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Integrating Contextual Factors into Teaching of English for Aeronautical Communications

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EVOLVING TEACHER TRAINING PROGRAMMES THROUGH INTEGRATING CONTEXTUAL FACTORS FOR LANGUAGE LEARNING AS PART OF AERONAUTICAL COMMUNICATION.

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Contents

Abstract

Since the introduction of the ICAO Language Proficiency Requirements (LPRs) over 10 years ago, language as an isolated element has often predominated as the key focus of improving communications in learning and testing for pilots and Air Traffic Controllers (ATCOs). This has, arguably, been to the detriment of an understanding of the complex system of elements that makes up the air-ground communicative process, of which language is, no less an important, but an integral part. An effect of this has been, quite naturally, to put the responsibility for improving communication and language training of pilots and ATCOs on the shoulders of language teachers.

By definition, however, such language is clearly defined as a "Language for Specific Purpose" (LSP) and training to acquire the necessary linguistic skills required necessitates a clear appreciation, not just of the communicative processes involved, but a broad understanding of the technical knowledge and operational environment that creates and helps form discourse between a pilot and an ATCO. It therefore goes without saying that even someone with many years experience of teaching language may find venturing into the highly complex technical domain of pilot/Controller dialogue somewhat challenging with little real understanding of the multiple factors and specific purpose language that are used to produce efficient and effective communication. Indeed, a pre-conference survey carried out by the International Civil Aviation English Association (ICAEA) in 2017 showed a notable disconnect between those responsible for carrying out the training and those receiving the training. This is troublesome in the sense that learners are not being afforded the training they require for communication in the real world. More critically, as in any professional domain, if training is not matching the learners' objectives then,

arguably, a less effective and efficient communication process may well undermine the LPRs rationale and thus impact on safety.

This paper offers a fresh perspective from research and practice I have carried out since 2016 supporting a greatly increased face validity of both learning and testing by explicit inclusion of multiple-factor real-world communication between pilots and ATCOs in place of the more typical, but limited, language-only approach. It forms the basis of a new perspective for training teachers and trainers of language and communication skills in aviation contexts[1], particularly that of radiotelephony communications between pilots and ATCOs. It adopts a contextual framework based on a learning continuum for determining what communication is required by learners in their every-day operations. It offers a methodology inclusive of the many interdependent factors that effect communicative competence where language is seen as an integral, not a stand-alone, element and can aid practitioners in preparing curricula, materials and interactive activities for the training room.

Introduction

Spoken communication is a multi-disciplinary human activity reliant on, amongst other elements, context, knowledge and socio-cultural influences (Fan, et al, 2015). Context and knowledge are themselves influenced by physical and cognitive abilities, length of exposure to, and experience in the domain, as well as socio-professional roles (Holmes, 2008; Raman, 2011). These are all internal elements which create many determinant factors in communicative competence. They are all manageable by

[1] This article avoids the use of the term 'Aviation English' due to its ambiguity in what is a Language for Specific Purposes (LSP) domain, and the often mis-used reference to the ICAO defined *standard phraseology*. Such language is defined more in terms of the air-ground communication process between pilots and ATCOs, which is constructed from *standard phraseology*, as well as general and specific purpose plain language – ie: the use of less- and non-coded spontaneous language used interdependently with *standard phraseology*.

human interaction reliant on a certain degree of proficiency in all these areas working interdependently. A person's communicative proficiency is therefore multi-faceted, variable and, by definition, ambiguous (Liberman et al, 2017).

In addition to the many internal factors, which are by and large, individually manageable (exposure, experience, training, schooling, social awareness, etc.) external factors also play an important role in any communication (Barshi, 2013). These are, by and large, governed by a limited manageability and therefore not so easy to decipher in terms of how one person will react to another when they affect a communication process (Howard, 2008). Technical, environmental, political, and socio-cultural issues are all extraneous affective factors that have an important influence on how interactional competence is affected.

Language

We know that plain language proficiency is a 'fundamental component of radiotelephony communications' (ICAO, 2010, p4-2) and is a 'unique kind of communicative event' (ICAO, 2010, p4-5). In the daily operations of pilots and ATCOs, however, spoken communication happens because of, and within, a multitude of variable external and internal factors (Moder, 2013; Kim, 2018). Usually language serves as a conduit to effect this communication in a collaborative process, and so is governed largely by many factors working interdependently, both *manageable* (internal) and *influential* (external).

To assist, therefore, in aiding learners to consolidate and improve their plain language proficiency in real-world communication, it is not sufficient to know lexical items or

structural forms in isolation. Kim (2018) suggests that the interactive skills of the ICAO LPRs – *Pronunciation*, *Comprehension* and *Interactions* – may well be more important than the purely linguistic ones – *Fluency*, *Vocabulary* and *Structure*. She also questions the fairness and validity of focussing on linguistic factors alone, whilst Douglas (2000), points out that language knowledge and specialist knowledge are inseparable. Having the 'opportunity to take part in genuine communicative needs in realistic second language situations' (Canale & Swain, 1980, p27) must therefore be taken into account for learning and testing, whilst learning language for such a specific purpose (ESP) should be 'oriented to the specific needs of the learners […] appropriate to the specific activities the learners need to carry out' (Paltridge & Starfield, 2013, p6). Hedge (2000, p47) even alludes to more specific skills such as: 'linguistic' – the language, 'pragmatic' – knowing when and how to use it – and 'strategic' – knowing how to accommodate, rephrase, repair and negotiate meaning, so that communication can be effected. This is perhaps most evident when remembering that air/ground communication takes place in *voice-only* settings and must be replicated in language training and testing.

As a valid base from which to consider new learning perspectives, such theory emphasises a rudimentary need for communicative and interactive competence above a general linguistic version in the very complex and dynamic process of pilot/ATCO communication. Such competence evolves from an integrated learning process that identifies and feeds off the context of the target language use (TLU), not simply linguistic knowledge in isolation. Bullock (2015) demonstrates examples of methodologies and activities suitable for learners of real-life communicative language in an aviation context.

Contextual factors

In order therefore to try and identify some of the contextual factors inherent in radiotelephony communication, consideration should be given to understanding the background of such situations where communicative competence is required. As the language proficiency requirements were developed mainly to increase communicative skills in plain language during *non-routine* and *unexpected* situations, I randomly brainstormed with groups of various Subject Matter Experts (SMEs – pilots and ATCOs) during training courses, situations they deem as factoral elements in communication during non-routine situations. All those who took part in this research had more than 10 years experience in their professional roles, which enabled elicitation of as much information as possible from their own occupational knowledge.

Each group was given three typical non-routine events – one on departure (engine failure of twin-engine airliner), one on the ground (unruly passenger) and one in-flight problematic weather situation). Although non-routine, the events were chosen as those likely to have been experienced by both groups and can be seen as some of the most common. The course participants were asked to think of as many concurrent manageable and influential activities as possible that could affect how both a pilot and an ATCO would communicate during such non-routine events.

Because of the complexity of each area, as well as the subjectivity of given responses, the factors are divided simply into *manageable* and *influential* in alphabetical order. The key areas are shown in *Fig.1*. Those primarily affecting ATCOs are on the left

and those affecting pilots, on the right. The list is certainly not exhaustive and more in-depth research and data would be needed to construct a comprehensive taxonomy, with full supporting evidence. What the results do show, however, is an awareness from both groups of SMEs that even at a simplistic level, oral communication between pilots and ATCOs is influenced by many elements, of which a large amount are, as previously mentioned, interdependent.

ATCO	**Pilot**
Manageable	**Manageable**
Anticipation / preparation / planning	Controlling, managing aircraft
Listening (other frequencies /colleagues)	Flight preparation
Phone calls	Language proficiency
Planning – mental/external	Listening to more than one frequency / aircraft
Reacting	Negotiating / informing / instructing
Scanning – screens, aerodrome, weather, etc	Problem – SARPS/checklists/problem solving
	Technical issues
	Expectancy

Influential	**Influential**
Emergency situations – 3rd parties	Cultural influences
Equipment limitations and serviceability	Multiple discourse communities: – passenger, cabin crew, ATC, Operations, Handling agent.
External events (Volcanic Ash / Strikes / Weather)	Specifics of a situation (technical issues, passengers, weather)
Flight plan management	Technical limitations of communications / ground facilities
Language proficiency of other speakers	TWR/GRD/ACC/APP – ATCO workplace
Sub consciousness	

Fig. 1

The exercise also saw some characteristics in more general emerging themes such as multiple simultaneous communicative tasks, situational awareness, lack of visual cues between speakers, and the potential technical limitations of equipment. Such factors also reveal the key influence and importance of technical knowledge and professional experience, the uncertainty of unexpected events, cultural norms and hierarchy and,

perhaps the most often overlooked, communication between speakers with differing levels and perceptions of proficiency, including those for whom English is their principal or sole language, a point alluded to by Kim & Elder (2015) and Kim (2018).

For a teacher with little or no operational knowledge of the complexity of pilot/ATCO communication, unaware of the many contributory factors stated above, not to mention being able to handle the complex rationale of what constitutes the various levels on the ICAO Rating Scale and the effect that this has on communicative dialogue, this can be extremely challenging. Communication is taking place in an extremely specific referential context with shared meaning developed through lengthy training and professional experience. This must be broadly understood to be able to extract the necessary language and communicative skills that learners will need. If learning is based around a traditional general-purpose language framework with some bolt-on lists of technical vocabulary, and a traditional *right or wrong* grammar approach, devoid of any contextual reality and appropriate functional language and strategies, learners will not acquire the necessary communicative and interactional competence for their real world objectives.

Teacher training thus requires a different approach to assist learners in achieving their objectives. Such training must be more focussed on the real-world authentic language contexts that learners need to operate efficiently and effectively. It should strive to adopt a methodology and curricula that increase learners' intrinsic motivation and takes into account the specificities of what constitutes air-ground communication, with all the influential and manageable factors that work interdependently. Furthermore, expanding on general purpose language to include relevant and

contextually specific purpose language in the context of given aeronautical settings is crucial to this process of learning and developing the required communicative skills.

To this end, a simple continuum can be used to develop course programmes, source material and prepare appropriate and authentic communicative tasks in the classroom. As shown in *Fig. 2*, the *a priori* consideration must be a given context. Without knowing the context, it is not possible to know the communication taking place, and thus what language use is helping to form this communication. Without knowledge of this language use, learning is arbitrary and out of context and therefore of little use for students in their intended operational situations.

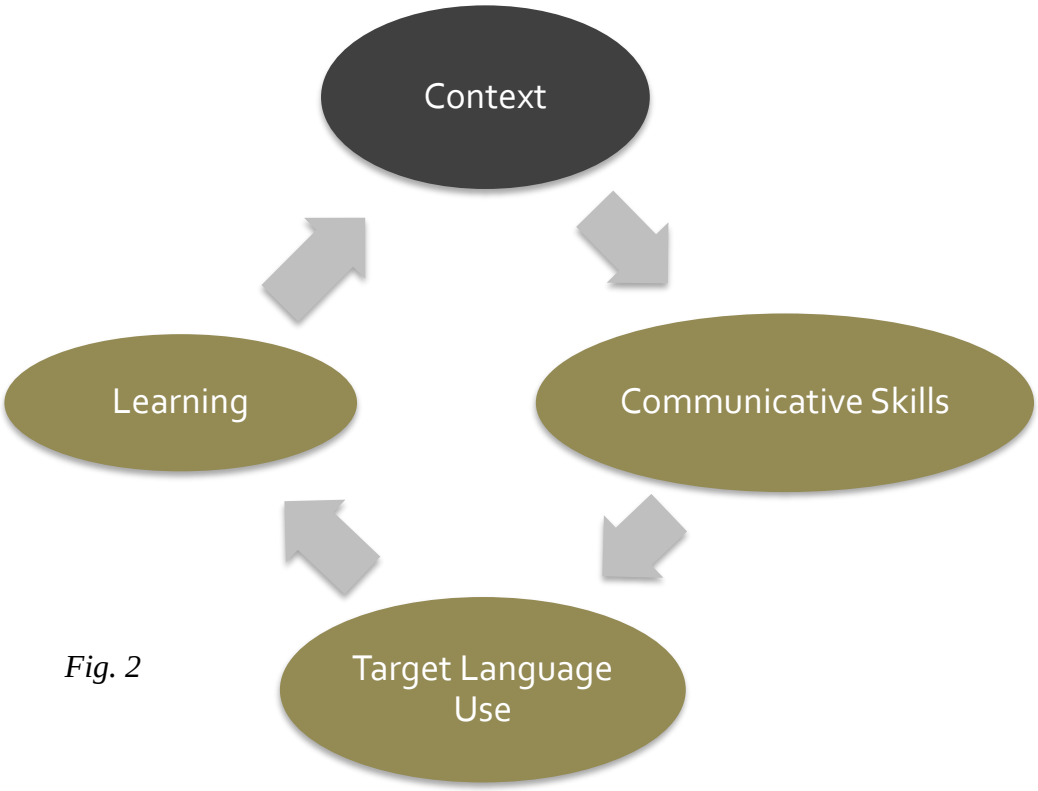

Fig. 2

Context based learning relates directly to the likely situations during which learners will have to communicate in their operational roles. In order to identify and exploit such situations in preparing curricula, material and tasks for learners, ICAO Doc9835 (2010, appendix B, *Part ii*) provides a very good reference tool. The given inventory of events, domains and sub-domains characterize most of the day-to-day communications between air traffic controllers and pilots. They represent situations, routine or non-routine that all controllers and pilots must be able to handle and which may also require familiarity with other domains linked to any given situation.

Depending on students' contexts such a tool can be given either as a checklist during a needs analysis interview – students tick or highlight those situations they are most likely to encounter – or as a warmer in a group or pair discussion activity, usually in the first training session, which acts as a 'live' needs analysis. As this activity is directly related to the communications that learners will need to engage in during their operational tasks, there is a direct personal connection and, thus, a very high likelihood of inherent motivation at this early stage. This is critical in establishing a base for meaningful learning from which the training course can operate.

Once the needs analysis has been established then the teacher can start to identify how to source authentic contextual communication to ensure a final curriculum includes as much of the learners' target language use (TLU) as possible. It is suggested basing a series of lessons on one domain (*approach situations, health problems, Aerodrome/airfield environment)* and then sub-dividing the group of lessons so each one focuses on one specific event from that domain eg: Approach situations*: go-around procedure; types of approach; holding procedure; VFR entry into CTR;*

airfield closure; etc. As previously mentioned, many domains and associated events are interlinked and so a certain reference to others is always relevant in understanding the context. Learners are thus exposed to a much greater awareness of likely events taking place rather than one-off events in isolation.

Once the domains and events have been established then teachers need to source as much information as possible from experienced SMEs as to how the likely given scenarios unfold. This can be done with a series of simple questions.

i) what actually happens before during and after the event?

ii) what are the normal procedures for pilot ***and*** *ATCO? (understanding the roles and activities of the other is extremely important in helping to manage the situation).*

iii) what manageable and influential factors affect the events?

iv) what communication is taking place and what communicative skills are required?

v) who is the pilot/ATCO also communicating with at the same time?

vi) what standard phraseology is required and how will this need to interact with plain language to effect the communication?

vii) what other domains will likely be affected by this specific situation?

viii) what are the L1s of the speakers and likely levels of language proficiency in English?

The number and type of questions is of course endless and teachers may decide, depending on their own experience of the domain, to ignore certain ones or add some of their own. What is crucial at this stage is to solicit as much information as possible

from SMEs to identify the exact communication taking place, particularly what are the affective factors, and what language is being used to effect the process (See *Fig 1*). This can then be transferred to methodology, material, and training room tasks.

Integrating a rationale for teacher training

The rationale behind this process formed the basis for teacher training workshops given by the author, one of which was run during the ICAEA conference at Embry Riddle Aeronautical University in Florida in May 2018. In general, participants were teachers of English in an aviation context, and the rationale was to help guide participants to better establish the contexts and associated factors involved in the real-world communication of their learners. Using the continuum in *Fig. 2* as a principle, participants were invited to identify the communication and language, then to think about preparing curricula, methodology and materials for their learners. As each workshop differed slightly in length, number of participants and outcomes, the rationale and structure is described below from a generic basis. Given responses were not specific to any one group, but are cited to show the kind of response that each task was intended to elicit.

Participants of each workshop were normally divided into groups of four and the workshop itself divided into two parts.

Activity 1 – *engaging with the communicative context* (See Appendix 1a)

Activity 2 – *engaging with the target language use* (See Appendix 1b)

In Activity 1, each group was given four titled picture cards, with each title referring to a pre-identified specific authentic interaction between a pilot and an ATCO in a non-routine situation. The four situations were:

1) Pilot incapacitation
2) (Suspected) Tail strike on departure
3) Bird strike on departure (aircraft airborne)
4) Destination closed due blocked runway

Each participant was given one card and a worksheet with 5 tasks. They had 10 minutes on their own to think about what happens during such an event and then time to complete the 5 tasks in their own words. Each group then had 10 minutes to discuss their individual situations together and elaborate on what the whole group thought would happen in each situation. Examples of the worksheets are given in Appendix 1a and 1b. Once this was completed a class discussion was held for 15 minutes to identify key areas for each situation according to the responses of each group.

The group then continued on to Activity 2 where the authentic scripts for each communication were handed out to the groups. The scripts did not include the full communication but sufficient utterances from the interaction to be able to identify the context, with the key communicative skills and language used. As for Activity 1, each person was then given 20 minutes to prepare – 10 minutes to read and reflect on their given script and respond to the tasks 6-10 on the worksheet, then 10 minutes together to discuss and brainstorm ideas.

The workshops were aimed to provide only a very short but focussed input for teacher training and would ideally form part of a more intensive and longer session to investigate further how the thoughts and ideas from the workshop participants better reflect on each individual's teaching environment. Additional studies would need to be carried out during a full teacher training course to evaluate an *a priori* and *a posteriori* impact analysis on individual classrooms.

Outcome and further discussion

Reaction and responses to the tasks are given below with additional commentaries to highlight how such tasks can be expanded on in longer teacher training courses.

Activity 1

Task 1.

Most participants were able to generate a lot of specific information here relevant to the situation given. However, few mentioned the need to look at the effect that one incident would have in the immediate future on other routine events and normal procedures for both ATCOs and pilots. Any non-routine event takes place in the context of routine situations simultaneously, and this must also be factored in, including the effect on other communications taking place at that time.

Task 2

The results here showed a broad appreciation of the type of material that could be introduced as a warmer, such as audio, video, reports, training manuals, etc. Care must be taken, however, to identify the broader based subject initially to allow as much elicitation as possible of knowledge and personal experience and enlarge the

thought process of learners to include all possible scenarios and options. Such broader elicitation also allows teachers less versed in the operational domains to benefit from the operational experience of the learner's as SMEs. As mentioned earlier, individual TLU domains include many specific situations and each situation can cross multiple domains. Careful preparation should always be considered by teachers when sourcing material and subjects to ensure technical accuracy and a certain ease of operational knowledge with the given situation.

Task 3

Notably, many participants included the need for role-plays and interactive tasks. Developing knowledge of the language in context is clearly part of the process for specific purpose communication, however, learning how to use it is arguably the most critical. Additionally, brainstorming the function and content of language in each situation before the role-play, allows learners to connect with the context and gives the possibility to reflect on what might be said and what they themselves may have to produce during the interactive tasks. Learners should be exposed as much as possible to using what they have learned with the additional possibility to provide and receive peer feedback. Furthermore, the necessary use of standard phraseology in such role-plays acts as an vital learning tool for operational environments in helping students to practice the basics of effective and concise standard radiotelephony communication.

Task 4

It is assumed that the language proficiency scale adopts a 'one size fits all' for language competence. That is to say that the proficiency for every pilot and ATCO must fit somewhere between ICAO Level 1 and Level 6. ICAO themselves did not

want to distinguish or prejudice speakers whose primary language is English. However, there are many additional socio-cultural elements that effect how language is used in inter-cultural communicative competence, and these are not necessarily factored in on the ICAO rating scale. Workshop participants clearly identified the potential differences in language competence between English L1 and L2 speakers of multiple nationalities, as well as power distance between speakers and expectations during communications. Understanding communicative competences and the, perhaps, subtle differences between multiple users of the same language are extremely important in such safety critical contexts. Lack of competence in 2nd language acquisition from English L1 speakers may also be considered as a causal factor in poor communicative skills. Monolingual speakers, however high their perceived level of language is, may not have certain developed communication skills that multilingual speakers will more likely have. Additionally, having the highest, or at least a very high, level of proficiency can be misleading and can often, paradoxically, through slang, speed of delivery, redundancy, and idiomatic phrases amongst other constrictive elements, be a barrier to communicating. It is not sufficient to achieve a wide variety of vocabulary and developed structural skills, if the speaker lacks the strategic skills to accommodate speakers with a lower level of proficiency by failing to paraphrase, or express slowly, clearly and concisely what they mean.

Task 5

As in question 1, participants identified many specificities of both pilot's and ATCO's tasks. Whilst identifying such items is of a clear advantage, teachers should look to develop this further as to why the tasks are being carried out and what affect this ultimately may have on the communication taking place. It not only enhances the

ability to understand the whole communicative picture but also allows learners to educate teachers in the operational specificities of the many given situations.

Activity 2

Tasks 6-8

Most participants when guided, were able to distinguish the different types of language used in the four scripts:

i) Phraseology

- *Roger; affirm; request; cleared for ILS approach; MAYDAY; report; etc.*

ii) plain technically specific and referential language

- *we have a bird strike; alert emergency services; we'll have to divert; aircraft is blocking the runway; anyone on the ground; do you have a gate yet?; I called OPS Control; would you need to dump fuel; etc.*

iii) plain general purpose language - (i) formal register: *I'll speak to you; at your discretion; in the meantime; a male of age 50 years; give me a second sir; just to inform you that ...; how much time will you need?; when convenient change frequency...; etc.*

iv) plain general purpose language - (ii) functional (request, offers, giving information, instructing): *do you have...?; would you like us to....?; we're going to need to...; I'm just going to call; What is the problem?; Could you do that for us?; We would like to...; etc.*

Discourse analysis of pilot/ATCO radio communication clearly shows these distinct elements in the language used. The four scripts included a mixture of nationalities and

L1s all communicating in English, but it was not known what the actual English language proficiency level of each speaker was. One script included interaction between two English L1 speakers whereas in another, it was noticeable that the ATCO had some considerable difficulty in expressing himself in English, which, in turn, appeared to exacerbate the stress level of the pilot concerned, as evidenced by the pilot's rising intonation in trying to communicate to the ATCO a serious technical issue with the aircraft.

Discourse analysis of authentic scripts also allows learners to clearly see the type of language used and in what circumstances. Authentic scripts allow teachers to focus on the four specific linguistic categories mentioned above when preparing curricula, course content as well as material and tasks for learning. Furthermore the inclusion of real-world communication enables students to really see the value of learning about communicative competence, leading to increased motivation and acceptance of the need for interactional skills in their jobs. Additionally, it provides a platform for discussing all contributory factors to such communication and widens the scope towards a better understanding of what forms and affects pilot/ATCO communication via the radiotelephone.

Tasks 9-10

As mentioned in Activity 1 Task 3, one of the best ways of helping the learning process for students is to practice using the target language through relevant and appropriate tasks such as role-play, and this again was clearly identified by workshop participants. The use of authentic transcripts should be identified by the teacher before the course begins. Teachers unfamiliar with many of the technical terms and

references should always seek advice from an SME. Similarly, teachers not acquainted with standard phraseology may also like to consider participating in a Radiotelephony course in their institution, where possible.

For learners with lower levels of language proficiency and for those ab-initio students with higher levels of general purpose language, but lacking a developed operational linguistic knowledge, initial exposure to the operational language can be done through any number of simple interactive tasks in the classroom which should be oriented towards the target language. As language proficiency and communicative confidence grow methodologies can change to preparing more complex role-play activities based on the likely events from sourced transcripts and the list of non-routine events as given in ICAO Doc9835. Students can even be invited to develop their own scenarios based on personal experience, which can then be facilitated by the trainer.

Conclusion

The objective of giving the workshops was to highlight one integral part of a complete teacher training course. The specificity of the workshops was centred around recognition of factors that affect communicative competence between a pilot and an ATCO and which are both *manageable* and *influential*. The workshops created a simple awareness of the role of such factors and how these can be integrated into course curricula and methodologies for learners, as well as to the importance of discourse analysis of the TLU and the use of authentic communications in the classroom. From the outcome of the tasks completed by the workshop participants, the objective was largely met. Reflections were possible on issues other than simple

linguistic elements during the communication, and considerations were given through authentic task-based material and how this can be integrated into learners' training.

Such workshops, however, only provide a broad overview of what teachers need to be fully at ease in working with students in such specific purpose language and communication training. Much more integrated and in-depth training should always be considered as part of a teacher's professional development. This was reflected in feedback received from workshops participants. It is also suggested that continuing research is undertaken to exploit such work in the pursuance of much more authentic and appropriate material for both training and testing of communicative competence in the aeronautical environment.

What this paper shows is that a more appropriate and focussed teacher training in such specific purpose professional environments enhances the ability for teachers and trainers to provide learners with effective and appropriate methodologies and course content. This refers not simply to learning their target language, but on how to use it effectively to improve interactional competence which, in turn, helps to create a safer environment for radiotelephony communication between pilots and ATCOs.

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Appendix 1a

Worksheet Activity 1

Activity 1: (20 minutes) CONTEXT – Engaging learners with the context and communicative factors in pilot/ATCO interaction during non-routine events.
Each group member has one contextual domain card for Activity 1.
i) Each member reflects, individually, about what happens during the situation on their card and completes their question sheet as fully as possible. (Time = 10 minutes).
ii) Then, as a group, discuss and brainstorm all ideas from the four domains and add further thoughts and ideas to your answer sheet. (Time = 10 minutes).
1 person from the group of 4 should write a completed sheet to be handed in at the end of the workshop.

1) Understanding the context: Discuss how the situation on your card could operationally affect both pilots and ATCOs.
2) – What material/media could you use to introduce the subject to learners both new to & experienced in their domain? (examples: texts, videos, audio, reports) – What activities would you then use to engage learners with the content of this context? (examples: reading, discussion, pair work, internet search)
3) What activities would you consider to make this learning relevant to the learners' own specific communication needs? (think of actual instances in your own teaching activities and/or operational domains – and relate what happens)
4) Who are the speakers and what socio-cultural factors could affect the communication? (examples: backgrounds, hierarchy, relationships, cultural references, language levels.)
5) What tasks are the speakers simultaneously performing and how might these tasks affect the communication? (think about **all** the tasks that both the ATCO and Pilot could be doing at this moment)

Appendix 1b

Worksheet Activity 2

Activity 2: (20 minutes) CONTEXT – Engaging learners with the language in aeronautical communication

Each group member is given the transcript relating to their domain card for Activity 2.

i) Each member reflects, individually, on the language used during the situation on their card and completes their question sheet as fully as possible. (Time = 10 minutes).

ii) Then, as a group, discuss and brainstorm all ideas from the transcripts in the four domains and add further thoughts and ideas to your answer sheet. (Time = 10 minutes).

1 person from the group of 4 should write a completed sheet to be handed in at the end of the workshop.

6) In the communication transcript, identify (using highlighters/colours to help identify different types): i) radiotelephony ii) technically specific plain language iii) general purpose language
7) In the plain language, what language functions are used? (examples: requests, orders, giving info, exchanging info, etc.) What technical collocations[1] & compounds[2] can be identified? i) Collocation: a group of words that go together and normally used in a fixed phrase. e.g.: *to carry out a missed approach procedure* ii) Compound: two or more nouns that are used together where the words to the left of the final word (head noun) act to describe the final word. e.g.: flight information ***service.***
8) What additional influences does the language of each speaker have on the efficiency of the communication? (Examples: First Language influence / regional variations of English / levels of proficiency between speakers).
9) What methodology, activities & materials could be used use to teach the language analysed in the above communication?
10) What real-world based interactive tasks could be considered for learners to best practice and further learn this type of communication?

Appendix 2 – Tapescripts used during the workshops. All recordings were sourced from publicly available internet sites.[2]

Exercise 1 : Pilot = EN (UK) / ATCO = EN (US) Event – Pilot Incapacitation (departure)

1	*Pilot*	*Tower BAW24R we're gonna have to take a few minutes would you like us to hold on Lima or on the left somewhere?*
2	ATCO	BAW24R you can stay on Lima to Alpha Alpha and there's no departures behind you.
3	*Pilot*	*Ground BAW24R be advised we're gonna need to return to stand and we're gonna need some medical assistance to meet the aircraft, the captain's not feeling very well.*
4	ATCO	BAW24R at your discretion turn left on Alpha Alpha turn left on runway 10L and taxi eastbound and er keep me advised.
5	*Pilot*	*Can I just take two seconds to give the company a call to er I can't get hold of them on the radio … I'm just going to SAT call them. I'll let you know when I'm starting to taxi BAW24R … just wanted to ask for medical services from you coz I can't get hold of anyone on the ground.*
6	*Pilot*	*And er ground sorry Tower BAW24R I am now ready to taxi to stand*
7	ATCO	BAW24R roger turn left on Alpha Alpha turn left on runway 10L
8	*Pilot*	*Left on Alpha and left on 10L*
9	ATCO	And do you have a gate yet?
10	*Pilot*	*Er negative I haven't been able to contact our ground staff … I called OPS control in London trying to get hold of them … so I have no gate.*
11	ATCO	We're gonna try … locally, find out what your gate is but join runway 10L and we'll see what we can find out.
12	*Pilot*	*Thank you very much Alpha Alpha and 10L BAW 24R.*
13	ATCO	BAW24R we've called locally to find out about a gate … in the meantime we'll get you back at least next to the international terminal so if they don't have something it'll be possible to try…
14	*Pilot*	*That's wonderful thank you very much BAW24R and just entering 10L now.*
15	ATCO	Er yes, join 10L and when you get a chance they'd probably like the information about the captain's age and possibly what the issue is …
16	*Pilot*	*OK thanks very much I'll speak to you when I'm just taxiing down the runway*
17	*Pilot*	*Tower BAW24R Captain is er male of aged 50 years old he's suffering from severe abdominal pains er maybe gastroenteritis, he's also grey and clammy, no other symptoms as yet.*
18	ATCO	Roger copy all.
19	ATCO	BAW24R there's no need to speak with ground and just for flying purposes we've extended your flight plan so it's good for three hours from now.
20	*Pilot*	*Ah, that's wonderful but we're two crew so we're going nowhere tonight BAW24R.*

[2] Recording transcripts 3 and '4' were used with kind permission of Malila Prado

Exercise 2 Pilot = Swiss German / ATCO = Russian Event – Bird Strike (take-off)

1	*Pilot*	SWR1311 mayday, mayday, mayday bird strike climbing to 2000ft... proceeding straight ahead
2	ATCO	Roger mayday SWR1311 would you like RWY10L ?
3	*Pilot*	*OK climbing now to 3oooft and request radar vectors, say again the heading*
4	ATCO	SWR1311 Turn left heading 100
5	*Pilot*	*Left heading 100 SWR1311*
6	ATCO	SWR1311 what is the problem … mayday
7	*Pilot*	*Bird strike … bird strike*
8	ATCO	SWR1311… you… did..catch… bird?
9	*Pilot*	*Affirm we have a bird strike*
10	ATCO	What you situation, SWR1311
11	*Pilot*	*I have vibration 1 and 2 engines … 2 engines*
12	ATCO	SWR1311, because… catch… bird?
13	*Pilot*	*Bird strike, affirm, SWR1311*
14	ATCO	SWR1311 turn left heading 300 … clear ILS approach RWY28R
15	*Pilot*	*Clear ILS approach RWY28R and request fire brigade*
16	ATCO	SWR1311 we ready for emergency landing and alert emergency services
17	*Pilot*	*OK thank you very much, SWR1311 and confirm situation mayday now*
18	*Pilot*	*We have 2 engine problems, 2 engine problems SWR1311*
19	ATCO	SWR1311 RWY28R visibility 4000m ceiling 200ft
20	*Pilot*	*Thank you*
21	ATCO	SWR1311 report localiser established you're on final
22	*Pilot*	*Will do*
23	ATCO	SWR1311, contact Tower 118.1

Exercise 3: Pilot = French / ATCO = Spanish (Mexican) Event – Destination closed (APP)

1	*Pilot*	*Copied that …five miles south of MATEO three four zero radial inbound AFR178*
2	*Pilot*	*I would like to request change runway for five left … we want to do the visual*
3	ATCO	Uh okay give me a second sir, I´m a little bit uh occupied I will check it
4	ATCO	AFR178… right now the airport is … has been closed … we´re looking for further information
5	*Pilot*	*and you don't have for the time being … any open …*
6	ATCO	That's correct sir I don't have information. At the moment the airport is closed
7	*Pilot*	*AFR178 we have about fifteen minutes … possible to wait uh before landing otherwise we´ll have to divert to mike mike quebec … so fifteen minutes waiting then we have to divert.*
8	ATCO	Understand sir uh and you got fifteen minutes for waiting … stand by, I will look for information. At the moment uh I don't have any.
9	ATCO	AFR178… uh we got aircraft with a incident and uh it´s over the runway zero five right … this delay is gonna be longer than the one uh five minutes that you got left for waiting.
10	*Pilot*	*And is it possible to find out if any other runway available?*
11	ATCO	No sir we … we are gonna be with the zero five right runway closed at uh more than one five minutes … due to aircraft that is blocking the runway zero five right … it´s gonna be not open faster than one five minutes.
12	*Pilot*	*Okay we understand … so we have to divert now to mike mike quebec tango. Confirm we proceed from now to mike mike Quebec tango?*
13	ATCO	That´s correct sir you´re cleared to proceed with a left turn direct to mike mike quebec tango.
14	*Pilot*	*'kay and uh we stay to one three thousand feet?*
15	ATCO	Uh I will call you back for higher … what is gonna be your requested altitude to quebec tango?

Exercise 4: Pilot = Indian / ATCO = Dutch Event – (suspected) Tail Strike (take-off)

1	*Pilot*	*Schiphol Departure hello JAI234 climbing passing one thousand nine hundred for six thousand feet*
2	ATCO	JAI234 hello climb flight level one three zero advise able to further climb two seven zero
3	*Pilot*	Climb FL130 wilco Jet Airways 234
4	ATCO	JAI234?
5	*Pilot*	*go ahead uh 234*
6	ATCO	JAI234 colleague from the tower uh thought you had uh slight tail strike on uh on rotation the runway controller didn't see any so just to inform you.
7	*Pilot*	*Okay … confirm we had a tail strike on uh rotation? uh JAI234.*
8	ATCO	JAI234 just one colleague … thought he uh he see that but the runway controller didn't see.
9	ATCO	JAI234 Amsterdam?
10	*Pilot*	*Go ahead for JAI234?*
11	ATCO	Uh your mode sierra call sign is not showing could you dial in JAI234 into that please?
12	*Pilot*	*Uum say again the callsign is not showing?*
13	ATCO	Uh we we have a read out of your mode sierra information including your heading final level but also … your callsign your callsign is not showing it´s showing as all zeros.
14	*Pilot*	*Uh JAI234 uh would like to climb … maintain one five zero.*
15	ATCO	JAI234 stop level one five zero … the reason?
16	*Pilot*	*Due technical JAI234 we´ll get back to you.*
17	ATCO	Okay please advise .
18	*Pilot*	*JAI234 we´d like to divert uh back towards uh Schiphol Airport now.*
19	ATCO	JAI234 you would like to divert back to Amsterdam, that is copied … continue present heading … would you need to dump fuel?
20	*Pilot*	*Yes uh we´d like to dump fuel uh and uh we need a lot of airspace to carry out the checklist.*
21	ATCO	Okay you can turn right onto heading three two zero that´ll be vectors and please advise when you would like to start dumping fuel and how much time you will need to dump fuel for.
22	*Pilot*	*JAI234*
23	ATCO	JAI234 you have all the time in the world and I will shortly switch you to a separate frequency that will no have, no other traffic so that we dedicate it to you … stand by for the transfer to that frequency.
24	*Pilot*	*Roger JAI234 now maintaining level niner zero maintaining heading .*
25	ATCO	Roger JAI234 when convenient change frequency one one eight decimal eight zero five.
26	*Pilot*	*Okay changing right now to one one eight eight zero five JAI234 thanks for all your help*
27	ATCO	Not at all