

Collaborative Development: How Linguists and Aviation SMEs can Best Serve the Aviation Language Community

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Abstract: For the purposes of safety in aviation and in accordance with the ICAO recommendations, all pilots and controllers must follow a prescribed set of rules in order to communicate effectively within the worldwide aviation community. Therefore, they must be trained in their use of aviation language. It seems, after research conducted in this context, that the training provided solely by SMEs does not suffice as they do not draw attention to proper articulation and pronunciation, nor drill grammar and vocabulary sufficiently. On the other hand, language instructors deliver on such issues on a regular basis, though, not being experts in aviation themselves, may leave out important elements of aeronautical communication. Hence, the only way to deliver the training is the collaborative development of both specialists. We suggest here one model of such cooperation. The generation of sample language and conceptual examples to place the use of this structured communication in the proper context, should be initiated by the SME. However, language instructors should be available to participate in such exercise building sessions to continuously keep the linguistic goal of the exercise in clear focus, as they would be best suited to that role. Using such a model to develop outcome-based language exercises embodies several advantages over developing study material produced by only one half of this suggested collaborative team. This paper will seek to elaborate on the different models which may be used in such endeavours as well as narrow the focus to the model suggested above, with a more detailed explanation of this model, to include sample language lessons (or lesson plans) generated in this way.

Keywords: Aeronautical English, SME, LME, aviation language community, collaborative development, Aeronautical English teaching

Introduction

There are few professional environments as high-stakes, fast paced and technically challenging as the flight deck of a commercial airliner in flight. We can think of the surgical theater in medicine or the control room of an operating nuclear power plant in similar terms. The contexts may look distant from one another, however there is something they all have in common. This is a universal need not only to master the respective craft involved, but also the need for very clear and extremely precise communication.

The training involved for any of these endeavours is recognisably long and arduous. Included in that training, when a common *lingua franca* is selected, is the demonstrated proficiency in that selected language. Arguably, this kind of proficiency, from an instructional point of view, would be best taught and practiced by a team comprising both linguists

or language instructors (LIs) and subject matter experts (SMEs), to harmonize the skill set of the prospective students.

It seems that the language training provided solely by LIs or SMEs is not always efficient enough in the aviation context, so it needs to be improved. Hence, the conducted research revealed the best practices to deliver such training through the collaborative development of both specialists. Below, a model of such cooperation is suggested.

1. Aeronautical English training

Our area of concern is Aeronautical English for both prospective flight students and accomplished pilots and air traffic controllers facing proficiency requirements in the specific English skills they will need to perform their job. More precisely, the research target group was operational personnel at all language levels, including *ab initio* pilots and native speakers of English. The research was conducted during two years at the selected flight academy in Poland as well as independent courses at the selected scheduled courses. The method used was first observation, second the analysis of gathered data and finally drawing conclusions. The research question posed was: How do we best prepare students and accomplished professionals alike, for the linguistic and communicative requirements they will need to achieve in order to succeed in the field? What this paper attempts to summarize is the outcomes of the two years of research we have conducted in this particular subject area in an aviation academy as well as at independent courses.

In general, the principles of aeronautical English training have been introduced by the International Civil Aviation Organization (ICAO 2009) and presented in the form of recommendations. It is crucial that the emphasis must be put on six language skills so as to prepare test takers for a real Aviation English test: “Any valid aviation English training must contain activities that are designed to address all six language skill areas specified in the ICAO Rating Scale and holistic descriptors: pronunciation, structure, vocabulary, fluency, comprehension and interactions”. Moreover, according to *Circular 323*, whatever choices are made about the content or subject matter used as a vehicle for the language learning activities, there must be a rationale and relevance for professional situations that can be demonstrated. Therefore, aeronautical English training should cover precisely communication areas specific for real world exchanges in the high-risk context.

As for aviation English trainers, facilitators and technical instructors involved in aviation English teaching, there are some fundamental qualities required by ICAO (see *Circular 323*, 2009). However, there is no regular cooperation between language instructors and subject matter experts mentioned therein. Nowadays, it is widely accepted that collaboration with subject-matter expert informants has an important role to play in the development of training and assessment of language for specific purposes (cf. H. Emery 2016: 21).

An SME is likely a current or former pilot, flight instructor, or air traffic controller, current or former, who is responsible for sharing operational knowledge with students. A valid question at this point, given that the task is language training, is what can the SME bring to the team? First of all, SMEs know the necessary phraseology; and should be able to switch easily to plain language in nonstandard situations. This is a crucial and very specific skill set that is generally only acquired one way, through real world experience. To be more precise, these three factors are what we want from SMEs:

- operational knowledge in order to place language accurately in context;
- practical and well-practiced use of standard phraseology (SP);

- plain English used skilfully in the proper context, particularly in non-standard situations.

A LI is a qualified linguist, a trainer with experience in aeronautical communication and knowledge in language teaching for specific purposes. LIs bring their own special abilities to the collaboration, beginning with their deep knowledge of the nature and process of language development and, importantly, language training. Additionally, they know how to teach languages for specific purposes. LIs main focus is to minimize the frequency and severity of the language users' radiotelephony (RT) failures.

They will also know how to improve a student's language through course and syllabus planning, and the design of lesson plans and exercises, including the timings involved. Particularly important too is the element of intercultural awareness. In today's global world, cross-cultural awareness should be a part of the process of training in general, and in language instruction in particular, given the important role language and communication plays in enhancing such awareness in any globally organized field, of which aviation is a prime example. Furthermore, the importance of the development of this awareness is easy to imagine; pilots these days may frequently be flying in multi-cultural crews and flying across many borders in a given day, therefore being exposed to many different cultural subtleties in the use of English for this purpose. Air traffic controllers face similar circumstances necessitating an equally obvious need for developing skills to cope with the potential misunderstandings that may arise.

SME	LI
Operational knowledge	Language processes knowledge
Practical use of standard phraseology	Language nature knowledge
Plain English use	Linguistic troubleshooting: minimizing language radiotelephony, communication failures
	Standard phraseology characteristics
	Language training
	Intercultural awareness

Table 1. Aviation SME's vs. LI's teaching objectives.

It seems reasonable that SMEs are mainly to impart the specific phraseology and terminology of aeronautical communications. And accomplished LIs are to ensure the clarity of articulation and structure, etc. in any communication setting. However, there are cases when both instructor functions presented above may be performed by one specialist, e.g. a pilot/an air traffic controller being a certified language trainer; or a teacher who became a pilot/an air traffic controller or was trained for radiotelephony communications.

According to J.C. Alderson (1981: 127), subject-matter knowledge is inseparable from language use, even more so in language for specific purposes. Therefore, we cannot expect entrants to aviation training to be able to speak ICAO aviation English knowing that they do not have the associated subject-matter knowledge. Therefore, using tests designed to meet the ICAO Language Proficiency Requirements for entrants to aviation training is highly problematic due to the lack of knowledge: a specific test might well assume or presuppose subject knowledge that the test-takers do not have.

The general concepts we present here should apply to all levels of pre-existing English proficiency, including native speakers (NSs). Our recently finished research involved NSs

and non-native speakers (NNSs), with mixed grouping whenever possible, so, it is crucial to remember how these issues apply to all. All levels make mistakes, not just second language learners (L2s). This opinion, that training should involve all levels of general proficiency, is widely accepted by the linguistic community (e.g. ICAEA seminars 2021, 2022).

2. A collaborative development model

The research showed that it is through the collaboration of Language Instructors (LIs) and Subject Matter Experts (SMEs) we can achieve the best results in aeronautical English training. However, the condition is that the two parties should follow an agreed syllabus and understand their specific training roles. As an example, three observed situations are presented below for which different collaborative models may be used. Each scenario shows the potential number of steps to take in the teaching process in order to achieve the best possible results.

Scenario 1: Ab-initio pilots language training

This is training which begins at or even before, as a prerequisite, the initiation of the flight or ATC training program. The task here would be identifying how to start training with the new elements of language built in. Fortunately, the recent research group was a mixed group consisting of both NS and NNS students (various nationalities) training together at the flight academy in Poland (in total 15 students). In this example, the introduction to the mechanics of Aeronautical English was initiated by the LI, due to more extensive and proper training in this area and it worked very well. Thus, it was proved that the SME would likely be more useful in a later phase of such training.

Firstly, it is the LI who makes a lesson plan and adapts it to the target level of a given group. It may, for example, start with the ICAO requirements for aeronautical communication that the new or aspiring aviators will be facing. There can be discussions, readings, checking for understanding and many other approaches to use. Moreover, at this stage of training the students may or may not be familiar with, for example, the distinctions between routine and non-routine situations in the various different phases of flight. Thus, such basic knowledge should be presented and followed by examples for better understanding of radiotelephony purpose. Moreover, a simple dialogues presentation, however not drilling yet, as practice, may be an interesting approach here. There can be more tasks involved like gap-filling, etc. just to comprehend the context and mechanism. To this end, the students will understand what type of communication they are prepared for and straight away they will try to imitate the presented exchanges.

Then the training will shift to the introduction to standard phraseology (SP), transmission of letters, numbers, time, standard words and phrases, callsigns, readback requirements, complying with clearances and instructions, aerodrome procedures, etc. It is recommended that SMEs would support and pick up some of the available time here as they will be more familiar with this aspect of aeronautical language, but it is not necessary at this stage.

Another key element here is placing aviation vocabulary in context, in other words, into situations both standard and non-standard, in which context is critical, as well as interesting because some terms may be new even to NSs. Drilling and role-playing will be both useful and fun here, particularly of plain aeronautical English in dialogues. These are the techniques which afford much opportunity to practice new structures in the context of natural communicative usage. It is always recommended, if possible, that NS are involved in dialogues with

NNS (A. Borowska 2017). SP should be practiced at this stage at the basic level, also recommended in flight simulators. Students should understand the difference between SP and plain Aviation English. The SME is supposed to be involved in the training at this level, they should inform the LI about encountered issues or language errors so that the LI can prepare tailored tasks to improve students' performance. Finally, both instructors monitor students' improvement.

Scenario 2: Plain Aeronautical English practice

This stage of language training should be more real-life oriented. This is the moment when the students are already familiar with the legal and operational requirements as well as the nature of radiotelephony communication. In our case, it was the time where both a simulator and solo flights were introduced in flight training, so SMEs can focus on the language training for real life aeronautical situations. It is likely that there will be intensive vocabulary development here mainly because of the introduction of new equipment and procedures. This is when the SME can focus on accuracy for communication clarity and intelligibility. It is again important at this point that the SME informs the LI about any problems encountered that may need remedial linguistic attention. The LI can then prepare tasks tailored to the current issue under the SME's supervision as this is a very key moment of cooperation between the collaborators and repetition of errors is not an objective here.

In the meantime, students attend regular language classes where they can sort all the incoming communication queries and drill grammar, vocabulary, pronunciation and interaction. Finally, the SME checks for accuracy and relevance in the flight training context. An important distinction here, for both the LI and the SME, is that the basic course, or in the case of *non-ab initio* trainees – an advanced aeronautical training course, is completed. Some, or even extensive aeronautical knowledge is now onboard. Thus, the SME should now aim at structured use of communications in the proper flight context. This is the moment when the collaboration is at its highest level due to the fact that both the LI and the SME prepare and execute tasks together in the classroom during workshops and during simulator and real flight training. Error correction becomes a priority here. The LI particularly should use a great deal of ready examples in order to build up radiotelephony communication awareness.

Scenario 3: The need to indicate intercultural communication issues to pilots

According to R. S. Zaharna (2009: 190), it is possible to be fluent in the language yet ignorant of the culture. As shown by research in an aviation context, intercultural aspects play a crucial role in radiotelephony communication (A. Hazrati 2015, S. Cookson 2019, A. Tavares Monteiro 2019, A. Borowska 2020) and have an impact on a proper interlocutors' attitude as well as communicative strategies. Moreover, intercultural differences are bound to influence the comprehension of events in people belonging to different cultures (U. Connor 1998). It has been shown that the non-native, when communicating in English, is confronted with a psycho-cognitive situation where their native linguistic and cultural schemata conflict with the English schemata dominant in international professional communities, and is thus forced to negotiate and redefine their cultural identity in order to successfully communicate in international and intercultural settings (*ibid*).

A high degree of language adaptation to the needs of global communication has already been seen in the sector of international aviation, with Airspeak, aimed at developing linguistic codes to enable pilots to interact adequately with air traffic controllers and other pilots.

In order to overcome the phonetic and linguistic difficulties experienced by non-native speakers, the structure and elements of these codes have been greatly simplified so as to avoid pointless redundancy and excessive difficulties in comprehension and expression (M. Gotti 2004). Although specific phrases have been codified, each with its specific function and well-defined meaning, and message/reply markers have been coined to identify the pragmatic value of each utterance, dominant cultures still seem not to be aware, or not to be willing to conform to cross-cultural challenges of global world (A. Borowska 2020).

It would appear to be an inescapable fact that all aspects of global aviation communication should be considered and so introduced to the training curriculum. The basic aim is to indicate these issues to students in a way that not only makes them aware of the issue, but also gives them the tools to reconcile these elements of communication as they invariably arise, both in training and in conducting their professional life. However, it is not a common practice today.

The research shows (A. Borowska 2016, 2017, 2020) that a majority of NSs react differently to intercultural challenges to NNSs. Sometimes NSs lose their patience with NNS unfamiliarity with small cues, double meanings, context issues and other nuanced verbal signs. When adopting rules of linguistic behavior based on language awareness plus cross-cultural awareness, more focus is placed on with whom we are communicating, and not only our own articulation in isolation. As a matter of fact, it may not be easy to know or judge, but it can be very important as trainers to teach how to recognize and react to cultural issues bearing flight safety and precise operations in mind.

The best solution is to present intercultural communication in class, where students can focus on case studies, etc. This is initiated by the LI, by introducing the concept along with some examples, and by generating an open discussion about what is revealed.

It is no wonder then that in order to make a valuable contribution to aeronautical English training, facing the scarcity of teaching materials, the ideal model would include a maximum intercultural context whenever possible by:

- organizing mixed nationality groups, and, if possible, NS and NNS;
- organizing an NNS LI/SME for NS students (our research showed positive training results in this area);
- presenting case studies on aeronautical intercultural communications in order to observe interlocutors' attitudes as well as linguistic behaviour;
- encouraging students to present solutions by using useful communicative strategies.

The objective of this scenario is to teach how to recognize and adopt the discursive behaviour of interlocutors in order to find out how they think, what they value, and how they 'see the world'. Last but not least is the fact that the students should be taught how to use their voice effectively at articulation/pronunciation workshops (LI's role) as listeners will make judgements about interlocutors' general attitude towards them solely by the sound of their voice.

This approach proved to be very useful in preparing for real-life global communications during our LI/SME's teaching experience in Poland at the associated flight academy. The students felt the context more and were more confident in selecting a communicative strategy when reacting to misunderstanding. The study also showed that many "say agains" came up in drilling communications, particularly when NNS students were exposed to NS ones. Hence, NS noticed that they may not be understood due to the choice of words they use or unclear articulation. Therefore, it appeared well grounded and critical to make students aware of potential miscommunication factors as well as to organize articulation tasks because the stress is on voice communication, so this is an important consideration for both

groups. Much of this, after being introduced by the LI, is going to be checked by the SME in the flight training setting.

3. Collaborative course planning and LI/SME mutual benefits

Based on the three scenarios presented above, it is possible to present a method to plan a course by LIs in collaboration with SMEs. Two of the shown research situations are currently basic in pilots' training, whilst the third one, though innovative, may be introduced to aviation language training on a regular basis. Moreover, in the multicultural context of aviation, effective teaching requires curriculum designers, trainers, teachers, and testers to go beyond the traditional ways of teaching and testing aviation English, which emphasize only language skills. Therefore, language instructors for aviation should recognize the sensitivity and significance of language and its culture to ensure safety (A. Hazrati 2015).

Generally speaking, aeronautical English course planning is usually done by LIs, however, there are obvious benefits available if the syllabus is created and developed collaboratively. The approach remains learner-centered. After the common goals are set, the syllabus is supposed to be designed by the instructional team which collaboratively knows what subjects will be included in the aeronautical training program, and when they are likely to appear, etc. Therefore, specific thematic modules should be prepared collaboratively in order to achieve a maximum efficiency. SMEs are usually responsible for technical aspects of training and they can prepare the list of the vocabulary they need students to use during the first encounters with a simulator and aircraft. Moreover, the LI is made aware of the SME's input regarding the professional and technical training regime. In the meantime, the LI should pay attention to students' proper articulation and pronunciation (including NS) as the SME has no time to drill this, nor to discuss case studies in intercultural communication.

It is worth mentioning the mutual benefits for LIs and SMEs. Firstly, SMEs can share operational knowledge and explain technical issues for LIs. This is naturally done in the development phase, and may also be conducted 'on demand', when close cooperation is available. This goes both ways, especially when lexical or linguistic issues arise. Moreover, the instructors are supposed to support each other by monitoring their areas of expertise, e.g., the SME puts attention on the technical aspects the LI presents, whilst the LI can monitor SME articulation and pronunciation. It is recommended for colleagues to achieve a sort of model for their students so it seems appropriate.

We are to indicate the best practices in our collaborative development context, we can say that an individual approach is of course possible, but we have found that the work may be more efficient and enjoyable for us and students will not be left alone with their questions. Both instructors will be also more supportive because they will not be afraid of losing face when questions come up unexpectedly that may be better answered by either an available SME or qualified LI. Therefore, if possible, the training team that consists of LI and SME for aeronautical English purposes should be formed. Moreover, we believe we have modelled an example of such a collaborative plan here so that it can be to everyone's benefit, and specially for those who communicate via radio: "Proper training will improve the ability of all concerned to optimally perform their tasks and will build the bridge between interlocutors, so that they may understand one another better" (A. Borowska 2017: 249).

Conclusion

To sum up, linguists and subject matter experts can serve the aviation community in many possible ways. In the language training phase, it can be done separately, when they focus on

their field of expertise, but also collaboratively, when they join their mutual efforts in order to satisfy training process needs, and contribute indirectly to aviation safety. It seems obvious that such collaboration involves setting common goals and requirements, and then developing specific thematic training modules.

It seems to be an obvious and clear advantage to having both available within a team as both the LI and the SME can prepare and execute tasks together. Both parties should also remember that reduction of errors becomes a priority here. Thus, LIs should not hesitate to ask SMEs for sharing and explaining their technical knowledge if required. On the other hand, these are LIs who are supposed to monitor not only students', but also SMEs (incl. NS) articulation and pronunciation. Consequently, having an NNS trainer for NS students has proved to be beneficial to the students. Finally, both players aim at intercultural awareness.

The best practices for serving the aviation language community is therefore the team work rather than the individual approach, though still possible. The three presented scenarios are ready to be implemented at the appropriate stage of the aviation language training.

References

- Alderson, J.C. (1981), *Report of the discussion on the testing of English for Specific Purposes*, (in:) J.C. Alderson/ A. Hughes (eds.), "Issues in Language Testing", London: The British Council. 66–134.
- Borowska, A./ A. Enright (eds.), (2016), *Changing Perspectives on Aviation English Training*, Studia Naukowe – Vol. 29, Uniwersytet Warszawski: Warszawa.
- Borowska, A.P. (2017), *Avialinguistics. The Study of Language for Aviation Purposes*. Peter Lang: Frankfurt am Main.
- Borowska, A. (2020), *Culture Indicators in Global Aeronautical Communication*, (in:) "The Specialist: Special Edition – Aviation English" Nr 3, Vol. 41, 1–17.
- Cookson, S. (2019), *Airline accidents involving linguistic factors*, (in:) "Australian Review of Applied Linguistics" 24 (3), 22.1–22.
- Connor, U. (1998), *Contrastive Rhetoric. Cross-Cultural Aspects of Second-Language Writing*. Cambridge University Press: Cambridge.
- Gotti, M. (2004), *Specialised Discourse in Multilingual and Multicultural Contexts*, (in:) "La revue de GERAS", 5–20.
- Hazrati, A. (2015), *Intercultural Communication and Discourse Analysis: The Case of Aviation*, (in:) "English Procedia – Social and Behavioral Sciences" Vol. 192, 244–251.
- ICAEA Virtual Workshops (2021, 2022) *Modes of Aviation English Training: Developments in online training and changes in perspectives;/ Aviation English and Communications Training for a Post Covid-19 Era*.
- ICAO, International Civil Aviation Organization (2009), *Circular 323, Guidelines for Aviation English Training Programmes*. ICAO: Montreal.
- Tavares Monteiro, A. (2019), *From a Language-Only Approach to a Broader View of Communicative Competence for Intercultural Communications in Aviation*, speech delivered at ICAEA Workshop 2019 – "Exploring the Aviation English training needs of: Ab-Initio Pilots and Air Traffic Controllers, and Aircraft Maintenance Personnel", Tokyo, Japan.
- Zaharna, R.S. (2009), *An Associative Approach to Intercultural Communication Competence in the Arab World*, (in:) D. Deardorff (ed.) "Intercultural Communication Competence". Sage.