5 Validating new perspectives and methodologies for learning and teacher training in English for aeronautical communications

Neil Bullock[1]

Abstract

English for Specific Purposes (ESP) is often governed by pre-defined communicative functions and rules within a specific domain. Radio communication between pilots and Air Traffic Controllers (ATCOs) is one such domain. Mandatory plain language testing, introduced in this domain in 2008, whilst clearly laudable in its safety related objectives, has often resulted in language being seen, and taught, in isolation, creating a disconnect between the classroom and the real-world. In 2015, Bullock argued for a change of perspectives in Language For Specific Purposes (LSP) teaching towards a methodology that would adopt a more inclusive communication and knowledge-based approach. Three years later, with evidence that the aforementioned disconnect remained, a pilot study was conducted with 33 student ATCOs to demonstrate how a more appropriate methodology could transfer such theory into practice and address real-world communication needs. This article discusses the research results, and demonstrates the positive learning impact such methodology had on the students. It suggests integrating this into more appropriate training for LSP teachers, offering learners a more appropriate environment in which to maintain and improve communication skills through language.

1. English Plus LTS, Concise, Switzerland; neilbullock@englishplus.ch

1.   Introduction

Dialogue in aeronautical communication between pilots and ATCOs relies principally on speaking and listening skills via the radiotelephone – International Civil Aviation Organisation (ICAO, 2010). In routine operations, such interaction is covered by internationally agreed standard phraseology – a fixed and restricted code of single lexical items (*roger, negative, wilco,* etc.) and short directly referential phrases (*say again*, *report intentions*, *request taxi*).

The implementation, in 2008, of obligatory testing, and consequential learning, of plain language proficiency for both pilots and ATCOs switched the focus to non-routine or unexpected events where phraseology alone is not sufficient for communication. In such events, communication is effected by the use of phraseology plus a combination of specific purpose plain language, supported by utterances of "non-domain specific *plain general-purpose* language" (Bullock, 2015, p. 5).

Learning such specific purpose language should be facilitated by teachers who understand the environment in which the communication is taking place (Sarmento, 2011), and have a clear understanding of the context (Douglas, 2000). Classroom materials need to correspond with learning activities to provide a real congruence with students' learning objectives (Paltridge & Starfield, 2013).

Despite ICAO offering global guidance on improving language proficiency in aviation (ICAO, 2010), there has been a tendency to promote plain language alone as the key item of communication. The result is that the onus for language training has been placed on language teachers, many of whom may well find such operational language difficult to comprehend. Teachers, however, must do more than simply get learners to absorb subject focussed material (Richards &

Rodgers, 2001). They should offer learners language from their highly complex and technical domain (Uplinger, 1997), and offer training strategies for real-world communication (Kim & Elder, 2009).

Bullock (2015) proposed re-focussing teaching towards a more appropriate and valid methodology for English learners in the aeronautical domain. He argued that by adopting a more inclusive communicative approach, students' real-world needs would be addressed creating an appropriate and valid learning process.

The methodology suggested an application of three of Brown's (2002) twelve principles for classroom practice, which are particularly important for ESP teaching:

- Principle 2: meaningful learning;

- Principle 4: intrinsic motivation;

- Principle 12: communicative competence.

Meaningful learning implies learning centred on content with relevant to the real-world communication context (Paltridge & Starfield, 2013).

Intrinsic motivation, coming from the actual learner, should be high, due to the amount of personal and professional investment. This can be supported by classroom activities that develop 'survival' and 'repair' strategies (Harmer, 2007, p. 344), such as "paraphrasing and restructuring" (Douglas, 2014, p. 4).

Communicative competence can be enhanced by interactive tasks that have "meaning-focussed input" (Paramasivam, 2013, p. 105) based on specific aeronautical themes and situations.

Bullock (2017) further proposed a conceptual framework supported by a learning-based continuum from which the key focus shifts from testing to learning of real-world communication (see Figure 1). In order therefore to assess how such

a methodology could fit into the framework, an initial pilot study was carried out to help provide a platform for further in-depth research. Such research could then deliver a base for developing ESP teacher education.

Participants in the research were 33 student ATCOs, undergoing their basic operational and technical training at the ROMATSA training centre in Constanta, Romania. During this training, students followed two one-week intensive English language classes (three hours per day in two groups) between December 2017 and January 2018. This training aimed to consolidate and improve students' English skills in all six aspects of plain language proficiency (as determined by ICAO, 2010). Participants were aged from 21-32 years old and all had an approximate general English speaking level between Common European Framework of Reference for languages (CEFR) B2 and C1. The group was chosen because the students were being exposed to the proposed methodology and the status of the students as subject matter experts, if only partially due to their trainee status, afforded a key element in the validity of the material and course content.

Figure 1.   A learning-based continuum for LSP
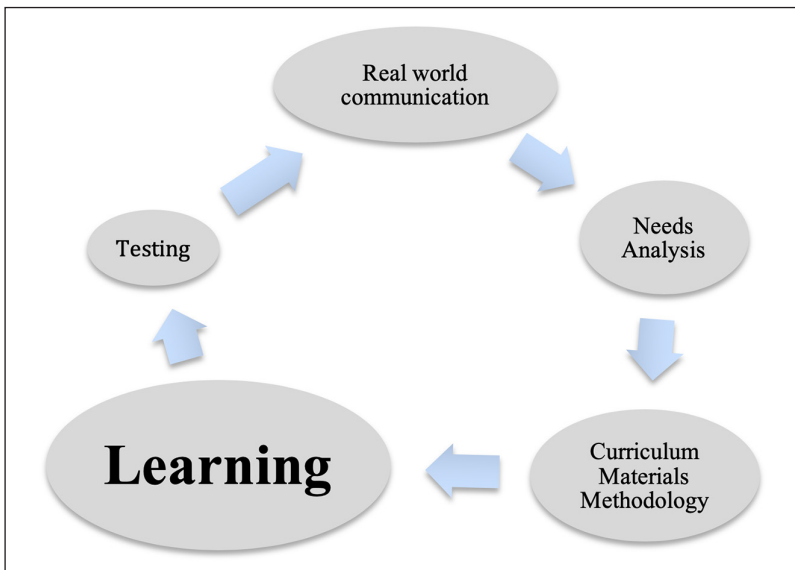
In order to see whether the proposed framework could be adapted to language learning in aeronautical communication, the main research question sought to validate the framework through the methodology and materials as used in the classroom as well as the students' learning objectives. Additionally, in supporting how such a methodology could effectively be implemented in the classroom, it was also important to see how much importance learners placed on the teacher having knowledge and experience of real-world communication. The following section of this paper details the methodology used together with the rationale.

2.   Method

2.1.   Research methodology

The research was based on a deductive mixed-methods approach, using a concurrent embedded design model (Cresswell, 2009, p. 210). This meant a simultaneous collection of both quantitative (statistical) and qualitative (informational) data, which could be sourced concurrently but evaluated independently. In order to help validate final analyses and conclusions, there was also a need to explore and explain the students' responses, and so sourced data needed to be both measurable (quantitative) and supportive (qualitative). The next section will look at the collection tools and how they were used.

2.2.   Data collection

Data were collected from the results of an online survey using *Survey Monkey* completed by the students anonymously and in their own time. All responses were completed between the first and ninth of February 2018, and all students completed the survey, giving a response rate of 100%. Data collection then followed before the results were analysed.

There was a minor concern over the internal validity as the students were able to discuss the course amongst themselves which may have influenced the results.

However, as all students were likely to be motivated and attending classes for their own professional development, these were seen to have a greater influence on the responses. Students were, however, still instructed to complete the survey alone and without reference to colleagues' responses.

Participants (Coded Pn) were asked to respond to 18 principal statements (coded in the data collection as Sn) related to the course content and methodology and six post-course sub-statements (coded in the data collection as Un) related to how each respondent perceived their increased awareness and knowledge of the language and subject matter[2]. Each statement included a five part Likert scale response (completely agree, agree, neither agree nor disagree, disagree, and completely disagree). The statements were specifically written and the type of response specifically chosen to allow collection of primary quantitative data which could demonstrate a degree of positive or negative correlation between the methodology and the students' expectations in their training objectives. This primary data was to be demonstrated as a positivity coefficient (100%=1.00) relating to the percentage of responses showing completely agree and agree. The rationale was that the higher the coefficient, the more positive the learners see a correlation between the course and their objectives, and thus the more valid the alignment could be with the ESP learning continuum. This method of data collection was chosen as efficient and practical, as it had previously been validated as a way of sourcing similar evidence from a test design project (National Aviation Authority, 2013, 2014).

Secondary qualitative data were obtained from two sources. Firstly, a free response comments option after each of the 18 principal statements in the survey. These were Coded S$n.nn$, corresponding to the statement (S), number (n), and free response comment in sequence (.nn), according to the order of student participation. Secondly, three free response comment options were presented at the end of all the six U-coded statements. The statements were

---

2. Ten of the main statements related to the overall environment of the course and the requirements of the students' sponsors. Whilst positively responded to, the data was not directly aimed to answer the question for which this research was carried out and so have not been included.

coded FR1-3, and the responses coded FR*n.nn* corresponding to the statement number (FR*n*) and the free response comment in sequence (*.nn*), according to the order of participation.

After completion of the survey, data were obtained and analysed. Firstly, the primary quantitative data were extracted by downloading the survey results as an Excel file that allowed simple numerical data to be calculated with which to assess positivity levels of the various statements. As a more complex data processing tool, such as SPSS, was not available during this pilot study, the data were simplified and shown within the relative limitations of the Excel software. The second stage of data collection investigated comments in the qualitative secondary data which could then be analysed for content and cross-referenced with the intended themes of the study. The data were transferred from the Excel file to a Word document and coded to facilitate referencing. The next section will detail and analyse the results from the study.

3.   Results and discussion

3.1.   Quantitative data

In line with the research model, the quantitative data were extracted first. The S-coded statements are shown in Table 1 sequentially. Those statements relative to in-course methodologies and materials show extremely positive responses (average coefficient for all, 0.99). Table 1 shows the positivity coefficients with the number of responses under each coefficient.

Responses to the statements relating to post-course students' perceptions on their learning objectives (Table 2) still showed high levels of positivity (average 0.92), although lower than the course content and methodology itself. One student gave a negative response for all six statements relating to post-course perceptions, although the fact that the same student had stated "the course was dynamic and engaging" may indicate simply an error when completing part two of the survey.

Table 1.   Positivity towards in-course methodologies and materials

Code	Statement – in-course methodologies and materials	Pos. n	Neutral	Neg.
S10	The trainer demonstrated a good understanding of how language is used in aeronautical communications.	1.00 33	0.00	0.00
S11	Course activities were varied, interactive, and allowed students to practise using the language learned.	1.00 33	0.00	0.00
S12	The content and context of material during the course was relevant for my training and future work as an ATCO.	1.00 33	0.00	0.00
S13	The lessons included interactive speaking and listening activities.	1.00 33	0.00	0.00
S14	Activities and material included a variety of different aeronautical situations.	0.97 32	0.03 1	0.00
S15	Activities and material focussed on routine and non-routine situations for ATCOs and pilots.	0.94 31	0.06 2	0.00
S17	The material helped improve my vocabulary and structure in an aeronautical communications context.	1.00 33	0.00	0.00
S18	I found the material professionally prepared and presented.	1.00 33	0.00	0.00
	Average	0.99 32.6	0.01 0.4	0.00

Table 2.   Positivity of students' post-course perceptions on training objectives

Code	Post-course reaction and opinion	Pos. n	Neutral n	Neg. n
U1	I feel more comfortable about my English skills related to the job of an ATCO.	0.94 31	0.03 1	0.03 1
U2	I am more aware of the difference between plain English and standard phraseologies.	0.94 31	0.03 1	0.03 1
U3	I am more aware of the need for language skills training as part of pilot/ATCO communication.	0.97 32	0 0	0.03 1
U4	I am more aware of the specific language skills required for good language proficiency in pilot/ATCO communications.	0.97 32	0 0	0.03 1
U5	I will use the material from this course as a reference to help maintain my English level.	0.81 27	0.13 4	0.06 2

U6	This type of course is really important for ATCO training.	0.88	0.09	0.03
		29	3	1
	Average	0.92	0.04	0.04
		30.2	1.4	1.4

3.2. Qualitative data

Before making any analytical observations of the qualitative data for trends and correlation with the quantitative findings, the numbers of responses and participation rate are noted for both the principal statements (Table 3) and the second set of statements (Table 4).

Table 3. Final free response comments towards course methodologies and materials

Code	Statement – in-course methodologies and materials	No of comments	Response rate
S10	The trainer demonstrated a good understanding of how language is used in aeronautical communications.	5	15.15%
S11	Course activities were varied, interactive, and allowed students to practise using the language learned.	2	6.06%
S12	The content and context of material during the course was relevant for my training and future work as an ATCO.	4	12.12%
S13	The lessons included interactive speaking and listening activities.	0	-
S14	Activities and material included a variety of different aeronautical situations.	1	3.03%
S15	Activities and material focussed on routine and non-routine situations for ATCOs and pilots.	0	-
S17	The material helped improve my vocabulary and structure in an aeronautical communications context.	0	-
S18	I found the material professionally prepared and presented.	2	6.06%
	Total	14	-
	Average	1.75	5.30%

As Table 3 shows, there were relatively few comments (14) relating to the main statements (response rate 5.3%). In response to the second set of statements,

Table 4 shows participation in the three options (FR1-3), noticeably higher with a total of 68 comments (response rate of 68.69%). The first two statements referring to what students liked most about the course, and what could be done to improve it, showed the highest response rates at 85% and 79% respectively.

Qualitative data thus provided four data sets of informational text from the free response comments in the study – one from responses S10-S18 and three from FR1 to 3. This provided a total of 82 responses. From these data, specific content was identified which could support the theoretical framework, and this is shown in Table 5 (themes coded A to D). Specific qualitative evidence from the statements is given below the table.

Table 4. Free response comments on post-course perceptions and training objectives

Code	Post-course reactions and perceptions – free response	Responses	Response rate
FR1	What did you like most about your aviation English course?	28	84.85%
FR2	This English course could be improved by …	26	78.79%
FR3	Additional Comments	14	42.42%
	Total	68	-
	Average	22	68.69%

Table 5. References to key themes in free response comments

	Research question focus	No of responses	% of total free responses
A	Adaptation of the theoretical framework to language learning for aeronautical communication in the classroom.	41	60.29%
B	Demonstration of congruence between methodology and materials and the learning objectives of students.	35	51.47%
C	Importance placed on the correlation between the teacher having knowledge and experience of real-world communication to enhance such methodology and materials in class.	11	16.18%
D	Learners' perceptions on relevance of methodology and materials to communication in real-life operational situations.	22	32.35%

A clear majority (60%) made reference to how the theoretical framework could be adapted to the language proficiency skills required for aeronautical communication. One student (P20) noted that "we received a lot of information that we can use for our future training", whilst P08 noted that "the material did indeed include a variety of different aeronautical situations". P03 remarked that "I got the chance to speak and practise my aviation English", whilst P11 commented that "it made me more aware of the importance of language proficiency in ATCO communications". Eighteen of the comments referred positively to the need for developing interactive skills for aeronautical communication, twelve of which related to what the students enjoyed most during their course.

In terms of how the methodology and materials achieved congruence with the learning objectives, over half of the respondents commented positively on this. Student P02 stated that the teacher "did his best to teach us plain language for aviation purposes", P04 noted that the teacher "knew what was important for our knowledge", and P05 observed that the teacher knew "exactly what to say and teach us".

The importance placed on the teacher having knowledge and experience of real-world communication to enhance such a methodology in class was less directly commented on (16%). P04 noted that having worked in ATC, the teacher "knew what was important for our knowledge", and P24 stated that the teacher "also shared a lot of his [ATC] experience". P05 also suggested that "it is obvious that the teacher [had worked in ATC] as he knew exactly what to say and teach us".

Finally, the relevance of the course to real-life communications was commented on by 32% of the respondents. In addition to some of the comments noted above, P11 stated that the course "made me more aware of the importance of language proficiency in ATCO communications", P24 additionally observed that "talking about real-life ATCO/pilot radio transmissions [...] can be a good starting point in discussing standard/non-standard issues".

Two additional issues raised are worthy of comment here. The first was that many of the students were apprehensive of their forthcoming exam. Ten comments

referred directly to a wish to see more exam preparation through: "more practice" (P03), "emphasis[ing] the requirements" (P06), "more preparation" (P20), and "more exercises and lessons" (P27, P28, P29). The second recurrent theme was the wish to have more learning time for English in aeronautical communications. The word *more* was identified 25 times in the comments relating to the perceived short time given for their training and specific subjects, with many different collocations alluding to the same comment: "I would like *more* hours for practising", noted student P21, "I only wished there was *more* time dedicated" (P08), "Even *more* interactive activities" (P01), having the lessons "*more* often" (P02), "Learning *more* phraseology" (P06, P10, P18, P20, P21, P31, P32), and "*more* listening and speaking" (P24).

4.   Discussion

The data analysis showed generally positive responses from the students correlating to the key areas of the research question. Quantitative data was almost unanimously in agreement with the given statements. Qualitative data, whilst less decisive, still showed a very clear majority in favour of how the methodology and materials correlated with the intended rationale of the proposed framework. Students' reactions to the methodology and materials, and the importance of an ESP teacher understanding the real-world target language, was also encouraging and correlated with how well the students perceived meeting their objectives.

The two emerging themes of more exam preparation and additional training, whilst seemingly negative, may actually indicate further support for the proposed framework. As the framework is based on a *learning* ideology rather than a *test* based system, implementation of a more appropriate framework may well alleviate the concern felt amongst students about taking their forthcoming test as training would focus more on the required skills for their professional roles. Secondly, the clear demand for further training in communicative language and skills may well indicate that employing the methodology and material during the course referred to has actually made students even more aware of the need for the required communicative skills in their future roles. This shows that whilst the theoretical

approach is targeting the objectives as planned, the suggested length of training to show tangible learning progress may well need to be revisited and lengthened.

5.   Conclusions

This pilot study aimed to research whether an emerging learning-based methodology for teaching ESP in the domain of aeronautical communications could be supported by correlating evidence from classroom practice with the theoretical rationale of the framework.

Data sourced from one group of 33 student ATCOs showed clear evidence to support the ideology that focussing on language and communicative skills from the target language domain, as well as employing language teachers with previous experience of the language and communication being taught, is extremely important. Furthermore, employing appropriate teaching methodologies for the required learning objectives in such a domain must also be an integral part of the learning being undertaken if the students are to acquire and improve their language proficiency skills.

Clearly this is an encouraging start which could lead to a more in-depth research project to further support the proposed theory. It is suggested that research could identify and focus on much more specific language and communication, content, and skills, as well as investigating elements of the methodology, material, and activities more thoroughly. The length and content of curriculum development could also be revisited to provide a more appropriate scaffold to promote and encourage appropriate learning as much as possible. Such research could be undertaken directly through classroom practice, as in this study, but should also feed into teacher training courses, particularly those aimed at ESP teachers so teachers are aware of and are trained to use the methodologies and material being proposed.

Finally, any research should look to extend data collection, including increased use of statistical analysis tools for quantitative data, which would offer clearer

and more focussed results. Qualitative data could also be extended through focussed face-to-face interviews with students in order to support this.

Acknowledgements

References

Brown, H. D. (2002). English language teaching in the "post method" era – towards better diagnosis, treatment, and assessment. In J. C. Richards & W. A. Renandya (Eds), *Methodology in language teaching* (pp. 9-18). Cambridge University Press. https://doi.org/10.1017/cbo9780511667190.003

Bullock, N. (2015). Wider considerations in teaching speaking of English in the context of aeronautical communications. *IATEFL ESPSIG Journal, 45*, 4-11.

Bullock, N. (2017). *A re-evaluation of washback for learning and testing language in aeronautical communication.* ICAEA, Conference proceedings, Dubrovnik 2017. http://commons.erau.edu/icaea-workshop/2017/monday/19

Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches* (3rd ed.). Sage Publications.

Douglas, D. (2000). *Assessing language for specific purposes*. Cambridge University Press.

Douglas, D. (2014). *Nobody seems to speak English here today: enhancing assessment and training in aviation English. Iranian Journal of Language Teaching Research, 2*(2), 1-12.

Harmer, J. (2007). *The practice of English language teaching.* Pearson Longman.

ICAO. (2010). *Doc 9835*, *manual on the implementation of ICAO language proficiency requirements* (2nd ed.). International Civil Aviation Organisation.

Kim, H., & Elder, C. (2009). Understanding aviation English as a lingua franca: perceptions of Korean aviation personnel. *Australian Review of Applied Linguistics, 32*(3), 23.1-23.17. https://doi.org/10.1075/aral.32.3.03kim

National Aviation Authority. (2013). Piloting trial of new level 4 listening material. *NAA Report*, 6-13.

National Aviation Authority. (2014). Piloting trial of new level 4 listening material. *NAA Report*, 1-14.

Paltridge, B., & Starfield, S. (2013). *The handbook of English for specific purposes*. Wiley-Blackwell.

Paramasivam, S. (2013). Materials development for speaking skills in Aviation English for Malaysian air traffic controllers: theory and practice. *Journal of Teaching English for Specific and Academic Purposes, 1*(2), 97-122.

Richards, J. C., & Rodgers, T. S. (2001). *Approaches and methods in language teaching*. Cambridge University Press.

Sarmento, S. (2011). What makes a good aviation English teacher? *Aviation in Focus, 2*(2), 3-5.

Uplinger, S. (1997). English language training for air traffic controllers must go beyond basic ATC vocabulary. *Flight Safety Foundation: Airport Operations*, *23*(5), 1-5.

ESP teaching and teacher education: current theories and practices
Edited by Salomi Papadima-Sophocleous, Elis Kakoulli Constantinou, and Christina Nicole Giannikas