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Avoiding Pragmatic Failure in Aviation Communication

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1 Introduction

Communication is an essential part of everyday life. It is described as an act of interchanging ideas, opinions, thoughts, emotions, feelings, information and messages from one person to another. People convey information and messages to others through verbal (face-to-face, telephone, radio, television or other media), non-verbal (gestures, body language) and writing communication (e-mails, books, magazines, social media). The transmission of the message from speaker to hearer can be affected by a huge number of factors, including cultural situations, social customs, emotions and so on. In face-to-face communication, the spoken content can be interpreted by processing visual cues, such as mimicry, deliberate signals (e.g. eye signs), facial expressions, gestures of the face, hand and body. In aviation communication, however, pilot and air traffic controller are not in face-to-face contact over the radio communication; therefore, they need to communicate solely through speech.

The languages serve as the medium of communication. They are the deposit of the cultural norms, social customs, relation, traditions and so on. Sometimes pilots cannot express the desired meaning one to another. In other words, the message of the operators (pilots, ATCOs) can be misinterpreted over the radio communication. Misunderstanding can occur any stage of the communication process between the pilots and traffic controllers. Misunderstanding and communication difficulties have been considered as a major factor in aircraft incidents and accidents. According to a survey of the U.S. National Aeronautics and Space Administration (NASA) Aviation Safety Reporting System (ASRS), 80 percent of aviation incidents or accidents can be traced to incorrect communication (NASA, 2019; General Aviation News, 2011; Sky Barry Aviation Safety, 2019).

The International Civil Aviation Organization (ICAO) instated English as the official language of aviation in 1951 to avoid confusion, ambiguities and misunderstanding between the cockpit and tower communication, thereby increasing the safety of flight. ICAO aimed to make communication much easier in a large worldwide air transportation system. It is well-known that native English speaker of operators make fewer communication mistakes compared to non-native English speaker of operators. However, English is not the native language of most pilots and air traffic controllers. Even with a common language, communication can still be challenging due to heavy foreign accents, poor language skill, speech rate, different pronunciations and using slang, etc.
The ICAO has introduced language proficiency requirements for flight crew members and air traffic controllers with a rating scale from “pre-elementary” (Level 1) through “expert” (Level 6), mentioned in the ICAO Amendment 164 to Annex 1. Pilots and air traffic controllers must be qualified and certified at least at an “operational level” (Level 4) of English proficiency in order to carry out their duties effectively with regard to international aviation. According to the ICAO language proficiency standard, pilots and air traffic controllers should have the ability to speak and understand the language used for radiotelephony communications specified in the language proficiency requirements in Appendix 1. (ICAO, 2011). The objective of the International Standard for Language Proficiency Requirements is to improve the level of language proficiency globally and aeronautical radiotelephony communication, thereby reducing the frequency of communication errors.

On the other hand, pragmatics plays a critical role in aviation communication. Pragmatics is a subfield of linguistics which studies the ways that context affects meaning due to several factors such as cultures, values, norms, religion, social background, etc. All these factors can vary from person to person and these differences can also assign inaccurate meanings to words.

Pragmatic failure refers to misunderstanding an important piece of added pragmatic meaning. This thesis attempts to discuss pragmatic failure in aviation communication. First, the communication will be briefly summarized in order to relate to the aviation sector. Secondly, the historical origin of pragmatics will be explained and then the differences between semantics and pragmatics will be highlighted. Thirdly, some reasons of miscommunication via the radio-telephony communications will be described by giving some examples of aviation incidents and accidents.

A questionnaire was conducted in order to investigate the reasons for communication errors of operators (pilots, ATCOs) related to several factors such as cultural norms, regional accents and poor language skill. This survey consisted of four groups. The aim of the survey is to find a way to avoid pragmatic failure in aviation communication. In passing, some results of questionnaires will be demonstrated.
1.1 Research Focus

One focus of this thesis is to examine the reasons for communication problems over the air-to-ground communication between pilots and ATCOs. To illustrate these roles, a questionnaire has been developed for pilots and ATCOs who talk over aeronautical radio telephony.

Misunderstanding in communication causes serious aircraft incidents and accidents. Several examples will be given about aircraft accidents and incidents due to communication problems including language limitations, cultural effects on language, and heavy foreign accents.

The present research also sought to investigate pragmatic failure in aviation communication with regard to communication error factors such as cultural norms, aiming at minimising potential misunderstanding between pilots and air traffic controllers, thereby improving the safety of international flights.

1.2 Research Questions

- Do pilots and ATCOs believe that language-related problems can cause fatal accidents and serious incidents?
- Do pilots and ATCOs experience threatening (dangerous) situations where communication problems are significant contributing factors?
- Do operators believe that culture has a large effect on the language they use?
- Do non-native speakers of English tend to make more communication errors over the radio?
- What are the elements that cause problems and possible misunderstandings or miscommunications between pilots and ATCOs?

2 Communication and Aviation

The English term “communication” has evolved from the Latin verb “communicare” which means “to share”. The meaning of communication is the act of conveying information between people to produce greater understanding, whether this is done vocally (talking), written (books, journals, magazines), visually (symbols, charts, graphs, figures, tables) or non-verbally (body language, gestures). It is simply defined as an exchange of thoughts facts, ideas and opinion between two or more persons.
According to Kanki communication (Kanki, 2010) provides an effective index of crew performance and serves five primary functions:

- Communication conveys information
- Communication establishes interpersonal/team relationships,
- Communication establishes predictable behaviour and expectations,
- Communication maintains attention to task and situation awareness, and
- Communication is a management tool

Language is a tool that a speaker uses in expressing ideas, thoughts, feelings, and opinions to the world. It is highly affected by the cultural norms and orientation of the speaker. Therefore, depending on a speaker, intended information is conveyed through a variety of language forms. For example, in case of a “requesting an action” it could be expressed in any of the following forms (ICAO, 2004):

a) Bring me the file.
b) Could you bring me the file?
c) Would you hand me that?
d) Pass that here.
e) Where is the file?
f) How about that file?

Therefore, even if speakers use the same language and want to convey the same messages, the interpretation of the messages sometimes can be different depending on the hearer due to the same factors such as time, place, cultural norms, social relations, etc.

In aviation, pilots and ATCOs are neither in face-to-face contact nor have a video speech interface between them while communicating to each other. Their communications are conducted entirely through radio messages using a specialized language designed to make communication as accurate and efficient as possible (ICAO, 2004; FAA, 2004). Therefore, their sense of listening and speaking play a very important role. According to Sauer (Sauer, 2003), gesture is at the same time a noun and a verb.

English was established as an official language of aviation in 1951 by the International Civil Aviation Organization (ICAO) and therefore the lingua franca in airspace in most parts of the world. Many flights operate in different countries and aviation communication takes place mainly between non-native speakers of English. ICAO
realized that the level of English used between pilots and ATCOs was not satisfactory. Therefore, ICAO implemented an English language proficiency requirement and compulsory language testing of pilots and ATCOs with the objective to improve the level of English language proficiency globally and aeronautical radiotelephony communication, and thereby reduce the frequency of communication mistakes. Aviation English has very specific characteristics and purposes which set it apart from general English. It covers English language use in a wide variety of aviation-related contexts and much of the aviation English can be classified as a code that is used in a very restricted context, known as “standard phraseology” (Cabre et al., 1998, p. 33-41.; Alderson, 2009, p. 168-187). There are six levels of operational proficiency ranging from Level 1 “pre-elementary” through Level 6 “expert”, established by the ICAO. Pilots, air traffic controllers and aeronautical station operators involved in international operations must demonstrate at least Level 4 “operational level” proficiency by meeting the following criteria (ICAO, 2004):

- “Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.”
- “Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.”
- “Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.”
- “Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication.”
- “Comprehension is mostly accurate on common, concrete and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users.”
- “Responses are usually immediate, appropriate and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals
adequately with apparent misunderstandings by checking, confirming or clarifying."

If the operator demonstrates English language proficiency at the Operational Level (Level 4), he/she should be evaluated at least once every three years. While demonstrating at the Extended Level (Level 5) should be evaluated at least once every six years; and demonstrating at the Expert level (Level 6), he/she gets the aviation English language proficiency for the rest of his/her life (Ukessays, 2019).

Effective communicating over the radio in General Aviation (GA) is one of the most challenging tasks for most operators. This is even more complex for non-native speakers of English (EL2) who are required to master not only a second language but ‘Aviation English’ to communicate with both Air Traffic Control (ATC) and other pilots. On the other hand, native speakers of English operators are also causing misunderstanding by using slang, jargon, idioms and everyday conversational English, rather than the established terms of English as an aviation lingua franca.

A well-known accident example: Communication errors between Air China pilots and an air traffic controller in New York’s John Fitzgerald Kennedy Airport (JFK).

The misunderstanding happened in 2006, during the time Air China 981 was taxiing to the gate after a 12 hours’ flight from the Beijing Capital Airport in China. Due to the different cultural norms and poor language skills, Asian pilots have difficulty to speak and understand the language both in communication with air traffic controllers and with other pilots (particularly for elder pilots). It can be clearly seen that the Air China 981 pilot could not understand English properly when he was replying to the air traffic controller.

The final radio transmission of the Air China 981 accident is taken directly from Lybio.net (Lybio.net, 2019)

Air China 981: Ei-ah right here on Juliaa hold sh... uhh taxri arpha, hold on Nowembah.. Now continue now ehh.. taxri now?

JFK Tower: Make the right turn here at Juliette, join Alpha hold short of Mike Alpha, Air China 981.

Air China 981: Air China nine-ah one-ah ju join ehh.. right ehh.. Juliah Joinah Arpha, ehh.. hord short o Nowembah
**JFK Tower:** Ok I’ll say it again, hold short of Mike Alpha, M, A, Mike Alpha, not November!

**Air China 981:** Okee hold short of uhh.. Mike Alpha, 9-uh81.

**JFK Tower:** Air China 981 have they cleared you into the ramp?

**Air China 981:** Roger uh ramp to uhh.. ramp to the jam, 9-uh81

**JFK Tower:** Ok they have cleared you into the ramp?

**JFK Tower:** Air China 981, Ground.

**JFK Tower:** Air China 981, Kennedy Ground.

**Air China 981:** 9uh81, go ahead.

**JFK Tower:** Have you been cleared into the ramp?

**Air China 981:** Ok creared to the ramp.

**JFK Tower:** No, that was a question, have the ramp people cleared you into the gate?

**Air China 981:** Roger es to the gate Air Chin 9uh81.

**JFK Tower:** I’ll try it again it’s a question, hold your position, this is a question […] Have-you-been-cleared-in-to-your-gate?

**Air China 981:** Ok we uhh ho-hol here.

**JFK Tower:** Ok, how’bout the question, have they cleared you into the gate?

**Air China 981:** Eeh tower ehh.. gwound Air Chin 9-uh81 ehh.. we are ehhh... ehh bitanumbaforisult end how we texi to the nowembah

**JFK Tower:** Air China 981 taxi to the ramp.

**Air China 981:** Roger taxri to rump

By limiting the vocabulary that pilots and controllers use over the radio, you can increase mutual understanding — especially since the radio is often garbled and contains static.

In order to effectively communicate with operators (pilots and ATCOs) between both native and non-native speakers of English, the use of aviation English is needed to avoid
any confusion or misunderstanding. Moreover, meaning should be conveyed as much as possible at a semantic level.

The burden of improving radiotelephony communications should be shared by native and non-native speakers (ICAO, 2004).

- “States should ensure that their use of phraseologies aligns as closely as possible with ICAO standardized phraseologies.”
- “Pilots and controllers should be aware of the natural hazards of cross-cultural communication.”
- “Native and other expert users of English should refrain from the use of idioms, colloquialisms, and other jargon in radiotelephony communications and should modulate their rate of delivery.”
- “Native speakers must ensure that their variety of English is comprehensible to the international aeronautical community.”
- “Plain language should be specific, explicit, and direct.”
- “English-speaking organizations, airlines or training centres may wish to explore how they might provide cost-efficient English language learning opportunities to code share partners and other airlines at minimal cost.”

2.1 Miscommunication

Communication is a complex system consisting of verbal, non-verbal, written, spoken and electronic communication. Aviation activities require highly skilled people in communication with a solid technical profile to cope with communication failures. One of the most important elements of communication between the pilots and ATCOs is the clear and concise exchange of messages between them. According to ATCOs’ regulations, all communications are to be expressed in command-based or instructional language (ICAO, 2001; FAA, 2004). Additionally, the Pilot/Controller Glossary (FAA, 2017), the Aeronautical Information Manual (AIM) (FAA, 2017) and the ICAO Annex 10 (Annex 10 Volume II., 2001) offer to Pilots and ATCOs an official guide to basic flight information and procedures to use standard phraseology of aviation. These communication regulations and the approved phraseology under normal conditions can be easily followed by most of the operators. However, in case of facing an emergency or abnormal situation, operators might use ambiguous or non-standard phraseology, thereby generating significant communication problems and maximizing the potential for
misunderstanding, particularly between native English speakers and non-native English speakers (e.g. regional accents, dialects, cultural norms, different word usage).

Communication problems have long been regarded as one of the biggest causes of accidents and incidents in aviation. According to a survey of the U.S. National Aeronautics and Space Administration (NASA) Aviation Safety Reporting System (ASRS), 80 percent of aviation incidents or accidents can be traced to incorrect communication (GAN, 2011; NASA, 2019; SBAS, 2019) (Table 1).

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage of Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect communication</td>
<td>80%</td>
</tr>
<tr>
<td>Absence of communication</td>
<td>33%</td>
</tr>
<tr>
<td>Correct but late communication</td>
<td>12%</td>
</tr>
</tbody>
</table>

*Table 1 Communication Factors in NASA ASRS Reports (GAN, 2011; NASA, 2019; SBAS 2019, p.1)*

The same report also mentions that listening has the highest weight with 45% in the communication problems (Table 2).

<table>
<thead>
<tr>
<th>Mode of Communication</th>
<th>Percentage of Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening</td>
<td>45%</td>
</tr>
<tr>
<td>Speaking</td>
<td>30%</td>
</tr>
<tr>
<td>Reading and writing</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Table 2 Communication, NASA ASRS Reports (GAN, 2011; NASA, 2019; SBAS 2019, p.1)*

Relying on semantic meaning, the accuracy of information delivery is improved and the possibility of misunderstandings over the radio communication is minimized. All the messages which the flight crew exchange need to be as much as possible at a semantic level.
2.2 Communication Problems in Aviation

Communication was an important factor in many accidents. Miscommunication between pilots and ATCOs could cause serious air disasters as pilots/ATCOs take decisions based on the information they receive from each other. If one of the operators fails to convey the information clearly or misinterprets the messages, then pilots/ATCOs might take the wrong decision. Therefore, maintaining reliable aviation communication between operators is essential for a safe flight.

The most well-known and widely discussed accident in aviation history is the Tenerife air disaster which took place on March 27, 1977 when two Boeing 747 airliners collided at Tenerife North Airport in Spain, which resulted in 583 fatalities (61 survived) - making it the deadliest air disaster in aviation history. The incident was due in part to difficult communication and to misunderstanding between the pilot and the air traffic controller, whose native language of English was Dutch, and the Spanish air traffic controller.

The final radio transmission of the Tenerife accident is taken directly from the original CVR (Cockpit Voice Recorder) transcript (Aircraft Accident Report, 1977).

**KLM (Radio):** Uh, the KLM ... four eight zero five is now ready for take-off ... uh and we're waiting for our ATC clearance.

**Tenerife Tower:** eight seven * zero five uh you are cleared to the Papa Beacon climb to and maintain flight level nine zero right turn after take-off proceed with heading zero four zero until intercepting the three two five radial from Las Palmas VOR.

**KLM (Radio):** Ah roger, sir, we're cleared to the Papa Beacon flight level nine zero, right turn out zero four zero until intercepting the three two five and we're now (at take-off / uh..taking off).

**KLM Captain:** We gaan. (We're going)

**Tenerife Tower:** OK.

**Panam Radio(C/P):** No .. Eh.

**Tenerife Tower:** Stand by for take-off, I will call you.

**Pan Am Radio (c/p):** And we're still taxing down the runway, the clipper one seven three six. (RDO and Tenerife Tower communications caused a shrill noise in KLM cockpit — messages not heard by KLM crew.)
**Tenerife Tower**: Roger alpha one seven three six report when runway clear.

**Pan Am Radio (c/p)**: OK, we'll report when we're clear.

**Tenerife Tower**: Thank you

**KLM Flt Engineer**: Is hij er niet af dan? [“Is he not clear then?”]

**KLM Captain**: Wat zeg je? [“What do you say?”]

**KLM-? Yup.**

**KLM Flt Engineer**: Is hij er niet af, die Pan Am? [“Is he not clear that Pan Am?”]

**KLM Captain**: Jawel. [“Oh yes. – emphatic”]

**KLM Captain**: There he is. (Pan Am captain sees landing lights of KLM Boeing at approx. 700 m)

**PAN AM Captain**: He’s coming straight ahead to us.

In this accident, the pilot of the KLM aircraft reported to the ATCO “we are now at take-off” and received the reply “OK”. Stand by for take-off” which was partly masked by noise. In this event, the pilot meant to say “we are now on the take-off roll” or we are now taking-off; however, the controller mistook his statement to mean the aircraft was at the take-off point and the pilot was ready for take-off, awaiting further instruction (Krifka, 2003). Actually, the KLM aircraft was taking off without clearance from the ATCO and was about to collide with the Pan American aircraft, which was already on the runway and taxiing toward the KLM aircraft.

The Tenerife accident was caused by misunderstandings between both non-native English speakers of the KLM pilots and the ATCO. According to Steve Cushing (Ludovic, 2019), the reason for the misunderstood communications was described as:

“In the KLM pilot's case, the form of a verb that is expressed in English by the suffix "-ing" happens to be expressed in Dutch by the equivalent of "at" plus the infinitive (the uninflected form of the verb, e.g., "fly" as contrasted with "flies", "flying" or "flew"). For whatever reason, perhaps because of fatigue or the stress of having to work in conditions of low visibility, the normally Dutch-speaking pilot inadvertently switched into the Dutch grammatical construction while keeping the English words. The Spanish-speaking controller, proficient in English but not in Dutch, and
unattended to subtle linguistic phenomena, had no clue that this shift was going on. *He interpreted the "at" in a literal way, indicating a place, the take-off point."

3 Defining Pragmatics

3.1 Pragmatic-Semantic Relationship

The term semantics was first formally used in literature by Breal in 1897 (Sankaravelayuthan, 2018) and simply meant the study of meanings. Semantics is essentially a discipline in linguistics that analyses the meaning of words in the language and how they are used to form meaningful phrases and sentences. Semantics is only concerned with phonology and vocabulary and the conceptual meaning of a word (Fig. 1). There is a strong connection between semantics and pragmatics as both deal with conveying meaning. Semantics is a narrow field which refers to the study of the relations of words to which they refer, whereas pragmatics, in contrast, is a broad field which analyses the meaning in relation to the relevant context. According to Frank Brisard in "Introduction: Meaning and Use in Grammar," Pragmatics is the meaning minus semantics".

![Diagram of language levels]

*Figure 1 Language and culture (Adapted from M. Herrera, 2019, p.7)*

Figure 1 basically shows the relation between language and culture. As shown in the figure, the major levels of structure applicable here are phonology, morphology, syntax, vocabulary, semantics, and pragmatics.

The phonological level deals with the structure of the sounds that convey linguistic content in a language.
The morphological level of a language is the level at which meaning can be assigned to parts of words and the level that describes how morphemes (the smallest meaning elements of words) are combined to make a word. The syntactic level of structure concerns the structure of the sentence, i.e., the categories of words and the order in which they are assembled to form a grammatical sentence.

Semantics starts at the level of words and extends over phrases up to sentences, and should therefore touch the structural level of words. Pragmatics can only meaningfully involve the level of larger phrases and sentences, and extends beyond the sentence boundary to the level of discourse.

The semantic level of structure of the sentence is computationally defined to be the level of representation supporting inferencing and other logical operations. Semantic level: The study of semantics does not take context into consideration; it is only concerned with grammar and vocabulary and the conceptual meaning of a word. Semantics has a limited scope since it only deals with meaning independent of context. Semantics is basically grammar (morphology, phonology and syntax) plus vocabulary.

There are scientific ways of dividing up semantics and pragmatics. Horn’s typology suggests in the following figure (Fig. 2) a semantics/pragmatics boundary, distinguishing between what is said and what is implicated, although the exact boundary has yet to be convincingly defined.

Figure 2 Horn’s typology (Horn et al., 1989)
3.2 Pragmatics

Pragmatics is a relatively young branch of linguistics that is defined as the study of the meaning of language utterances with respect to its situation or context of use. Another perspective is that pragmatics mainly deals with meaning beyond the dictionary meanings of statements; in other words, it is about what is actually meant with an utterance based on the norms and conventions of a particular society, or context, in which conversation takes place. The introduction of the term “pragmatics” appeared the first time in linguistic terminology in the 1930s by Morris, Carnap and Peirce who regarded pragmatics as the analysis of how an interlocutor interprets the sign to another as known “semiotics”. Semiotics, also called semiology, is the study of interaction between structure and meaning both in relation to language and to society. Within semiotics, Charles Morris, a psychologist and philosopher, distinguished three distinct categories of the language science into syntax (or syntactic), semantics and pragmatics. The Theory of Speech Acts was proposed by British philosopher of language J.L. John Austin (1962) who explained the meaning as the nature of speech act as “in saying something we are doing something” (Austin, 1962). Pragmatics comes into its own when Stalnaker (1970) suggests ways that it can be made precise. Before this time, little attention was paid to pragmatics. The field of pragmatics only constituted itself as such and developed as a subfield of linguistics by Grice in 1975 (Grice, 1975). And scientific analysis only began with the Cooperative Principle (Grice). Therefore, pragmatics only started in earnest in 1975 (Fig. 3).

By 1980 there were three more important issues for the development of pragmatics that ushered pragmatics in as an independent discipline in linguistics: (i) the “Journal of Pragmatics” published and established by Jacob. L. Mey and Hartmut Haberland in 1977 [14] (ii) Principles of Pragmatics by Levinson and Leech in 1983 and (Leech, 1983; Levinson, 1983) (iii) the International Pragmatics Association (IPrA) was first launched during the International Pragmatics Conference held in Italy in 1985 (Jacquemet, 2013).
There are also several definitions of pragmatics from different perspectives. Here is a set of definitions of pragmatics from different linguists. One possible definition might go as follows: pragmatics characterizes the features of the speech context which help determine which proposition is expressed by a given sentence (Stalnaker, 1972). The proposition (exact meaning of the sentence) is not always fully defined semantically. So we can have several different propositions depending on the context. It is a medium where we examine how people transfer a variety of pieces of meaning, through the use of language. It has consequently more to do with the analysis of what a speaker means by his/her utterances than what the words, phrases or sentences in those utterances might mean by themselves.

Another kind of definition of pragmatics that might be offered would be that “pragmatics is the study of language from the point of view of users, especially of the choices they make, the constraints they encounter in using language in social interaction and the effects their use of language has on other participants in the act of communication” considered by David Crystal (David, 1985). Therefore, pragmatics is a major field of language which studies human beings with their feelings, needs, and attitudes through language. It focuses not on what people say but how they say it and how the messages can be conveyed and interpreted by the hearer in social context, according to Leech in “A Linguistic Guide to English Poetry”.

Pragmatic analysis of language can be broadly understood to be the investigation into the aspect of meaning which is derived not from the formal properties of words and constructions, but from the way in which utterances are used relative to the context in which they are uttered (Leech, 1987). The role of context is always important in the study
of the use of pragmatics. Pragmatics studies the ways that context affects meaning due to several factors such as cultures, values, norms, religion, social background, etc. In pragmatics four types of context can be differentiated:

1) Physical context is the location of a given word, the situation in which is used as well as time of the communication
2) Linguistic context refers to what has been already said before in the utterance.
3) Social context refers to the social relationship among speaker and hearer.
4) Epistemic context refers to what is known by both speaker and hearer about the world.

Let’s give an example in pragmatics;

If I utter “I need a drink”, what do you understand from this sentence? What is the default situation in this sentence? Am I thirsty for some water or do I need alcohol?

Need and drink are very clear semantically in this sentence. There is no word that indicates alcohol in this sentence. Alcohol is added pragmatic information in certain cultures where for example in America, alcohol is legal and commonly imbibed. However, elsewhere for example in Jordan where alcohol is illegal, one would instead expect that someone refers to water, coke or tea.

Another example of pragmatic failure is given in aviation. Eastern Airlines L-1011 jumbo jet crashed at night in the Everglades near Miami in December 1972. The aircraft, Flight 401, had been assigned to circle at 2,000 feet while the crew tried to fix a suspected nose-gear malfunction. Apparently none of the distracted crew members noticed when the automatic "altitude hold" device disconnected and the plane began a nose-dive.

A traffic controller following the plane on radar did notice. When the scope showed the jumbo jet down to 900 feet, he radioed:

*ATCO: "Eastern, ah, 401, how are things coming along out there?"

*Pilot: “O.K., We'd like to turn around and come back in.”*

The crash followed half a minute later; 99 (94 passengers and 5 crew members) of the 176 people aboard suffered fatal injuries (Aircraft Accident Report, 1972).

In the accident of the Eastern Airlines L-1011 at the Miami airport, the aircraft had two technical issues. The first one was the aircraft was losing its altitude and the other one an
in-operative nose gear light. The air traffic controller radioed the pilot when he was aware of the elevation problem, however; the ATCO did not know about the problem of the nose gear light at the time. When the ATCO asked the pilot in command “Eastern, ah, 401, how are things coming along out there?” which the pilot assumed to mean that the ATCO was talking about the issue of the noise gear light and replied to ATCO “O.K., We'd like to turn around and come back in.” Both of them were referring to a different technical issues while the aircraft was about to crash into the everglades (UKEssays, 2019).

Let’s have a close look of the ATCO’s message: “Eastern, ah, 401, how are things coming along out there?”. In this message, “how are things coming” is not quite clear because it is not well known which “things” are meant by the ATCO. This information can be interpreted by pilot with a different meaning. What does “things” mean in this message? As soon as the ATCO says “things”, the meaning must be analysed through pragmatics, because only from the context is it possible to know what things are referred to.

“How are things coming along” is quite low register (colloquial). In a low register more of the meaning is usually conveyed through pragmatics. Low register communication, as one would talk with a good friend, is to be avoided in aviation communication, because words are in general not precise. In this situation the pilot inferred (filled in) the meaning. Therefore, this example relates to pragmatics.

Pragmatic failure refers to uncorrected misunderstanding of pragmatic meaning. In order to avoid pragmatic failures, the ATCO must be as precise as possible in his message. Moreover, meaning should be conveyed as much as possible at a semantic level. Instead of saying ”Eastern, ah, 401, how are things coming along out there?”, the ATCO could have said ”Eastern, ah, 401, you dropped to 900m. Please explain.”

**Grice’s Conversational Maxims:**

Grice, H, P (Grice, 1975) based his Cooperative Principle on maxims. Maxims do not have to be followed by speakers. However, depending on whether maxims are followed or not, pragmatic information is licenced (added). This means that pragmatic information is can be created by the way the speaker follows or does not follow the maxims.

The main idea is to minimize pragmatic meaning at a high register. It is obvious that it is not possible to speak fully at a semantic level because we never really are able to fully
remove pragmatic information. (In fact, the context that is used in aviation added the pragmatic meaning that they were using Aviation English. The operators are expected to follow the ICAO Standard Phraseology because of the context.)

Operators should follow the maxims, but that is only one of many possible ways that operators can use the maxims. Extra pragmatic information includes that added pragmatic information that someone provides because they are or are not speaking the way the maxims indicate. If operators use Aviation English correctly, there should be practically no added unwanted pragmatic meaning. As much as possible should be conveyed only semantically. It is difficult for a speaker in an intercultural setting to be certain that the hearer will understand the pragmatic meaning intended by the speakers.

Figure 4 Grice’s Conversational Maxims (Adapted from M. Herrera, 2019, p.20)

- The Maxim of Quantity: “Try to make your contribution as informative as is required for the current purposes of the exchange” (not less informative, nor more informative) (Birner, 2013)

- The maxim of Quality: Try to make your contribution truthful. “Say only what you have reason to believe is true - do not say what you believe to be false or lack adequate evidence” (Birner, 2013)

- The maxim of Relation: “Say only what is relevant to the conversation” (Birner, 2013)

- The maxim of Manner: Be clear, orderly and brief (avoid unnecessary prolixity) in what you say, avoid ambiguity or obscurity in your contribution. (Birner, 2013)
3.3 Cultural Context

Culture is all socially transmitted behaviour, art, architecture, languages, signs, symbols, ideas, beliefs, norms, traditions, rituals, etc. which are learnt and shared in a particular social group of the same nationality, ethnicity, religion, etc. Different cultures may have different rules, norms, behaviours and gestures. Cultural differences cause communication problems in a business environment.

Communication across cultures is challenging. It plays a great role in culture. It is a process of transmitting information, ideas, data, thoughts, and emotions. The types of communication are verbal, non-verbal, printed, electronic, etc. Cultures are created through communication; that is, communication is the means of human interaction through which cultural characteristics — whether customs, roles, rules, rituals, laws, or other patterns — are created, learned, transmitted and shared.

Airline industry accident analysis shows that cabin safety and effectiveness are directly related to the level of flight deck and cabin crew integration (Metscher, 2009). Because of the globalization of the airline industry nowadays, multi-cultural flight crews need to work together. These flight crews are socially, culturally and radically different from each other. Different intercultural interactions between members of flight crews happen every day. Working in a multi-cultural flight environment has advantages and disadvantages on work efficiency and flight safety. On the one hand, operators from different cultures see the same things in different ways and perspectives. Therefore, multi-cultural flight crews are more aware of system problems and may share possible solutions to technical problems more easily, especially in an abnormal situation. This will affect their reaction time. Cultural diversity can also be helpful to accomplish complex tasks. For these reasons, multicultural diversity of operators may enhance flight safety. On the other hand, cultural factors such as: power distance, individualism, and uncertainty avoidance may cause misunderstandings between the operators.

This difference in communication is a typical misunderstanding between members of a high-context (indirect, e.g. Chinese, Japanese) and low-context (direct, e.g. German, US) culture. Indirectness, this “speaking between the lines” and not giving information that can be inferred from the context, is one of the single most challenging aspects of intercultural communication for Westerners.
Hofstede’s research identifies an important way of helping to explain the relationship between culture and communication. The six dimensions of culture according to Geert Hofstede (Hofstede, 2011) are:

1) Power Distance Index - defined as “the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally.” It refers to the distribution of influence within a culture.

2) Individualism (vs. collectivism) - defined as “the tendency of individuals to look after themselves and their immediate family as opposed to the collective society.” It refers to how people define themselves and their relationships with others.

3) Masculinity (vs. femininity) - defined as “the tendency within a society to emphasize traditional gender roles and traits.”

4) Uncertainty Avoidance - defined as “the extent to which members of a society feel threatened by uncertain or unknown situations.” It refers to tolerance of ambiguity and acceptance of risk.

5) Long-term orientation (vs. short-term orientation) - defined as “a society’s orientation toward time and the value it places on patience.”

6) Indulgence (vs. restraint) – defined as “related to the gratification versus control of basic human desires related to enjoying life.”

There have been studies using the Hofstede dimensions in aviation. One example is Merritt and Helmreich (1996) who surveyed 9,000 male commercial airline pilots from 18 countries who work for airlines owned, and operate by national cultures. This study concluded that national culture should be added to the list of the influences upon a pilot’s work style and preferences (Havold, 2001). The survey results are taken from “21st Century Communication: A reference handbook” by William F. Eadie (Eadie, 2009):

- Pilots from Korea, Brazil, Mexico and Philippines had the highest power distance scores while pilots from Australia, New Zealand and South Africa had the lowest.
- Pilots from the US, Britain and Ireland had the highest individualism scores while pilots from Korea and Taiwan had the lowest.
- Pilots from Korea and Taiwan had the highest uncertainty avoidance scores while Hong Kong, New Zealand, the United States and Ireland had the lowest.

The power distance index and uncertainty avoidance items dealing with attitudes toward automation. According to the NASA research (Sherman et al., 1996), high power distance
and high uncertainty avoidance predicted a high level of cockpit automation. U.S. pilots were therefore more likely to resist aspects of cockpit automation than their peers from countries where acceptance of authority and structure is more prevalent.

4 Competency

One of the most disputable issues in linguistics so far is the term ‘competence’. The term “competency” first time used by David McClelland, Professor of Psychology at Harvard University, in 1953. It appeared for the first time in an article of Lundberg (1972) and became commonly used after the article of David McClelland (1973) titled “Testing for Competence Rather Than for Intelligence”. Over a short period of time, many different visions, models and skill developing concepts were described.

According to the Oxford dictionary, competence (or competency) is the ability to do something well. Longman Business Dictionary defines competence as “the ability or skill to do something well or to a satisfactory standard”. As the dictionary definitions make clear, the concept of competence centres on ability or capability to apply the set of related knowledge, practical behaviour, attitude and skills required to successfully and efficiently perform tasks.

Mainly, competency can be categorized into 4 groups as follow (Varga, E. et al., 2015):

- Personal competencies (reliability, flexibility, loyalty, coping with stress, hardworking, self-improvement and patience, etc.)
- Social competencies (communication skills, social skills, empathy, cooperation, motivation, organizational skills, and initiative, etc.)
- Cognitive competencies (problem-solving and ability to learn, etc.)
- Special competencies (communication in a foreign language, IT skills, economic skills and technical skills, etc.)

In addition to this list, the fifth group can be pragmatic competencies which “is the ability to use language effectively in order to achieve a specific purpose and to understand a language in context” (Thomas, 1983). According to Tucker and Cofsky, there are five major components of competency (Tucker and Cofsky, 1994) including knowledge, skills, self-concepts, traits and motives (Fig. 5).
Current civil aviation training today

Pilots and air traffic controllers are the key to making air travel safe. Basic civil aviation training is regulated by national aviation authorities flight training regulation and performed by national aviation authorities (cooperating within the framework of the Joint Aviation Authorities, JAA in Europe). The regulations are intended to ensure safety and quality in the training (Dahlstrom, N., 2016).

During the last few decades, the aviation industry has consistently improved operator training to further enhance safety and security. However, because of the rapid technological changes and an increase in the level of automation in aviation, further training improvement still needed to cope with new situations and problems such as communication problems. In the current aviation system, operators must be able to make the best and decisive decision from a set of alternative decisions, communicate effectively and demonstrate effective leadership and team-work. The quality of the decision depends strongly on the messages which operators receive over the radio. In order to avoid pragmatic failure and have a successful communication, operators need to send, receive and interpret information clearly. This can be possible with using ICAO Standard Phraseology, being aware of sociocultural norms of operators, and having a high level of English skill. Operators need to attend mandatory Crew Recourse Management (CRM) courses. These courses are designed to help operators to adapt rapidly to a different environment and culture.
5 Questionnaire and Results

A questionnaire was conducted in order to investigate the reasons for communication errors of operators (pilots, ATCOs) related to several factors such as cultural norms, regional accents and poor language skill. The data were collected from questionnaires which were completed by pilots and ATCOs, including professional pilots of domestic and international flights (experienced pilots), student pilots (less-skilled pilots) and ATCOs in air-traffic service units that handle domestic and/or international flights and retired ATCOs. The survey took most participants between 10 and 15 minutes to complete.

The questionnaire used in this research consists of 21 questions, some with multiple choices, a multiple choice grid and short answers. These questions can simply be divided into 4 parts; (i) Q1-Q9 (ii) Q9-Q16, (iii) Q16-Q19 and Q20-Q21.

- The goal of the first part of the questionnaire is to gather general information about operators, including gender, age, job (pilot or ATCO), years of expertise, etc.
- The second part of the questionnaire assessed cultural differences and their effect on communication.
- The third part of the questionnaires were developed to investigate the reasons of misunderstandings between operators over radio.
- The last two questions allowed operators to freely express their views on how native and non-native English speakers can improve their communication over the radio.

This questionnaire is based on 212 responses of operators: 168 ATCOs (79.2%) and 44 pilots (20.8%) (Fig. 6). The majority of the participants who completed the questionnaire were men (183 participants – 79.7%), i.e. 142 air traffic controllers and 41 pilots. Some of the operators have indicated more than one profession in the survey (both pilot & ATCO, pilot & ANSP-Air Navigation Service Provider Director, ATCO & AFIS-Aerodrome Flight Information Service director, and Pilot & Engineer).
In the first part of the questionnaire, all survey participants are asked to identify their gender, age group, experience, and type of licence, etc.

As can be seen in Fig. 7 (left) overall more men completed the questionnaire (183 participants 79.7 %) in comparison to women (28 participants – 20.3). The mean age of the operators was 38.4 with a range of 18 to 81 years: 51.4% of the participants (109 operators) were between the ages 24.6 and 37.8. (Fig .7 right). This figures shows that the survey was filled in by a range from student operators to retired operators, which plays a very important role in the accuracy of the results.

The flight experience of the surveyed pilots ranged from less than 50 to more than 5000; the majority of the pilots (82.7%) have flight hours between 100 and 5000 (Fig. 8 left). On the other hand, the experience of the surveyed ATCOs ranged from 5 months to 42 years; the mean experience of the ATCOs was 14.9. The experience of the 80 ATCOs (47.6%) was between 5 months to 11.25 years (Fig. 8 right).
The design of the survey was to be demographically inclusive and worldwide accessible. There were operators from 69 different nationalities, listed in the figure below (Fig. 9). Hungarian, Indian, Turkish, Nigerian, Australian and American had the six biggest portions (number of operators:19,19, 15,13, 8 respectively).

The majority of surveyed operators are non-native English speakers (80.9%) while only 19.1% are native speakers (Fig. 10 left). Although 40 % of the survey respondents reported having a Level 5 Aviation English score, only 11.4% haven’t been tested yet (Fig. 10 right).
In the second part of the questionnaires, a database was built with information about: the culture of operators, measuring the understanding between native and non-native English speakers of the operators, problems with the current ICAO Standard Phraseology, the cultural effect of operators in radio communications, etc.

When operators are asked “Do native speaking pilots and ATCOs generally speak aviation English to non-native speakers in an effective manner”, they mostly answered “Usually” (127 Operators – 59.9%) (Fig.11 left). When asked “Should native speakers speak Aviation English to non-native speakers in the same way as they speak Aviation English to other native speakers”, they mostly have answered “Yes” (132 operators – 62.2%) (Fig. 11 right). Moreover, only 10 operators have given a short answer to this question. From this group, some of the operators believe that there should be more “consideration” from the non-native speakers. This means that if a native English speaker of operator feels that non-native English speaker of operator has difficulty using and understanding English, then the native English speaker needs to slow down his/her speech rate, avoid using slang, idioms, jokes and references specific to their own culture while delivering their messages in order to not leave room for confusion and ambiguities.
There are frequent situations in which it can be advantageous to talk to English speakers in what one respondent referred to as “plain text”, which was his way to indicate the idea of semantics. Standard phraseologies should almost be used for both native and non-native speakers. Some non-native speakers display excellent English communications skills; however, they are not always using the ICAO Standard Phraseology.

When operators were asked “Are you satisfied with the ICAO Standard Phraseology”, happily, over 89.8% of the surveyed operators are satisfied with the current ICAO Standard Phraseology. Unfortunately, the 10.2% of the operators believe that some of the standards need to be modified for clear and unambiguous communication over the radio (Fig. 12). Their satisfaction of the ICAO Standard Phraseology is extremely important to communicate effectively over the radio; regardless of whether they are native or non-native English speakers.

Figure 12 “Are you satisfied with the ICAO Standard Phraseology”

According the surveyed operators, some suggestions can be given in order to improve the ICAO Standard Phraseology:

- There is a lack of vocabulary in ICAO Standard Phraseology for contingency and emergency phases. It should contain a specific phraseology for the most frequent unusual situation in order to minimize the risk of misunderstanding between pilots and ATCOs.
- Most of the operators don’t use the word “to” in “descend to Flight Level”, “climb to Flight Level”. The word “to” still creates confusions as it is a homonym for “two”, “to” or “too”.
- Phonetics should be emphasized in teaching Aviation English to avoid ambiguity in speech where there is difficulty in deciphering words by either pilots or ATOCs; difficult words should be spelt out using the ICAO alphanumeric.
• ICAO Standard Phraseology should be simplified to reduce RT (Radio Telephony) congestion.
• There is a need to be more flexible in order to improve understanding between pilots and ATCOs.
• Some of the surveyed operators commented that ICAO constantly changes words. However, these words are not the ones which create confusions and ambiguities.

The participants were asked to answer questions about their culture. The culture of operators has influence on his/her responses to survey questions. The survey shows that there are 31 different cultures of the operators (Fig. 13). The culture distribution of the surveyed operators was heavily inclined to European culture, and is followed by African, Asian, American and Middle-Eastern cultures.

![Chart showing culture distribution of operators](image)

*Figure 13 Culture of the operators*

With regard to the result of the survey, about all of the operators agree that good communication has significant effects on teamwork effectiveness and safety (Fig. 14). It is obvious that communication plays a great role in culture. Cultural differences might cause communication problems in an aviation environment. In order to avoid the cultural misunderstandings, operators should understand the cultural norms and values of another operator.

Cultural differences can also lead to differences in pragmatic meaning. Semantic meaning can be thought of as the “dictionary meaning”. (It would be practically impossible to create a dictionary with all possible pragmatic meanings as it would need to take into
account all possible contexts.). The messages in aviation would be clearer when pragmatic meaning is avoided, as in theory every language learner has access to the same “dictionaries”, regardless of their culture.

Figure 14 Statements on culture of operators

The aim of the question below (Fig. 15) is to find some reasons for misunderstandings between native and non-native operators. Seven different statements were given to the survey participants. According the results, native English speaking operators speak too fast and use complex words and structures. It is also necessary to highlight that non-native English speaking operators misunderstand some of the words from native English speakers that sound the same as other words (homonyms).

Figure 15 Statements on native – non-native English speakers

Misunderstanding in aviation remains a serious threat to safety. As discussed in the second chapter, 80 percent of aviation incidents or accidents can be traced to incorrect communication (GAN, 2011; NASA, 2019; SBAS, 2019). The reason for the communication errors between pilots and ATCOs can be mainly attributed to poor language skills, heavy foreign accents and failure to use ICAO Standard Phraseology, etc. which results in misinterpreting the message over the radio. In order to avoid pragmatic failure as much as possible, operators need to know which factors affect the meaning of
the context such as cultures, values, norms, religion, social background, etc. All these factors can vary from person to person and these differences can also assign inaccurate meanings to words. As a result, greater importance should be attached to pragmatics. When asked, “How many times have you experienced misunderstanding that has been quickly cleared up?”, the majority of the surveyed operators (33.2%) answered more than 10 (Fig.16 left). And when asked “How many times have you experienced misunderstanding that has not been quickly cleared up?”, the majority of the operators (40.6%) answered between 1 to 3 (Fig.16 right). This result shows that serious misunderstandings are still happening in aviation communication.

![Figure 16](image.png)

Figure 16 How many times have you experienced misunderstanding that has been quickly cleared up? (on the left) and How many times have you experienced misunderstanding that has not been quickly cleared up? (on the right)

6 Conclusion

Communicating effectively via the radio in aviation is a challenging task for most pilots and ATCOs. This is even more challenging for non-native English speaking operators.

Pragmatic errors are causal factors in failures within the air traffic system. Pilot and ATCOs make appropriate decision based on the message which is received over radio-telephony. Sometimes operators, particularly non-native English speakers, fail to convey intended messages to ATCOs or other pilots which might result in serious misunderstanding.

In order to have an efficient and successful radio communication between operators, all the messages must be conveyed, received and interpreted clearly. Pragmatic failure in aviation communication might lead to many aircraft crashes and incidents while cruising and on the ground. Operators make communication mistakes and, due to the dynamics of the system, these mistakes can be serious.
In this thesis I gave several examples of pragmatics in general. However, with regard to the pragmatic examples of aircraft accidents, I spent hours looking through sites that list the Cockpit Voice Record (CVR) transcripts, but it is so challenging that I was able to give an example of only one aircraft accident. I still wish to try more further appropriate examples as I continue my research.

The questionnaire was conducted in order to investigate the reasons for communication errors of operators (pilots, ATCOs) related to several factors such as cultural norms, regional accents and poor language skill. The aim of the survey is to find a way to avoid pragmatic failure in aviation communication. In aviation communication, ideally operators have to try to communicate without any pragmatic meaning. That is theoretically impossible, but the aim is to minimize how much pragmatic information is conveyed. Any pragmatics can cause misunderstanding. There can always be misunderstandings because one of the operators can interpret the context differently. When speakers communicate pragmatically, they want to make sure that they have the same understanding of the contexts as the speaker. The more you understand someone, more you can speak with pragmatics, because you will understand the context better. Also if you are having a conversation, and if it is not a critical conversation, you have all the time to talk back and forth in order to understand the meaning better. If you have enough time you can clear up any temporary misunderstandings that are caused by pragmatics. Therefore, pragmatics is very dangerous in aviation communication because there is usually not enough time (particularly in abnormal or emergency situations).

Once the areas of pragmatics and other possible linguistics sources of misunderstanding and their impact on air safety have been identified, we propose some approaches for native and non-native English speaking operators, and also for both to improve their aviation communication: For native speakers: (i) should be taught how to communicate simply and precisely with their non-native speaker colleagues, (ii) speak at a correct speech rate, (iii) speak clearly and concisely, (iv) and not use slang, idioms, dialects or jokes. For both native and non-native English operators: (i) follow strictly the ICAO Standard Phraseology, (ii) be familiar with different cultures, (iii) speak slowly and clearly to avoid misunderstandings, (iv) if the message unclear, ask for clarification to not leave any room for confusion, (v) exclude irrelevant information. For non-native English speakers (i) improve English and terminology, (ii) learn to articulate and (iii) talk in a calm and precise manner.
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Appendix

Questionnaire Questions and Answers

1. Please select the gender you most closely identify with:

![Gender of operators (Pilots and ATCOs)]

2. What is your age?

![Age of operators (Pilots and ATCOs)]

3. What is your main job?

![Profession of participants]

4. If you are a pilot, how many flight hours do you have?

![Flight Hours of the Pilots]
5. If you are a pilot, what type of pilot certification do you have?

![Certification of Pilots](chart1.png)

6. If you are an air traffic controller, how many years of experience do you have?

![Experience of the ATCOs](chart2.png)

7. Are you a native speaker of English?

![Are you a native speaker of English?](chart3.png)
8. What is your nationality?

9. What is or are your native language(s)?
10. What other language(s) are you comfortable speaking?

11. What was your score on the Aviation English test?

12. Which culture(s) do you identify with?
13. Do Native Speaking pilots and ATCOs generally speak Aviation English to Non-Native Speakers in an effective manner?

14. Should Native Speakers speak Aviation English to Non-Native Speakers in the same way as they speak Aviation English to other Native Speakers?

15. Are you satisfied with the ICAO standard phraseology? If not, please specify how it can be improved.

Some of the constructs seem to have been devised by someone in the legal field, rather than the aviation field. Modifying the cleared altitude on a SID, for example. Far too complex.

We deviate, that we don’t use the word “to” in “descend to flight level”, “climb to FL”.

Sometimes not clear
There’s a need to be more flexible in order to improve understanding but also shorten RT

It should contain a specific phraseology for the most frequent unusual situation in order to minimize the risk of misunderstanding between pilots and ATCOs

Phonetics should be emphasized in teaching aviation English to avoid ambiguity in speech. Where there is difficulty in deciphering words by either Pilot or Atco, difficult words of contention should be spelt out using the ICAO alphanumerical. This though could only be effective in less busy airspaces.

Simplify

Too many words mandated. Keep it short and simple

Certain words in English do not have the same meaning ICAO and this can be confusing. They appear to be French translated to similar meaning.

Too much compliance on precise read backs where should be key words read back to confirm understanding. Too much reliance on detailed understanding of procedures when related to phrases e.g. speed restrictions on STARS what phrases cancel which restrictions but the below transitions another subtle change in phrasing changes speed. Get back to plain aviation English.

There's a lack of vocabulary in standard phraseology for contingency and emergency phases

It can be used in many areas

No, ICAO always is changing words we usually do not use

Mostly, until my own country gets its hands on it and adds superfluous extra bits!

Use best practice from states that have filed differences and look to adopt. PBN SID STAR phraseologies poor.

Star phraseology is the biggest joke. It is so confusing and doesn't make any sense

Should be simplified to reduce RT congestion

Table 3 Are you satisfied with the ICAO standard phraseology? If not, please specify how it can be improved.

16. Please express your opinion on the following statements
17. When you speak on the radio to native English speakers, how much do you agree with these sentences?

<table>
<thead>
<tr>
<th>Sentence</th>
<th>Graph Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-native speakers of English are easier to communicate with than native speakers.</td>
<td><img src="image1" alt="Graph" /></td>
</tr>
<tr>
<td>Native English speakers are insensitive to my English language difficulties.</td>
<td><img src="image2" alt="Graph" /></td>
</tr>
<tr>
<td>Native English speakers speak too fast.</td>
<td><img src="image3" alt="Graph" /></td>
</tr>
<tr>
<td>Native English speakers use complex words.</td>
<td><img src="image4" alt="Graph" /></td>
</tr>
<tr>
<td>Native English speakers use complex language structures.</td>
<td><img src="image5" alt="Graph" /></td>
</tr>
<tr>
<td>I misunderstand lots of words from native English speakers which sound the same.</td>
<td><img src="image6" alt="Graph" /></td>
</tr>
<tr>
<td>Native English speakers make 'standard operational messages' too complicated.</td>
<td><img src="image7" alt="Graph" /></td>
</tr>
</tbody>
</table>

18. How many times have you experienced misunderstanding that has been quickly cleared up?

![Pie Chart](image8)

19. How many times have you experienced misunderstanding that not has quickly been cleared up?

![Pie Chart](image9)

20. Please write three things that native English speakers can do to improve communication with you on the radio?

<table>
<thead>
<tr>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not using slang- Speak slower- using aviation English when they talk over radio</td>
</tr>
<tr>
<td>Using only standard phraseology</td>
</tr>
<tr>
<td>Use standard RT natter, avoid jargons and clarify in case of a doubt</td>
</tr>
<tr>
<td>I am a native speaker but a way we could help non-native speakers is to speak slowly and not use shorthand or expressions</td>
</tr>
<tr>
<td>Correct phraseology, rate of speech, not to use abbreviations</td>
</tr>
<tr>
<td>Meet each other to know how he/she pilots say.</td>
</tr>
<tr>
<td>Use standard phraseology, Avoid slang/ accents. Speak slowly.</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Slower pace, accents, use of phraseology</td>
</tr>
<tr>
<td>Understand that non-native won’t be able to understand some slang or would be lost if the speak too fast</td>
</tr>
<tr>
<td>Clarity</td>
</tr>
<tr>
<td>I have problem with Americans only, so it's more of a phraseology problem. I think they should learn the phraseology that the whole world is using.</td>
</tr>
<tr>
<td>Avoid complex instructions; speak clearly; listen very carefully and verify when necessary.</td>
</tr>
<tr>
<td>Listen, speak slowly, use familiar phraseology.</td>
</tr>
<tr>
<td>Use standard phraseology Avoid slang, even aeronautical slang. Speak a little bit slower.</td>
</tr>
<tr>
<td>Speak slowly, be concise, be audible.</td>
</tr>
<tr>
<td>1. Restrict to the use of Aviation English and terminologies 2. Speak clearly and concisely 3. Speak at an &quot;even speed rate&quot; of speech</td>
</tr>
<tr>
<td>Speak slower. Keep RT standard. Be clear and use simple English if you want to explain a difficult problem or reason</td>
</tr>
<tr>
<td>Speak slowly, use simple word, standard phraseology</td>
</tr>
<tr>
<td>Speak bit slower, More standard phrases, Avoid using too much slang or word common to native speakers</td>
</tr>
<tr>
<td>Slow down, articulate more, don't try to brag with their level of English</td>
</tr>
<tr>
<td>1. Speak slowly 2. pronounce the words individually and not mixing them up with other words. 3. They should be patient and repeat their transmission when requested by the ATCO</td>
</tr>
<tr>
<td>Standard phraseology, normal rate of speech, speaking loudly</td>
</tr>
<tr>
<td>Speak slowly and without the native accent.</td>
</tr>
<tr>
<td>Speak slowly in case of non-routine situation And avoid slang And strong accent. speak slower/clearer and repeat when asked</td>
</tr>
<tr>
<td>Speak clearly, slowly, loudly</td>
</tr>
<tr>
<td>Standard phraseology, pronunciation, speed</td>
</tr>
<tr>
<td>Use standard phrases</td>
</tr>
<tr>
<td>Use Standard phraseology, be concise and straight to the point</td>
</tr>
<tr>
<td>Slow rate of speech Clear and concise Should be brief</td>
</tr>
<tr>
<td>They tend to speak jibberish English.</td>
</tr>
<tr>
<td>Speak slower, use common aviation English</td>
</tr>
<tr>
<td>Speak slowly, articulate better the words and follow strictly the phraseology</td>
</tr>
<tr>
<td>Use standard RT, correct speech rate, listen carefully</td>
</tr>
<tr>
<td>Speak slowly and distinctive. Use proper phraseology. Speak what is required</td>
</tr>
<tr>
<td>To use standard phraseology, nothing else</td>
</tr>
<tr>
<td>Use standard phraseology. Speak slower without eating their words.</td>
</tr>
<tr>
<td>Use strict phraseology</td>
</tr>
<tr>
<td>Pronounce words clearly</td>
</tr>
</tbody>
</table>
Accent, slow talk, use RF more carefully and wait for the frequency to empty before communication

1. Use standard phraseology when they have a request or a complain
2. Speak at normal rate

Speech rate should be optimum

Use ICAO Standard Phraseology
Be aware of non-native English speaker potential deviations and accents
Speak in a good rate

Use standard phraseology

N/A

Use ICAO level English

use of phraseology, short sentences, slow speaking
Try to speak in phraseology
Go through the pattern where u are talking
Speak clearly

Speak in a neutral accent

Do not use slang or jargon, speak slowly, re-phrase/re-emphasize when requested to "say again"

Not speak slang, speak clearer, a bit slower

1. Keep talking speed even and precise
2. Don’t rush messages
3. Keep transmissions to the essentials

Word distinctively

1. Speak slowly
2. Speak louder
3. Speak clearly

Use standard RTF and procedures
Speaking slowly, using aviation phraseology, simple and brief messages

1) Speak slower when they speak with non-native speakers
2) Use stand phraseology
3) Listen to read backs carefully

Converse with many native English speakers

Nothing. I'm a native speaker.

Use standard phraseology. They shouldn't use idioms that are normal only in their country/culture. They shouldn't slur their words just because they are Native speakers.

Use standard phraseology, speak at normal speed, don’t use local accent

Get your message understood

Request additional information, do not know procedures, speak so fast

Adhere to standard phraseology, speak up, be prepared to handle non-native speaker's accent

Use standard phraseology

1. Emergency 2. Weather 3.Fail of aircraft

Moderation, clarity and standard

Be slow and speak boldly clearly

Speak slower
Use tones that can be easily understood
Try and understand the culture of the non-native English speaker
<table>
<thead>
<tr>
<th><strong>Stick with standard phraseology!</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Speak slowly</td>
</tr>
<tr>
<td>2. Speak without accent</td>
</tr>
<tr>
<td>3. Use ICAO Standard Phraseology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speak slowly especially those coming from a thick accents</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Using standard ICAO phraseologies</td>
</tr>
<tr>
<td>2. Slow communication to buy time for understanding</td>
</tr>
<tr>
<td>3. Avoidance of complicated words</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speck slower</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplify explanations and instructions</td>
</tr>
<tr>
<td>Use standard phraseology</td>
</tr>
<tr>
<td>Speak slower</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Restrict yourself to aviation language</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not abbreviating</td>
</tr>
<tr>
<td>Use simple language</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>They should stay with the phraseology as long as possible, speak with an efficient and variable tone between the traffics, try not to deviate from standard fluency when the native speaking traffics increase in a period of time.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak slowly</strong></td>
</tr>
<tr>
<td><strong>Do not make people feel under pressure</strong></td>
</tr>
<tr>
<td><strong>Keep it simple</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speak slower</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak in aviation phraseology more</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Use the standard phraseology</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use normal simple English instead of complicated structures</strong></td>
</tr>
<tr>
<td><strong>To appreciate accents embedded in otherwise correct aviation English.</strong></td>
</tr>
<tr>
<td><strong>Maybe they can speak a little bit more accurately and distinctly.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Using standard phraseology or identify non-standard usage in AIP</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Follow standard phraseology</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak slower, follow standard phraseology</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Use standard phraseology, in case of misunderstanding degrade level of complexity of the clearance, not give every info at once</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Speaking without accent would be better. Accent is the main problem generally, not the pace of the speaking.</strong></td>
</tr>
<tr>
<td><strong>2. Especially when addressing a waypoint, using abbreviation of the station names by using phonetic alphabet would be better since we may be not familiar with the area and it is hard to understand an unexpected proper noun. (For example using &quot;direct STN VOR&quot; instead of &quot;direct Stornoway&quot;).</strong></td>
</tr>
<tr>
<td><strong>3. Happened many times, two and three sound similar and I believe it is due to accent too, because of not using a bright &quot;R&quot; in thRee.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Better pronunciation, slower and precise</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICAO language, Rate of speech 100 words/min. RT procedure</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>N/A</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>To speak slow. Use standard phraseology.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak slower, follow standard phraseology</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speak slowly</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speak slowly, without slang, use only the correct phraseology</strong></td>
</tr>
<tr>
<td><strong>Speak slowly, be sensitive to culture and be polite</strong></td>
</tr>
<tr>
<td><strong>Speak slower, use common aviation English</strong></td>
</tr>
<tr>
<td><strong>Speak clearly, loudly and slowly</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>Speak slower</strong></td>
</tr>
<tr>
<td>Use standard ICAO language in terms of pronunciation, order of words and speed of speech</td>
</tr>
<tr>
<td><strong>None</strong></td>
</tr>
<tr>
<td><strong>Speak slowly</strong></td>
</tr>
<tr>
<td>Use letter R as should in aviation</td>
</tr>
<tr>
<td>Unsure, English is my first language</td>
</tr>
<tr>
<td><strong>Speak not too fast</strong></td>
</tr>
<tr>
<td>Speak slower, try to the whole worlds and avoid phrasal verbs</td>
</tr>
<tr>
<td>Work on their number pronunciation especially British pilots</td>
</tr>
<tr>
<td>Speak Slower - use standard phraseology as much as possible - introduce themselves to other cultures and the way they speak English</td>
</tr>
<tr>
<td><strong>Slow down</strong></td>
</tr>
<tr>
<td>Adapt to the listener's level of English and avoid complex phrases.</td>
</tr>
<tr>
<td>Slow, clear, standard communication</td>
</tr>
<tr>
<td><strong>Speak slowly, ICAO Standard Phraseology and clear word.</strong></td>
</tr>
<tr>
<td><strong>Speak slowly. Use noncomplex structures. Use standard phraseology.</strong></td>
</tr>
<tr>
<td><strong>Avoid dialects or slang</strong></td>
</tr>
<tr>
<td>Speak slowly, never use plain English, have to be more comprehensive if he is not understood</td>
</tr>
<tr>
<td>Speak slowly, use easy words, to verbalise</td>
</tr>
<tr>
<td>I am a native English speaker</td>
</tr>
<tr>
<td>Use standard phraseology, calm pace, clear voice</td>
</tr>
<tr>
<td><strong>Nothing, really...</strong></td>
</tr>
<tr>
<td>1. Maintain an even rate of speech</td>
</tr>
<tr>
<td>2. Always use standard phraseology</td>
</tr>
<tr>
<td>3. Where there is a mix-up, repeat words.</td>
</tr>
<tr>
<td><strong>Try to understand the manner they think</strong></td>
</tr>
<tr>
<td>To be honest I work in an airport which is quite rare to be visited by native speakers pilots.</td>
</tr>
<tr>
<td><strong>Speak slowly</strong></td>
</tr>
<tr>
<td>1. To speak slowly</td>
</tr>
<tr>
<td>2. Be precise and concise</td>
</tr>
<tr>
<td>3. To use clear short sentences</td>
</tr>
<tr>
<td><strong>Paraphrase,</strong></td>
</tr>
<tr>
<td>Use simple words, use short sentences, make breaks</td>
</tr>
<tr>
<td>1. Adhere all time to ICAO standard Phraseology.</td>
</tr>
<tr>
<td>2. Speak slower with Constant tone</td>
</tr>
<tr>
<td>3. Reduce number of words in each message.</td>
</tr>
<tr>
<td><strong>Articulate- use simple words - speak slowly</strong></td>
</tr>
<tr>
<td>Make sure they understand the procedures they intend to use or request.</td>
</tr>
<tr>
<td>1. Use the ICAO standard phraseology</td>
</tr>
<tr>
<td>2. Speak slowly.</td>
</tr>
<tr>
<td>3. In case the subject is not understood by the listener, he must change the terms.</td>
</tr>
<tr>
<td><strong>Talk slowly, reduce ascent</strong></td>
</tr>
</tbody>
</table>
Slow down and enunciate clearly. Shorten or cut instructions into blocks.
Understand that the non-native multi crew will need to cross check internally what they heard, then maybe briefly discuss differences in their ‘hearing’ and then read back their group understanding. Giving them time gets things done faster!!

**Follow standard ICAO Phraseology**

- Speak slowly
- Normally it’s not the words used but the accent or pronunciation is the problem. Standard phraseology is not an issue. Accent becomes an issue only when they have to say something which is not covered by standard phraseology.

1. Speak slowly
2. Avoid phrasal verbs
3. State ATC requests clearly preventing unnecessary colloquial technical explanations

- Use standard radio phraseology; speak slower; nil
- Slower communication, standard phraseology, simple English
- They should use phraseology first whenever available. They should use normal speech rate not faster. They should use common English words if needed to speak nonstandard phraseology.

- Speak little bit slow, understand we are not native English Speaker, be patient.
- Remember it’s "tree" and not "three" and the rest of the standard phraseology.
- Not applicable, I’m non-native English speaker but have lived last 15 years in English speaking country so I’m fluent now
- Speak slowly where appropriate. Avoid colloquialisms.
- Speak in a slower pace, stick to standard r/t as far as practicable, concise and simple English in situations when standard r/t not applicable.
- Use standard phraseology, drop accents, be concise
- Speak slower, stick to RT, non-RT sentences to be very simple
- Slow down, pronounce correctly and listen carefully

1. Avoid using slang words. 2. Use short pauses while sending important information. 3. It's better to stick to the common phraseology.

**Standard phraseology. Small words.**

- They need to listen out to the non-native English speakers on radio
- They should not make fun of the non-native English speakers' accent
- They should speak slowly

Speak slow, use ICAO standard phraseology, avoid complicated sentences

Slow up, use standard phrases, slow up
Clear diction. Moderate pace. Standard phrases if possible.
Speak slowly and clearly is enough.
Simplify, use standard phraseology, make sure radio equipment is good enough
Speak slowly, no use slangs and speak out

**Standard Speech rate, stick to standard phraseologies, use simple words**

- Use Professional Aviation English and Common Phraseology given by ICAO to Avoid confusing communication. And talk slowly so that Non Native English speaking person can understand them better.

Speak slower, clearer and use more standard phraseology instead general English
Speak slow
Use simple English
Stick to standard RT

Speak Slowly n clearly when they see once that the non-native person is not understanding. Use correct phraseology.
Understand the request or any radio call. Try to make the non-native speaker comfortable to speak without hesitation. Be calm if can’t understand the language

Speak slowly, clearly
1. Stick to standard phraseology
2. Speak slower
3. Choose the simplest of words when communicating

Articulate, talk more slowly, listen to more Non-native English speakers

Pronunciation of certain waypoints could be strange/different for US pilots, different R/T for US pilots

Speak slow, use short sentences,

Use easy English, use correct phraseology, speak slower

British are excellent in communication; however, Americans are difficult to understand through radio. They should speak more clear, and stick to ICAO standards.

Let go of the accent, use lesser slangs,

Be more articulate

Table 4 Please write three things that native English speakers can do to improve communication with you on the radio?

21. Please write three things that Non-native English speakers can do to improve communication with you on the radio?

Improving their English skill, using clear English, not using foreign accent
Learning the standard radio comm...

Speak slowly, standard RT matter and clarify on case of a doubt
It is hard to understand when people have a thick accent. If they spoke more slowly it might be easier to understand with their accent.

Standard phraseology, careful hear back, clear and standard speech
Speak clearly every times he/she say something.

Use standard phraseology.
Avoid accents.
Speak slowly.

Better English, comply with phraseology and reduce accent
We need to improve our English level but sometimes it's difficult to have enough training

Listen and speak
Practise classes at least once a year
Prepare and familiarize yourself with airports you are using outside your native language countries.

Speak correct phraseology, listening, interpret correctly
Keep practicing to improve their pronunciation.
Be familiar with different cultures.
Standard phraseology.

Speak slowly, avoid extensive explanation, endeavour to minimize mother-tongue influence.
1. Restrict to the use of Aviation English and terminologies
2. Speak clearly and concisely
3. Speak at an "even speed rate" of speech

Don't assume. Make sure you understand the message and ask again if you don't. Speak slower and clear

Use standard phraseology, speak slowly,
Always learn new stuff, Never stop improve your English, If not clearly understood; rather ask to repeat it again than doing something you aren't 100% sure you heard / understood

Learn that simple language, Practice sentences before transmitting, try changing their "native" accent so that others can understand them

1. They should listen out
2. They should request the ATCO to repeat when they don't get the message well
3. They should not hesitate to confirm any word or transmission they aren't sure of..

The same as above
Try to speak clearly.
Asian and Arabic pilots should improve their accent.
Improve intonation, accent, and various vocabularies range

Same as above
Speak clearly, slowly, loudly, with a repeats
Pronunciation, standard phraseology,
Study English either in England or in U.S.
As above
Same as above
Be patient and listen carefully and if not understood request to repeat the transmission.

Read more relevant literature, listen ATC and try to not confuse others on frequency
Practice the pronunciation and follow strictly the phraseology
Use standard RT, correct speech rate, listen carefully
Use phraseology, Speak distinctive and slowly. Listen before speaking
Train listening comprehension, use standard phraseology, try to speak clearly

Some of them have to definitely learn English
Use strict phraseology
Slow talk, accent, use RF more carefully

1. Improve ability in aviation English
2. Learn some slang used by pilots or ATCOs (Report spot wind, Charlie-Charlie etc.)
3. When not sure about what is requested from an Atco, better use "say again"

Practice the pronunciation
Be conversant with Radio Telephony Phraseology
Stick to well-structured standard phrases
Speak slowly and clearly
Refrain from too many instructions
Practice in order to improve their fluency

N/A
Use ICAO level.
Use of phraseology, short sentences, good pronunciation
| Speak clearly |
| Talk in phraseology as much as u can |
| Speak in standard English |
| Learn English... |
| Use phraseology as close as possible, practice pronunciation before pushing the PTT button. |
| Know standard phraseology, be more familiar with the upcoming points on the flight plan, familiarize with different accents to understand them better |
| 1. Practice correct and precise phraseology |
| 2. Talk in a calm and precise manner |
| 3. TTT - Think, Transmit, Talk |
| Word distinctively |
| 1. Speak slowly |
| 2. Speak louder |
| 3. Speak clearly |
| The same 😊 |
| Clear messages, improve pronunciation, improve hearing |
| 1) Speak as clearly as possible |
| 2) Use standard phraseology |
| 3) Nonstandard emergency communication is vital, know your vocabulary |
| Speak slowly |
| Annunciate slower. Especially people from India and China. Vowel sounds are important. |
| Use standard phraseology. They should try to form their sentences better or simpler so we can understand what is happening. Pronunciation is a problem for many pilots and should be improved. |
| Speak slower, keep it simple, articulate more |
| Use standard phraseology, when necessary use plain English, use normal speed |
| Work on aviation phraseology |
| Poor English, traffic information and additional information |
| Adhere to standard phraseology, receive continuous training, be required to improve English proficiency level regardless of level (except 6) |
| Until now, I have mainly positive experiences with the professional pilot community, though I work in a very multicultural ATC centre, so standard ATC language is the norm. |
| Be slow and speak boldly clearly |
| Have good listen out |
| Clarify information that is not clear to them |
| Understand traffic pattern, so as to predict certain instructions or information. |
| Use aviation phonetics properly (i.e. 3 = “tree”) |
| Practice! Again and again.... |
| Use standard phraseology2. Talk slowly 3. Talk clearly |
| Practice speaking English more |
| Speak slowly and with clarity |
| Speak Standard phraseology |
| 1- Good communication |
| 2- Good understanding |
| 3- Proper English |
Listen to BBC and other programs of native speakers
Listen out
Slow down
Ask if you don't understand
Explain more
Read back in own understanding
Restrict to aviation language

They should learn the true pronunciation of the words and try to keep that true pronunciation as the cultures of traffics varies,
Must change their tone when speaking from their language to English to prevent misunderstanding,
If it is hard to stay with the correct pronunciation for them, they should strongly keep speaking slowly.

Be confident
Keep it simple and improve English
They should improve their accent
They should speak slower
Use the standard phraseology
Use normal simple English instead of complicated structures
To appreciate accents embedded in otherwise correct aviation English.

They may carry on their accents. They should avoid Fast speaking with different type of accents and cultural tongue differences.
Try to speak without accent with correct pronouncing
Follow standard phraseology
Stick on to standard communication phraseology

Don’t use their own language that often, it decreases situational awareness of the others. Beware of common misunderstandings about their accents. Always confirm read backs.

1. Speaking fast is not a key to save time, because after a fast instruction, a "say again" reply comes.
2. Using the standard phraseology is important to prevent misunderstandings.
3. As I wrote as answer to previous question, instructions given by abbreviated names of stations and phonetic alphabet makes everything clear, since VOR/NDB station names in local language are hard to understand and identify.

Listening improvement, huge vocabulary and be attentive.
Same in Q 20
Use standard phraseology, advise if you need special handling, don't try to sound like a native speaker if you are not one.
Should improve level English. Constantly to learn English. Use standard phraseology.
Stick on to standard communication phraseology
Speak slowly
Speak clearly, listen attentively and make effort to improve oneself by listening to ATC Radio coms online.
Read more relevant literature, listen ATC and try to not confuse other on frequency
Speak clearly, loudly and slowly
Same as number 20.
Better articulation, speak slower especially when they’re unsure and stick to simpler words.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Details</th>
</tr>
</thead>
</table>
| Just use the phraseology                                             | Better listening skills, clear speaking  
If unsure, ask to repeat it or speak slower  
Speak clearly  
Listen to discussion of native speakers  
They are fine I guess  
Improve their English level - use standard phraseology as much as possible - try to get rid of their accent  
Be clear  
Reading books  
Use their English more often to improve their speaking  
Listen to audio books  
Increase level English, standard communication,  
Practice English, standard phraseology and use simple word  
Use standard phraseology. Speak slowly. Use clear accent.  
Practice, be brief, mind tempo.  
Try to explain in other ways if he is not understood at the first time, speak slowly, avoid long messages in frequencies  
Improve their aviation English, listen to a native speakers, do frequently English test to know their English level and improve it the most important, practice daily English  
Speak slowly, use standard phraseology, practice language as a piloting skill, not just flying skills  
Same as above  
Pronunciation, learn standard ICAO phraseology, ask if uncertain  
1. Speak slowly  
2. Use Standard phraseology  
3. Repeat difficult words, if necessary, spell the out using standard ICAO alphanumeric letters and numbers.  
Understanding  
1. Avoid using langue other than English.  
2. Speak using standard phraseology as much as possible.  
3. Reduce their rate of speaking.  
Listen and speak more  
1. To improve their pronunciation  
2. To improve their listening skills  
3. Use standard phraseology  
None  
Use correct tenses, put the words in correct position, speak slowly  
Same as above  
Lose the accent-use complete sentences-speak clearly  
Learn the phraseology and say only what’s required. A controller will ask again if something needs clarification. Non-native speakers waffle on taking up valuable transmission times.  
Better understand the language and lose the accent  
Understand more ICAO phrases than the basic 20-30 normally used in good conditions.  
If they do not understand, let me know rather than reading back and blindly |
continuing on.
Prepare more for a possible change in procedures so the transition can be done relatively quickly.

1. Start with topic title.
2. When he discover that there is an error, he should not be shy about the correction.
3. Preparation for the topic will benefit him more and make to reach the goal faster.

Use standard phraseology, listen more carefully

Maybe not try and guess too much what they heard. Ask for one thing “say again Star” May give clarity to the rest of the text.
It is not just non-native that have problems. I sat in the jump seat into the US as we were set up for an ILS. 4 Native English (Australia) and we had committee meetings trying to get to an agreement on what the ATC was saying.
We all have accents!!!

Follow standard ICAO phraseology

1 Use standard phraseology
2 State clearly ATC request without unnecessary additional information
3 Inform promptly whether issued clearances and instructions were not clear enough

Use standard radio phraseology; speak slower; nil
Standard phraseology, better pronunciation, simple English
If the level is not good they should try to use phraseology as soon as possible. They should ask to ATC whenever they did not understand what was said to clarify.
Because in many occasions they are doing wrong thing. The lack of language can be eliminated by using standard phraseology, mic techniques, situational awareness, etc.
Be understandable, use only phraseology, talk only what you have to talk.
Learn more English than just standard phraseology.

Ask or tell me: ‘what do you mean’, or ‘speak slower’ or ‘explain in a different way/use other words’

Use CPDLC when it all gets too hard! Stick to standard phraseology.

Speak slowly and clearly. Develop a set of keywords that are used in emergency or unusual scenarios. Talk more in English to native speakers outside working environment.

As above
As above

Say if don’t understand, read back as the instruction was given, province correctly

1. Improve pronunciation to reduce misunderstanding to minimum (e.g. Chinese don't have a letter "R" in their alphabet and Koreans and Japanese a letter "L" so instead of saying RWY 08 "Right" they may say "Light" but sometimes it can be misunderstood as Left). 2. Learn standard phraseology and common phrases used in unexpected situations hardly. 3. Can't come up with any other ideas, sorry.

Listen. If in doubt query the instructions

1. They should speak slowly
2. Always request for the native English speakers to repeat the sentences if they don’t understand
3. The native English speakers to paraphrase the sentences in a simple manner in which the non-native speakers can understand

Extend vocabulary, learn ICAO standard phraseology, practice hearing skills

Slow up, use standard phrases, repeat messages

Please ask me to explain or say again if you are not sure. Speak slowly. Don't worry. We're here to help.
Just keeping standard phraseology enough.

Practice English outside work, watch English TV or read English books to improve vocabulary, use standard phraseology

Study hard to be familiar with English, practice and speak slowly and clearly to avoid mistakes

Standard Speech rate, standard phraseologies, learn to increase vocabulary

Same as above

Use standard phraseology, say in short clear transmission and ...

Stick to standard RT
Avoid direct translation from their native language to English
Avoid using complex English words

Use correct phraseology.

Proper use of phraseology. Knowledge of proper aviation terms. Clearing any doubts related to communication

Try to avoid their non-English pronouncing, also speak slowly and clearly.

1. Always use standard phraseology
2. Learn to articulate and pronounce better
3. Avoid use of own native language

Improving their English.

Listen to more English speakers,

Chinese and many pilots from the far East have strange pronunciation

Speak slow, use short sentences

Use correct phraseology, keep in mind accents

Learn how to use ICAO Standard Phraseology correctly, and use it accordingly

Don't copy the accent, speak clearly, use shorter sentences

Practice, practice, practice

Table 5 Please write three things that Non-native English speakers can do to improve communication with you on the radio?