

[論文]

Observations on Task-Based Language Teaching in Aviation English

John Dolan
Neal Newbill

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Abstract

Aviation English is a less known English for Specific Purpose that features a strict and formulaic phraseology for radio communications as well as an aviation-specific lexicon used outside of radio communications. Due to the nature of aviation itself, a pilot's English must be fluent and accurate, in contrast to general English where accuracy need only be good enough to effectively communicate the speaker's message. With the importance of fluency regardless of minor errors in accuracy in general English, Task-Based Language Teaching (TBLT) has played an important role in the modern classroom, and it is also important in Aviation English instruction despite aviation's need for accuracy, as it has the potential to teach secondary, non-linguistic skills that are required of pilots in addition to teaching them how to complete professional tasks in English. This paper will evaluate the merits of TBLT in Aviation English instruction within the context of an ATC Communications course at a Japanese university.

Introduction

Since humans first took flight in a powered aircraft in 1903, lessons learned from tragic accidents have led to the multitude of regulations and requirements that make modern air travel safe. Among these regulations and requirements is the use of English as the lingua franca, more specifically Aviation English. Aviation English is categorized as an English for Specific Purpose (ESP), which is specialized English for certain activities, including Business English and Medical English. Aviation English combines formulaic standard phraseology for radio communications

between pilots and Air Traffic Control Officers (ATCOs) and general English that uses an aviation-specific lexicon for situations outside of radio communications, such as ground handling and flight planning, as well as emergency situations where no standard radio phraseology exists. This standardization of Aviation English was spearheaded from 2003 and is still maintained by the International Civil Aviation Organization (ICAO), a specialized agency of the United Nations.

Due to the nature of Aviation English, it lends itself well to Task-Based Language Teaching (TBLT), a subset of Communicative Language Teaching (CLT). TBLT as a form of instruction focuses on completing real-world tasks in the target language. TBLT is distinct from but also often combined with Content-Based Language Teaching (CBLT), which takes as its focus the teaching of a specialized subject using the target language. TBLT is not only used to teach pilots the English skills required by ICAO, but as a side effect can also help them develop important general skills required in the cockpit, such as situational awareness and aeronautical decision-making.

The Case for English as the Lingua Franca in Aviation

Throughout the history of aviation there have been many accidents caused by pilot error, mechanical failure, or language. ICAO investigations of accidents concluded that there are three ways in which language can contribute to an accident: incorrect use of standard phraseology, lack of general language proficiency, and use of more than one language in the same airspace (ICAO, 2010). One infamous example of language contributing to an accident is the Tenerife Disaster of 1977, where two airliners operated by Pan-Am and KLM collided on the runway of

Tenerife Airport and claimed 583 lives. In this incident, the native language of the ATCO was Spanish, and the native languages of the two pilots was English and Dutch. While language was not the sole cause of the accident, a lack of language proficiency and use of ambiguous, non-standard phraseology were determined to be contributing factors by Spanish authorities (Cookson, 2009). Prompted by the Tenerife Disaster, ICAO increased its efforts in developing standard radio phraseology and language proficiency requirements for commercial pilots. ICAO assesses language proficiency according to a scale consisting of six levels, with Level 4 being the minimum required for a pilot to be considered operational (ICAO, 2010).

Fig. 1: Selected aviation accidents where language was a contributing factor.

Accident	Date	Fatalities	Native Language of Pilot (s)	Native Language of ATCO
Zagreb Mid-air Collision	1976	176	English Serbo-croatian	Serbo-croatian
Tenerife Airport Disaster	1977	583	Dutch English	Spanish
Avianca Flight 52	1990	73	Spanish	English
Charkhi Dadri Mid-air Collision	1996	349	Kazakh/Russian Arabic	Hindi/English

Characteristics of Aviation English

Aviation English combines formulaic radio phraseology standardized by ICAO and aviation-specific English for use in situations where the ICAO standard phraseology does not apply. The ICAO radio phraseology

is designed to convey the necessary information as precisely and concisely as possible, and attempts to avoid any possible communication errors due to pronunciation, ambiguity, or radio interference. The following is a transcription of a standard radio phraseology exchange between United Airlines flight 827 and Narita ATC, recorded on May 4, 2018:

ATC: United eight-two-seven, Narita tower, runway one-six right, line up and wait.

Pilot: One-six right, line up and wait, United eight-two-seven.

ATC: United eight-two-seven, wind two-five-zero at one-four, runway one-six right, cleared for takeoff.

Pilot: Runway one-six right, cleared for takeoff, United eight-two-seven.

ATC: United eight-two-seven, contact departure one-two-four decimal two.

Pilot: Two-four decimal two, United eight-two-seven.

In this exchange, Narita Tower instructs United 827 to enter runway 16R (the right of two parallel runways), and await further instructions. United 827 responds with a readback of the instructions to acknowledge understanding and compliance with the tower's command. Narita tower then gives United 827 current wind conditions—250 degrees (from the west) at 14 knots—and gives the flight permission to take off. United 827 again reads back the instructions, and proceeds with departure. Once United is airborne, Narita Tower instructs United to contact departure control on radio frequency 124.2. Due to the majority of aviation radio frequencies being in the 100.00Mhz range, the readback is often truncated by omitting the first digit, in this case shortening it to 24.2. It should be noted that in this transcription, numbers are read individually, “one four” instead of “fourteen,” for example, to avoid any misunderstandings due to

pronunciation with similar sounding numbers. “Forty” could easily be misinterpreted to be “fourteen,” and is thus pronounced “four zero.” In the case of radio frequencies, the decimal is read as “decimal” instead of the standard English “point.” Another example of a precaution against miscommunication is the adoption of “affirm” instead of the full word “affirmative.” Should a radio transmission be garbled and only “-ative” be discernible, it would leave too much ambiguity between “affirmative” and “negative.” These precautions are one major feature of ICAO standard phraseology.

*Fig. 2 : ICAO standard pronunciation of numbers
(stressed syllables are underlined) .*

0	<u>ZE</u> <u>RO</u>
1	<u>WUN</u>
2	<u>TOO</u>
3	<u>TREE</u>
4	<u>FOW</u> ER
5	<u>FIFE</u>
6	<u>SIX</u>
7	<u>SEV</u> EN
8	<u>AIT</u>
9	<u>NIN</u> ER
Decimal	<u>DAY</u> <u>SEE</u> <u>MAL</u>
Hundred	<u>HUN</u> DRED
Thousand	<u>TOU</u> SAND

Fig. 3 : ICAO standard pronunciation of individual letters
(stressed syllables are underlined) .

Letter	Word	Pronunciation
A	Alpha	<u>AL</u> FAH
B	Bravo	<u>BRAH</u> VOH
C	Charlie	<u>CHAR</u> LEE or <u>SHAR</u> LEE
D	Delta	<u>DELL</u> TAH
E	Echo	<u>ECK</u> OH
F	Foxtrot	<u>FOKS</u> TROT
G	Golf	GOLF
H	Hotel	HO <u>TELL</u>
I	India	<u>IN</u> DEE AH
J	Juliett	<u>JEW</u> LEE <u>ETT</u>
K	Kilo	<u>KEY</u> LOH
L	Lima	<u>LEE</u> MAH
M	Mike	MIKE
N	November	NO <u>VEM</u> BER
O	Oscar	<u>OSS</u> CAH
P	Papa	PAH <u>PAH</u>
Q	Quebec	KEH <u>BECK</u>
R	Romeo	<u>ROW</u> ME OH
S	Sierra	SEE <u>AIR</u> RAH
T	Tango	<u>TANG</u> GO
U	Uniform	<u>YOU</u> NEE FORM or <u>OO</u> NEE FORM
V	Victor	<u>VIK</u> TAH
W	Whiskey	<u>WISS</u> KEY
X	X-ray	<u>ECKS</u> RAY
Y	Yankee	<u>YANG</u> KEY
Z	Zulu	<u>ZOO</u> LOO

In addition to the standard phraseology, an aviation specific lexicon is used in communicating with ground staff and cabin crew, and in unusual or emergency situations over the radio with ATC, for which there is no standard phraseology (ICAO, 2010). With international commercial aviation being a cross-cultural and multilingual environment (Tajima, 2004), it is not uncommon for the pilot, copilot, and cabin crew to all have differing native languages in addition to the differing native languages among ground staff, ATC, and other pilots flying in the same airspace. Thus many tasks required of pilots, such as weather analysis and flight planning, may also be conducted in English. This is why English was chosen by ICAO to be the lingua franca of aviation.

Task Based Language Teaching

Task Based Language Teaching (TBLT) is a form of language instruction that uses authentic language to complete a non-linguistic task, with a focus on meaning and communication rather than grammatical accuracy. This type of instruction assesses students' ability to navigate a real-world task in the target language rather than directly assessing their grammatical or lexical knowledge of the language, and aims to improve students' fluency and confidence. The four requirements of a task are:

1. It has a focus on meaning.
2. It involves some kind of "gap."
3. The students freely use language they think would be useful to complete the task.
4. The task has a non-linguistic outcome
(Ellis, 2003).

The “gap” in a task could be something as simple as an information gap, where one student needs a certain piece of information that another student has. Some examples of TBLT include going to the doctor, asking for directions, returning or exchanging goods purchased from a store, or talking with police to report an incident or stolen item.

The efficacy of TBLT has been under some debate regarding its focus on functional language rather than accurate language, and the possibility that students can complete a task without using accurate language or without completing the linguistic objective of the lesson at all. In one brief classroom experiment at a Japanese university, students were instructed to complete an information gap task using the present perfect, however it was noted that many of the students were able to complete the task using past and future tenses, thus avoiding the target grammar (Sato, 2010). Indeed it is possible to complete a real-world task without using sufficiently grammatical language. A tourist ordering food at a restaurant could simply point at a menu item and say, “This” instead of using a grammatical structure such as, “I would like the bacon cheeseburger with fries, please.” While it is commonly acknowledged that this is a weakness of TBLT, it is also argued that repetition of tasks can lead to accurate acquisition of target grammar in addition to developing fluency (van de Guchte et al., 2016). In the context of Aviation English instruction, TBLT is encouraged to cultivate not only communication skills but also primary thought in English, as pilots are already under considerable cognitive load while flying. Reducing the additional cognitive load of translating from one’s native language to English increases safety and efficiency in the cockpit (Barbieri, 2014). ICAO itself recommends Content-Based Language Teaching (CBLT) for the instruction of Aviation English, including task-based classroom activities (ICAO, 2010).

Observations of TBLT in Aviation English Instruction

After observations of and participation in one semester of an ATC Communications course at a Japanese university, it was noted that the primary methods of instruction were TBLT and CBLT. The students in this course were undergoing “ground school,” where they learn about aviation theory and other prerequisites before conducting flight training in the United States. As an ATC Communications course, the curriculum focused on standard radio phraseology between pilots and ATCOs, however it also involved other tasks and taught the student pilots secondary non-linguistic skills that are required of pilots.

Two critical requirements of pilots both in radio phraseology and in piloting are confidence and critical thinking. Unlike an exchange in standard language, where participants can converse freely, an exchange in standard radio phraseology has a strict protocol concerning when participants can speak. In busy airspace, there will be multiple “conversations” taking place between ATC and different aircraft, and an incomplete “conversation” should not be interrupted. When ATC queries an aircraft, the pilot must respond immediately, concisely, and without hesitation. Until this exchange is completed, ATC cannot query another aircraft, and other aircraft can likewise not respond to ATC. The following is an example of ATC communicating with multiple aircraft simultaneously:

ATC: United eight-two-seven, wind two-five-zero at one-four, runway one-six right, cleared for takeoff.

United 827: Runway one-six right, cleared for takeoff, United eight-two-seven.

Delta 183: *Narita tower, Delta one-eight-three coming up on* MELON for one-six right.*

ATC: *Delta one-eight-three, Narita tower, wind two-five-zero at one-four, continue approach, number two.*

Delta 183: *Number two, continue approach one-six right, Delta one-eight-three.*

ATC: *United eight-two-seven, contact departure one-two-four decimal two.*

United 827: *Two-four decimal two, United eight-two-seven.*

**coming up on* is non-standard phraseology.

In this exchange there are three “conversations.” ATC instructs United 827 to take off, and United acknowledges with a readback. This would be considered one complete “conversation.” After United 827’s readback, Delta 183 reports their position and intent to land. ATC responds with instructions, and Delta 183 acknowledges with a readback. This would be another complete “conversation.” Delta 183 could not transmit until United 827 acknowledged ATC’s instructions to take off. Due to the dangers of not promptly responding to radio transmissions, it is the pilot’s responsibility to request repetition or clarification, or to notify ATC that he or she does not understand. During role-play activities, the student pilots in the ATC Communications course often hesitated when responding to ATC, especially when they were not able to understand ATC’s instructions. To build student pilots’ confidence, role-play activities like this were frequently repeated.

Additionally, role-play activities were used to develop student pilots’ critical thinking skills. During role-play activities, the student pilots often accepted ATC instructions without question. This could be attributed to

Power Distance in Japanese culture. Power Distance is one of Hofstede's five "dimensions" of culture, and is defined as the extent of power inequality that a culture finds acceptable. In a culture that scores highly on Hofstede's Power Distance Index, subordinates have a tendency to accept the power held by their superiors and do not question their decisions or instructions, while a culture that scores lower has more equality between subordinates and superiors. According to Hofstede, Japan scores relatively highly on the Power Distance Index (Hofstede, 1993). One study investigating this concept of Power Distance in the context of commercial aviation indeed found that pilots from countries that score highly on the Power Distance Index score even higher than the general population (Meritt, 2000). This implies that co-pilots, who are subordinate to the pilot in command (PIC), are reluctant to question the decisions or actions of the PIC. With ATC being in a position of authority directing air traffic, it is plausible that a similar power distance exists between the PIC and ATC. To aid in teaching Japanese student pilots to think critically and question ATC, the instructor of the course would often role play as ATC and give students instructions that, if followed, would result in a crash. An example of this would be clearing two aircraft to take off from opposite ends of the runway simultaneously, causing a head-on collision. In this situation it would be the PIC's responsibility to query ATC for clarification.

These role-play activities were made more authentic, as a TBLT task should be, by giving the student pilots handheld transceivers and sending them out of the classroom. The instructor, or one of the other students, would assume the role of ATC, while the other student pilots were tasked with completing a full flight using correct radio phraseology. The instructor would test their critical thinking skills by giving them unsound instructions. This had the additional effect of developing their situational

awareness, as the only way to recognize that following ATC's instructions could lead to disaster is by maintaining a mental picture of the air traffic. Not only do the student pilots have to listen to instructions given to them, they must also listen to instructions given to the other student pilots during the activity.

Beyond radio phraseology tasks, student pilots were also tasked with weekly airport briefings, where they would present pertinent information about an airport as if it were their destination in an actual flight, and they were also tasked with flight planning in English using navigational charts. While these tasks do not involve any particular target language, they will most likely be doing similar tasks in English during flight training and throughout their careers as pilots.

Conclusion

Despite the questions surrounding TBLT's focus on fluency over accuracy, and its known weakness of students being able to circumvent the target language to complete tasks in the classroom, it can be used with repetition to encourage accuracy. In particular with Aviation English, it can be used to promote student pilots' confidence as well as nurture other skills they will need both in the sky and on the ground once they begin their flight training and subsequent careers. While in the authors' opinion, strategies to address cultural differences, such as Power Distance, needs more development, TBLT lends itself well to Aviation English with the numerous tasks required of pilots, and is promoted by ICAO, along with CBLT, as the recommended method of Aviation English instruction. Beyond Aviation English, TBLT could be effectively applied to other English for Specific Purposes. The authors' also recognize that a factor

contributing to TBLT's effectiveness in Aviation English may be the fixed, formulaic nature of the standard radio phraseology, which is in stark contrast to the fluidity of general language. This could bring into question the suitability of TBLT in teaching Aviation English that lies outside the standard phraseology, such as in emergency situations. Additionally, this could lead into questioning the suitability of TBLT in teaching other ESPs as well as general English.

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