How Simulation Enhances Communication as an integration tool in ab-initio air traffic controller training

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María Molina Carranza
Simulation - Workshop
Communicative skills - Useful phrases

I DON´T UNDERSTAND
SAY AGAIN
SAY AGAIN SLOWLY
SAY AGAIN WITH OTHER WORDS
STAND BY
AREA SIMULATION
MEANINGFUL LEARNING

• The learner is fully engaged
• The brain organizes the information based on what it relates to.
• It takes longer than rote memorization.
• Hands-on tasks.

David Ausubel
Air traffic controllers’ curriculum

- Aviation Regulations
- Standardised Phraseology
- ESP – English Language with Specific Aviation Terminology
- Air Traffic Control
- AIS
- Human Factors
- Meteorology
- Communications
- Search and Rescue
Symbology - Clearances

LVBPL Cleared from Rosario to Córdoba Via Flight Planned Route, flight level 3-2-0 until Cordoba VOR, after take off direct to ISRAT, cross/pass over ISRAT at or above flight level 1-5-0

COPA 4-5-3 Cleared to Tocumen, Via Flight Planned Route, flight level 3-4-0 until SINUT position, Standard Instrument Departure BIVAM 2 Alpha, RESTRICTION: reach flight level 3-4-0 1-0 miles before UGALA.
Ezeiza reports wind of one-three-zero degrees, zero eight knots, Visibility 8 kilometers HAZE. Scattered clouds at 6 thousand feet, Temperature two three, dewpoint one eight. QNH one zero two zero.
Cone of learning (Edgard Dale)

After 2 weeks, we tend to remember:

- 10% of what we READ
- 20% of what we HEAR
- 30% of what we SEE
- 50% of what we SEE & HEAR
- 70% of what we SAY
- 90% of what we SAY & DO
How to plan a simulation

Air traffic control simulation

**ATSU**: Tower

**Objective**: The student will be able to use Standardised Phraseology in routine situations whenever applicable, and plain English in non-routine situations, in a simulated scenario, in the manouvering and movement area as it is established in Doc. 4444 ATM and Doc. 9432 Manual of Radiotelephony, Annex 10, Doc. 10056. Doc. 9835.  
*The student is expected to use at least these functions:*

- Give an order/amended order/alternative orders
- Cancel an order
- Give advice/information/instruction on how to do
- Announce a change.

**Competencies assessed**

- Speaks clearly, accurately and concisely.
- Uses appropriate vocabulary and expressions to convey clear messages.
- Uses standard radiotelephony phraseology, when prescribed.
- Adjusts speech techniques to suit the situation.
- Demonstrates active listening by asking relevant questions and providing feedback.
- Verifies accuracy of readbacks and corrects as necessary.
- Uses plain language when standardized phraseology does not exist or the situation warrants it.
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Meteorological Information:

<table>
<thead>
<tr>
<th>Callsign</th>
<th>Dep. ad.</th>
<th>Dest.</th>
<th>First comm.</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>CXMAS</td>
<td>SUMU</td>
<td>Your airport</td>
<td>5 NM SE</td>
<td>2000</td>
</tr>
<tr>
<td>PTMET</td>
<td>Your airport</td>
<td>SAAR</td>
<td>Gate N° 6</td>
<td>FL100</td>
</tr>
<tr>
<td>ARG1758</td>
<td>Your airport</td>
<td>SARI</td>
<td>Gate N° 3</td>
<td>FL350</td>
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</table>

At the beginning of the exercise PTMET calls tower and request departure clearance to SAAR. The student is expected to give Air traffic control clearance, pilot readbacks with one mistake. The student should correct readback.

Later, ARG1758 calls. Request ATC to SARI. Both aircraft call ready to taxi, the student is expected to provide taxi clearances and information about the traffic maneuvering in the platform.

CXMAS Calls 5 miles southeast of the airport for landing. Meteorological information should be provided, and landing instructions, including traffic circuit vocabulary and departing traffic information.
Simulation goes on until both aircraft have departed and CXMAS has landed.
Additional information: Runway 11/29

METAR 140/10 6000 BR BKN025 15/13 Q1001

PTMET PA28
ARG1758 B737

CXMAS
5 NM South East
The assessment form

Date: …../……/……
Name: ..................................................  Surname: ...............................................................  
Sector:  TWR / APP / AREA (EN ROUTE) / AREA (TMA)  Stage:  1 / 2 / 3

<table>
<thead>
<tr>
<th>Observable behaviour</th>
<th>S</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC4.1 Selects communication mode that takes into account the requirements of the situation, including speed, accuracy and level of detail of the comm.</td>
<td></td>
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<tr>
<td>PC4.2 Speaks clearly, accurately and concisely</td>
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<tr>
<td>PC4.3 Uses appropriate vocabulary and expressions to convey clear messages.</td>
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<td>PC4.5 Adjusts speech techniques to suit the situation.</td>
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<td>PC4.6 Demonstrates active listening by asking relevant questions and providing feedback.</td>
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<tr>
<td>PC4.7 Verifies accuracy of readbacks and corrects as necessary.</td>
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*PC means Performance Criteria*
Now, let’s put our **hands on tasks!**

1. Divide into two groups (each one has to have an Air Traffic Controller or Pilot.
2. Choose who is going to be the ATCO. (1)
3. Decide who are going to be pilots (3)
4. Other attendants will assess ATCO’s performance through the Assessment Form.
5. Then, after simulation is over share your experience.
Summarizing

✓ Simulation is a powerful tool that allows students to put “hands-on-tasks”.

✓ Meaningful learning may take longer than rote memorization, but the knowledge acquired remains longer too.

✓ Simulation and OJT helps ab initio air traffic controllers to understand where each piece of the puzzle goes.

✓ According to Edgar Dale’s pyramid, doing things is one of the best ways to achieve long term knowledge (learn by doing)

✓ Assessment becomes easier and more effective when we focus on Competencies (Observable behaviours)
Questions?

Thank you!

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Survey