workers and contribute to safe and effective performance in complex work systems. They include competencies such as **decision-making, workload management, team communication, situational awareness and stress Management"**

- CRM training is now mandatory by all ICAO countries for all airline crew members

- In Australia, this is achieved through a **Multi-Crew Cooperation (MCC)** course, which a pilot must complete before operating in multi-crew environments

Crew Resource Management

A good example of why CRM is important:

There are 2 sisters in a kitchen, both of whom want an orange – but there is only one left

- What do you expect is the solution?
- How might they compromise?

The sisters decide to cut the orange in half – this way they will each have half an orange

One sister took her half to the juicer and starter to squeeze herself a rather too small orange juice.

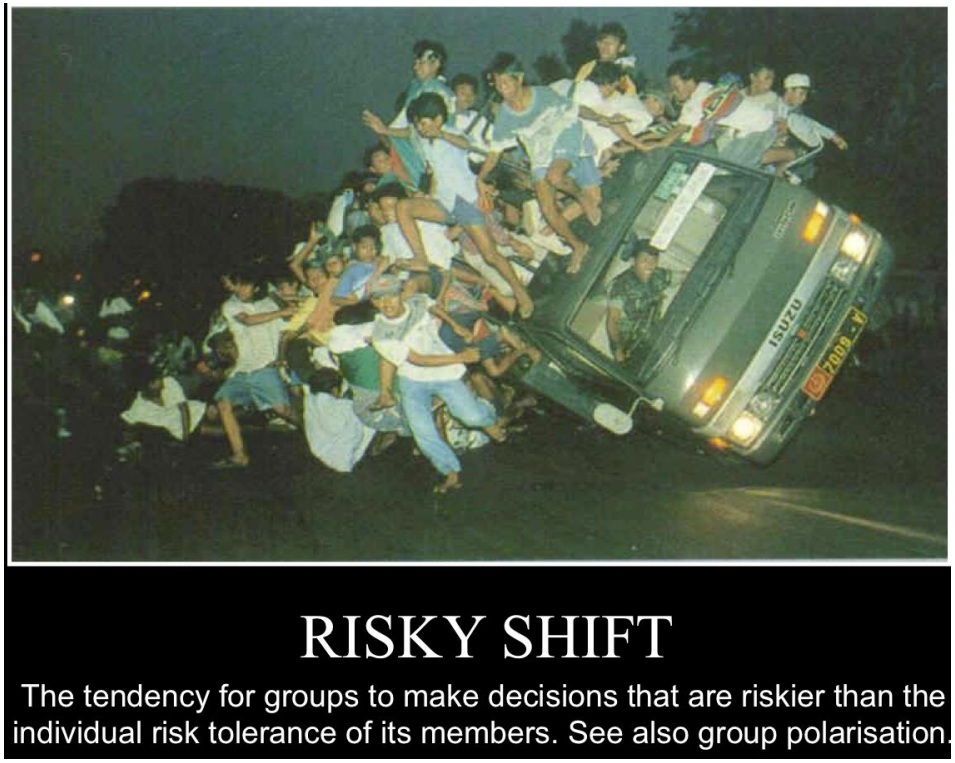
The other sister, with much difficulty, began to grate the rind off her half to flavour a cake.

*Had they **discussed needs rather than heading straight to solutions**, they could have both had a whole orange!*

RISKY SHIFT

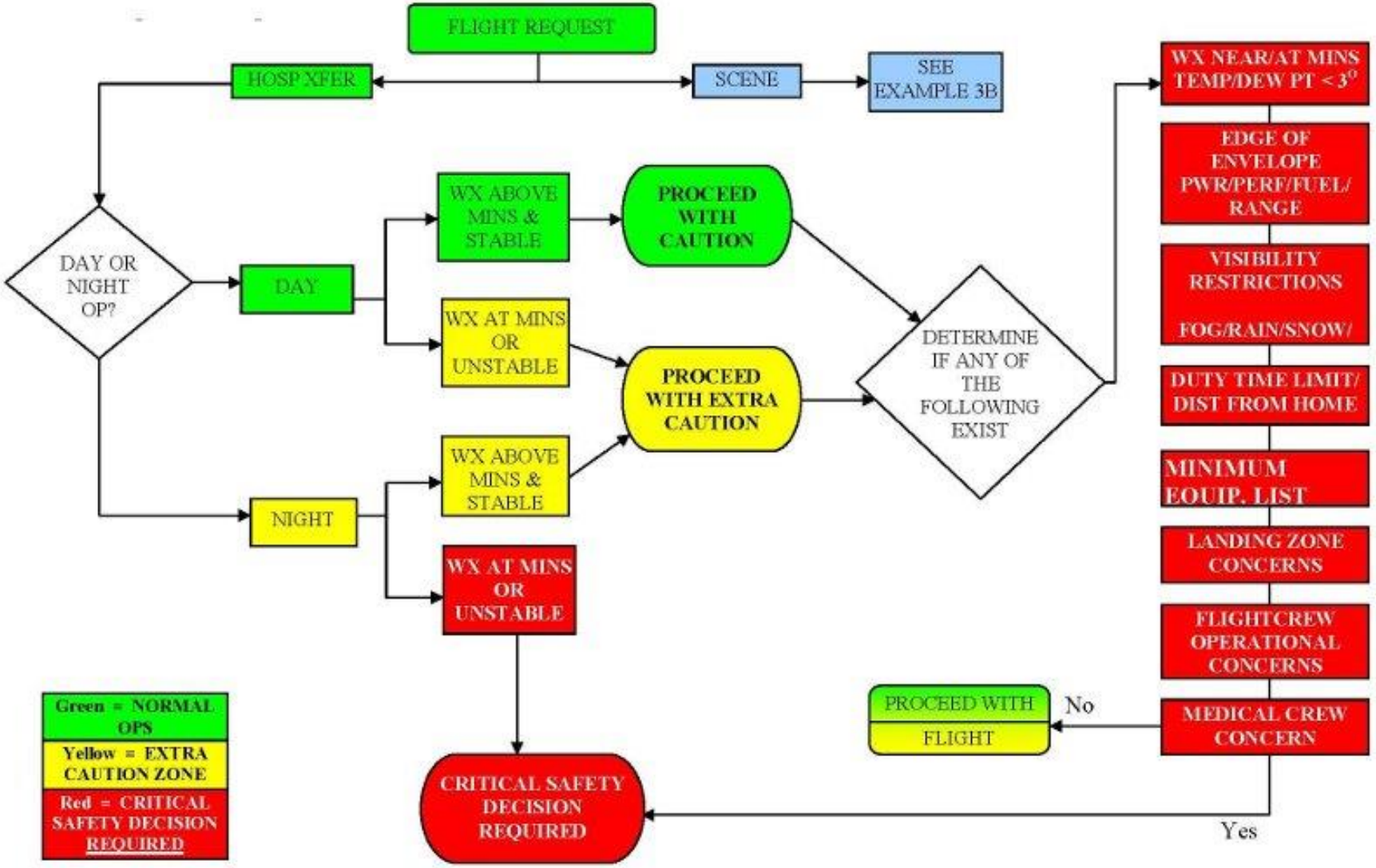
Risky Shift

- One of the most dangerous parts of multi-crew operations is **“risky shift”** behaviour
- This refers to the animalistic instinct of **“safety in numbers”**
- In other words, pilots of **multi-crew operations** will be **more likely to take risks** than pilots who are conducting single-pilot operations
- Whilst each crew member is **individually concerned**, a **lack of communication** and even **pride** may contribute to no one crew member voicing their concern



Risky Shift

- One way to overcome this is to use a **risk assessment matrix** to aid in judgement



COMMUNICATION

Communication

- The most common form of communication in flight is **verbal**

- It has 2 purposes:

1. Allows us to express our thoughts and ideas to others (Push-Mode)

2. Allows us to access the thoughts and ideas of others (Pull-Mode)

Push-Mode

- Expressing our opinion
- Stating facts of beliefs
- Giving commands
- Presenting our side of a negotiation

Pull-Mode

- Asking a question
- Requesting an opinion
- Making a proposal
- Inviting others to negotiate

- Note that **different operational circumstances require different modes of communication**

Communication

- The **pull-mode** of communication invites others to speak and requires us to **listen**

- Pilots must be mindful to **listen actively.** A large part of what we hear in conversation can be ignored, misunderstood and forgotten due to factors such as:

Wandering Attention

- You can think much faster than someone can speak, so it is easy to **"tune out"**

Preparing your Contribution

- While someone is speaking, you are already thinking of what to say next

Engineering the Conversation

- You try to divert the conversation towards an area that suits you

Arguing

- You consistently rebut the comments of others – you must have the last word!

Barriers to Effective Communication

- Factors that hinder effective communication include:

External Factors

- Noise levels
- High workload
- Physical discomfort

Internal Factors

- These are factors affecting the **interpretation or perception** of what is said
- **Expectancy** – we hear what we expect to hear instead of what is actually said!
- Language barriers

Aids to Effective Communication

- Factors that aid effective communication include:

Standard Phrases

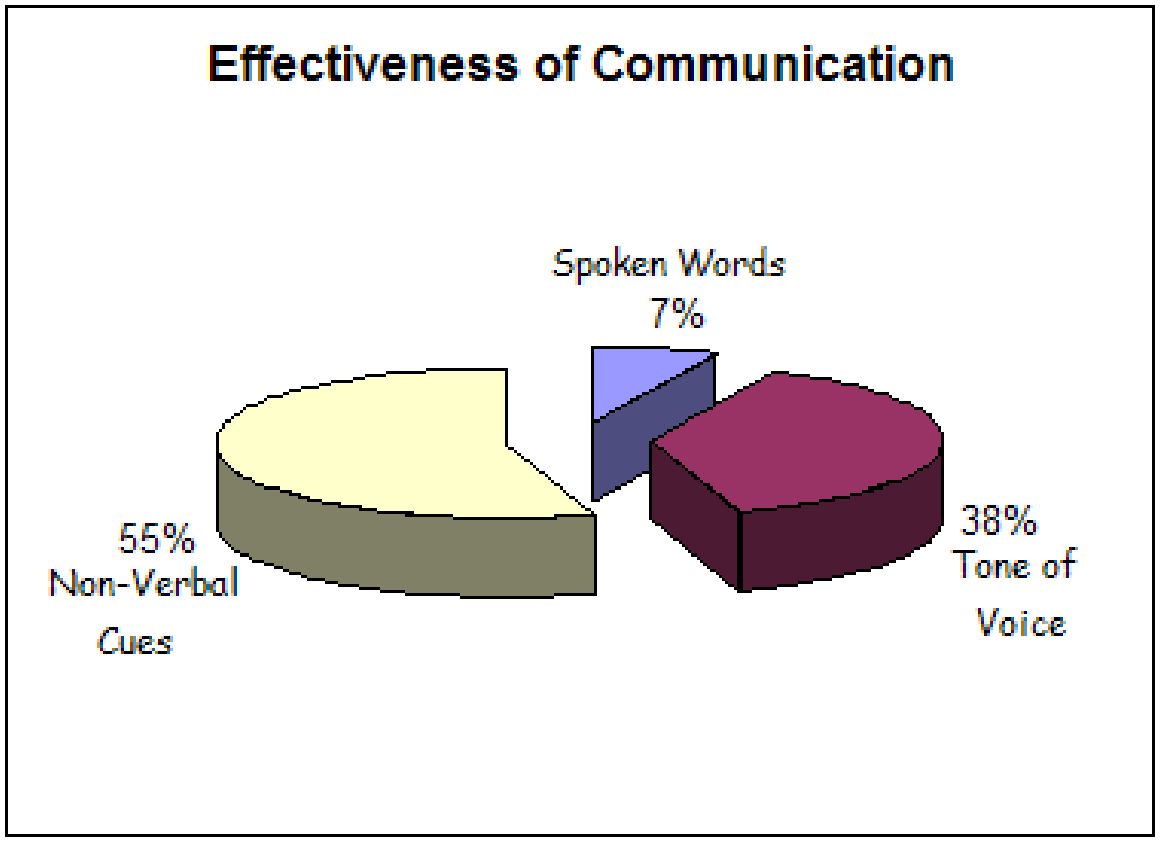
- Standard phraseology like in RATEL reduce the likelihood is misinterpretation

Thinking Before Speaking

- What words will you use?
  How will you use them?
  Is this the best method?

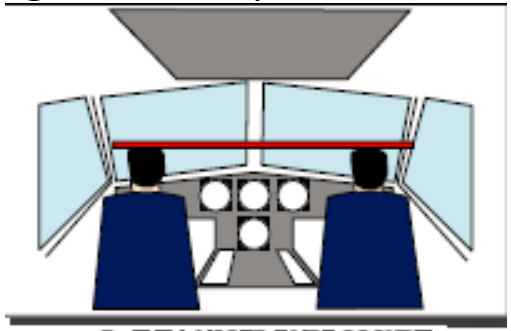
Pace & Clarity of Speech

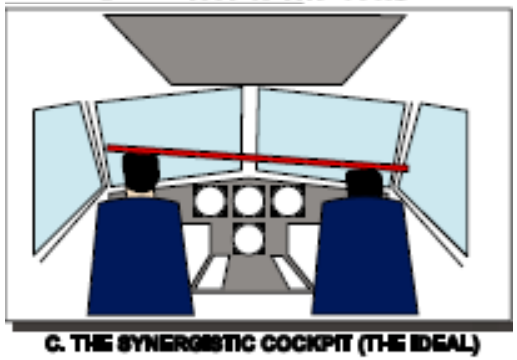
- When stressed, speech can become rapid and unclear

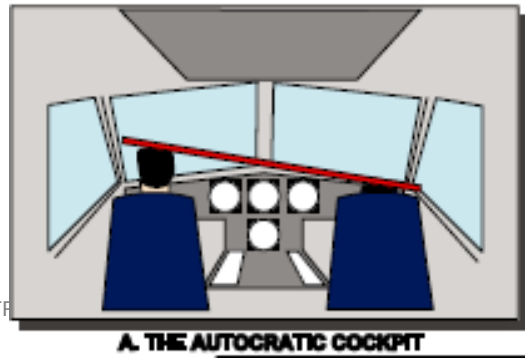


Cockpit Authority Gradient

- In the multi-crew environment, the **cockpit authority gradient** can have significant impact on **crew communication**







Shallow Gradient

- Both the Captain and FO share decisions equally
- Captain consults FO on every issue
- FO may become “too familiar” or friendly
- Decisive action in an emergency may not be taken

Correct Gradient

- Captain has overall command
- Captain involves the FO as a useful team member
- FO respects Captain but feels free to contribute

Steep Gradient

- Captain has total command
- Captain leaves FO out of all decisions
- FO is unlikely to contribute ideas or thoughts – even when doubtful of the captain’s decision!

Two-Communication Rule

- Airlines from different countries with **different cultures** are likely to have **different cockpit authority gradients** that are considered “normal”
- In Asia and Europe, steeper gradients are more common than in Australia
- To ensure that adequate communication takes place, many airlines have introduced the **“two communication rule”**
- Instead of having a “Captain” and “Co-Pilot,” the flight crew is now referred to as **Pilot Flying (PF)** and **Pilot Monitoring (PM)**
- The PM directs a communication which requires a “read back” from the PF
- If the PF does not respond, the communication is repeated

- If the PF does not respond a second time, the PM will take over

Body Language

- Aside from verbal communication, other forms of communication include:

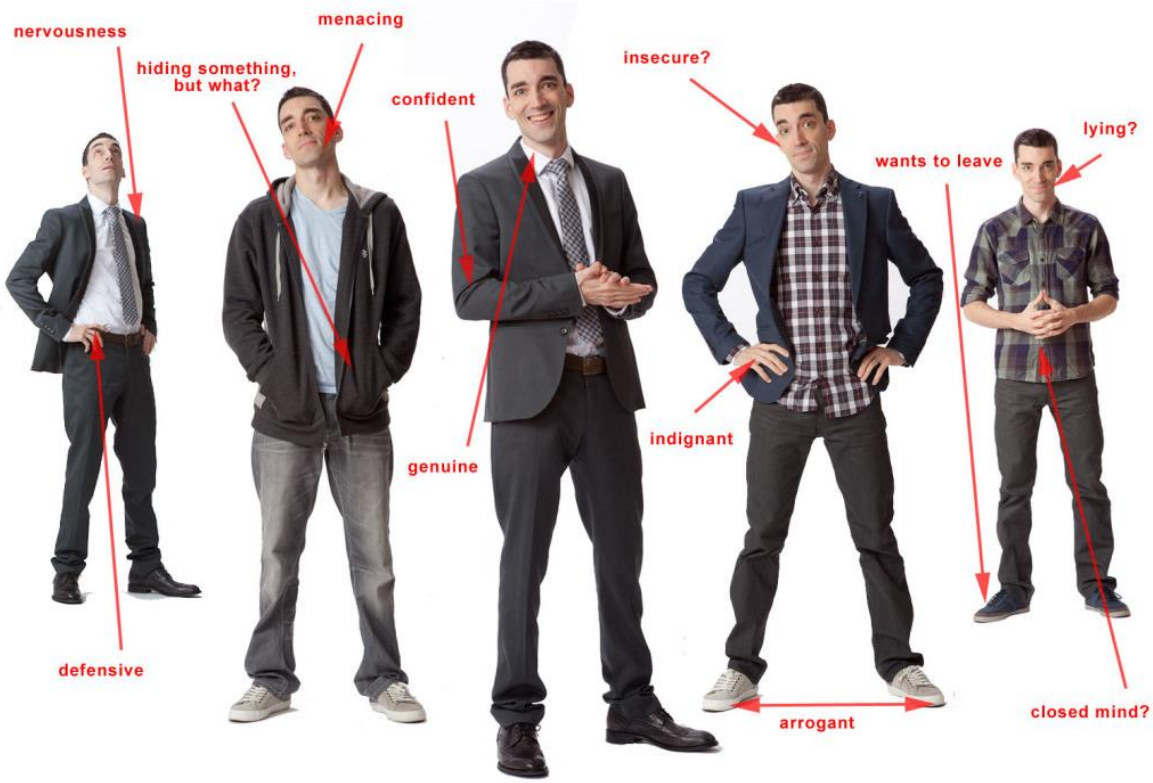
1. Eye contact

2. Facial expressions

3. Touch

4. Body orientation & Posture

5. Hand & Head movements (gestures)



- Most of these can be distracting, misinterpreted or hazardous on the flight deck and should be rarely used if not avoided

- Positive gestures, such as **head nodding**, however, can give encouragement and aid effective communication

LEADERSHIP

Leadership

- A leader is someone whose ideas and actions influence the behaviour of others

- The 3 main priorities of leaders are:

  1. The Task

  2. The Team

  3. The Individual

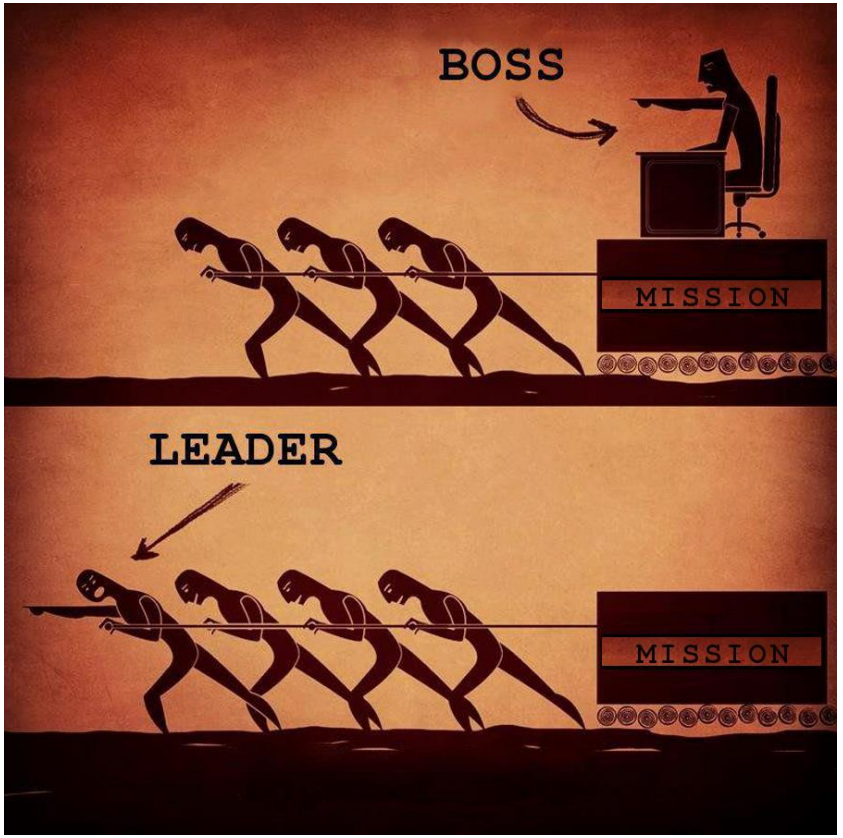
- A good leader is able to influence others in such a way that:

  1. They want to achieve the **task needs**

  2. They feel content as a **team** and **individuals** whilst doing so

Leadership vs. Authority

- Note that being the “captain” or the “boss” doesn’t automatically make you a leader
- **Authority is assigned**
- **Leadership is acquired (or earned)**
- A leader must gain the respect and trust of their team over time
- This can be achieved through:



1. **Personally understanding the task needs, team needs and individual needs**
2. **Demonstrating a high level of skill and competency in your own performance**

Qualities of a Good Leader

Lead by Example

- Set high standards and demonstrate a high level of **personal performance**

Advise Intentions

- Keep the team informed and explain the reasons for using or not using the ideas of others

Delegate

- Allow others to participate – the leader cannot do it all! Monitor and supervise

Motivate

- Offer praise for good performance **(positive reinforcement)**

Consult

- Involve the team in making most decisions

Prioritise

- Direct attention to tasks in a logical order

FOLLOWERSHIP

Followership

- Whilst it is important to know what makes a good leader – airline pilots do not start out as captains!

- Therefore, it is also important to consider **followership** – how we act as a member of a team being led

- As a team member, you may not get to choose the people you work with – it is therefore important that you are able to **put aside differences in personality** and work effectively to achieve team goals

- The best quality a follower can have is **assertiveness**

1. **If you feel unsure or uneasy about a specific plan of action, even if it is the captain's decision, you must voice your concern**

2. **If an appropriate plan of action has been chosen, you must fully support this decision even if you personally prefer a different option**

Followership