

## Challenges in teaching and learning, and in teacher education in Vale do Paraíba, Brazil.

*Desafios no ensino e na aprendizagem, e na formação de professores no Vale do Paraíba, Brasil.*

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### ABSTRACT

The Paraíba Valley, located in the east of São Paulo state, is an outstanding hub of technological-industrial development in Brazil, also known for being the birthplace of the Brazilian aeronautical industry. It is also a region where relevant teaching and research centers are located, focused on aviation in general, and the aviation industry in particular. It is well known that English is the lingua franca in aviation and it is used internationally, in radio communications between pilots and air traffic controllers, as well as by flight attendants, aircraft mechanics, and several other professionals working in the field of aviation, whether civil or military. Teaching and learning the English language have therefore become essential for professionals working in the aviation market and it must be at the core of both beginning and continuing education centers of professionals in this area. Thus, this article has two objectives that complement each other: to set forth considerations about the presence of ESP in the area of aviation in general, and, more specifically, in air traffic control instruction in Vale do Paraíba; the second, linked to the first objective, is to emphasize the importance of English teacher education in order to bring their expertise up to the level of English for Specific Purposes, in this case, aviation.

**Keywords:** Teaching-learning English, English for Specific Purposes, English for aviation, English teacher education

### RESUMO

*O Vale do Paraíba, situado ao leste do estado de São Paulo, é um insigne polo de desenvolvimento tecnológico-industrial do Brasil, também conhecido por ser o berço da indústria aeronáutica brasileira. Trata-se, também, de uma região onde estão localizados relevantes centros de ensino e pesquisa voltados à aviação de um modo geral e à indústria aeronáutica em particular. Sabe-se que a língua inglesa é tida como a língua franca da aviação, sendo utilizada internacionalmente, tanto na comunicação radiofônica entre pilotos e controladores de tráfego aéreo como também por comissários de voo, mecânicos de aeronaves e diversos outros profissionais que atuam na área da aviação, tanto civil como militar. O ensino-aprendizagem da língua inglesa tornou-se, pois, imprescindível ao profissional que atua no mercado da aviação e deve estar presente nos polos de formação inicial e continuada de profissionais dessa área. Sendo assim, este artigo tem dois objetivos que se*

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*complementam: o primeiro trata de tecer considerações sobre o ensino e aprendizagem de Inglês para Fins Específicos na área da aviação, mais especificamente, voltado à formação de controladores de tráfego aéreo no Vale do Paraíba; o segundo, vinculado ao primeiro objetivo, é o de enfatizar a relevância da formação de professores de inglês como língua estrangeira/língua franca para atuar nessa área.*

**Palavras-Chave:** *Ensino-aprendizagem de inglês, Inglês para fins específicos, Inglês para aviação, formação de professores de inglês*

## 1. Introduction

It is well known that the Vale do Paraíba region, situated in the east of the state of São Paulo, Brazil, is the home to the Brazilian aeronautical industry. It is also an important center for innovative technology companies and relevant universities, colleges, and technological institutes. Key research and development centers are located there, many of which offer courses for those aspiring to position themselves in one or other of the many different jobs related to aviation.

It is also known that English has long been established as the lingua franca of aviation (ICAO, 2004) in as much as it involves communication among aviation professionals, such as air traffic controllers, pilots, flight crew members in and beyond the cockpit, and aircraft maintenance staff, to mention just a few. Therefore, understanding the role of English language learning and the relevance of English instruction in courses that prepare professionals to work in aviation is crucial.

With this scenario in mind, and with ESP (English for Specific Purposes) as theoretical support, the aim of this article is twofold: (1) to set forth considerations about the presence of ESP in the area of aviation in general, and, more specifically, in air traffic control instruction in Vale do Paraíba; (2) to discuss the relevance of teacher education programs in preparing professionals to work in the area of aviation English in general, and air traffic control instruction in particular.

This article is organized as follows: first, the theoretical background that supports our study, namely ESP, needs analysis, and ESP in aviation will be presented. Then focus will be given to English teacher education, with particular emphasis on teaching aviation English to air traffic controllers in Brazil.

## 2. ESP and Aviation English

The Language Proficiency Requirements adopted by the International Civil Aviation Organization (ICAO) is a benchmark in safety improvements in aviation English. Considering English for Specific Purposes, aviation English figures prominently in most aviation/aerospace activities that make use of several specific idiosyncratic structures (RAGAN, 1996). Hence, a more noteworthy

attention to the nature of aviation English will be crucial for aviation professionals whose work depends pressingly on the use of this very specialized language.

Despite being used in different aviation-related jobs, whether by pilots, mechanics, dispatchers, or aeronautical information personnel, among many others, in this article, more attention is given to air traffic controllers. The latter make use of aviation English to handle all non-routine or emergency situations not included in phraseologies<sup>3</sup>. As pointed out by Mathews (2004), in the context of aviation communications, it is imperative that pilots and air traffic controllers have competent language skills to express themselves in plain language when coping with circumstances that call for it (MITSUTOMI; O'BRIEN, 2004). In a bid to improve safety standards, the International Civil Aviation Organization published, in 2004, the *Manual on the Implementation of ICAO Language Proficiency Requirements - Doc 9835*. The manual set requirements for the training and assessment of pilots and controllers operating in international air traffic. The document recommends content-based language training in order to facilitate and boost the effectiveness of an aviation program (MATHEWS, 2004). This alone points to the relevance of discussing ESP in aviation.

### **2.1. ESP and Needs Analysis**

Much could be written about the origins of ESP. However, according to Hutchinson and Waters (1987), three reasons were responsible for the emergence and development of all ESP: the demands of globalization, a revolution in linguistics, and focus on the learner.

The authors argue that ESP is not concerned with a particular kind of language or methodology, neither does it consist of a very specific type of teaching material. They emphatically assert that ESP is “an approach to language teaching in which all decisions as to content and method are based on the learner’s reason for learning”. (HUTCHINSON; WATERS, 1987, p. 19). Also, they emphasise the importance of needs analysis, which is considered, in the words of Dudley Evans and St John (1998, p. 122) “the corner stone of ESP”. The basic ESP philosophy, according to Robinson (1991), is to cater to learners’ specific needs as much as possible.

As stated by Dudley-Evans and St. John (1998), in the ESP theoretical model, needs analysis, the pillar of the ESP approach, is the first stage in the design and implementation of any course. Taking into consideration that needs analysis is an intrinsic part of any ESP program, the very first question to start a course design is “Why do these learners need to learn English?” A distinguishable feature of the ESP approach is the perception of the need, rather than the existence of a need (HUTCHINSON; WATERS, 1987). Accordingly, “if learners, sponsors, and teachers know why the learners need English, that

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<sup>3</sup> Standard words and phrases used by pilots and Air Traffic Control to ensure that they maintain the highest professional standards when using radiotelephony. (<https://www.skybrary.aero/bookshelf/books/115.pdf> access on 18/2/2020)

awareness will have an influence on what will be acceptable as a reasonable content in the language course"(HUTCHINSON; WATERS, 1987, p. 53).

Dudley-Evans and St John (1998) mention the following stages while designing/implementing ESP classes: needs analysis; course design; teaching/learning; assessment; and evaluation. However, they claim that there is no linear order to deal with them. "Rather, they represent phases which overlap and are independent" (DUDLEY-EVANS; ST JOHN, 1998, p. 121).

In fact, although inseparable, the stages cannot be analyzed one after another in a linear fashion. So, it is necessary for needs analysis to intertwine with all of these different aspects. An ESP program is, therefore, built on an assessment of purposes and needs and the functions for which English is required.

## **2.2. ESP in Aviation**

English is, in fact, the language of international aviation communication and its prominent use is a key safety issue. Indeed, as stated by Douglas (2000), aviation English is a language for specific purposes that maintains itself as a means of international intelligible communication, because the community that utilizes it is international. According to Widdowson (1982), aviation professionals developed the use of English focused on mastering their specialization with the objective of addressing the needs of an efficient communication.

To exemplify, when pilots and air traffic controllers start their studies, they have to bear in mind that the language used will be highly specialized, consisting of vocabulary and concepts not readily understood by ordinary people (MITSUTOMI; O'BRIEN, 2004). In the examples given below, extracted from teaching notes, common English words such as "12 o'clock," "clear," and "heading" have aviation-specific meanings:

- Example 1: "Affirm. Can you see the pylons at 12 o'clock, at about 4 miles?" (air traffic controller indicating to a pilot the position of a communications mast).
- Example 2: "We are clear of the runway on ...er...N by B, Iberia 324." (pilot indicating that the aircraft can leave the runway),
- Example 3: "X7420, confirm heading 300." (pilot asking the controller to confirm the aircraft's direction).

Not restricted to controller and pilot communications, aviation English can also include the use of English related to other aspects of aviation: pilot's announcements, cockpit communications, the language used by aircraft engineers, flight attendants, dispatchers, aeronautical mechanics, or even the

English studied by students themselves in aeronautical and/or aviation universities, just to mention a few. Aviation English can therefore be seen as a subdivision of ESP (MODER, 2013).

### **2.3. Provisions for a safe use of Aviation English: a timeline**

It is relevant to note that aviation safety depends on accurate pilot-controller communications. In an attempt to develop and implement procedures that ensure the English language competence of air traffic controllers (ATCO) and flight crews, ICAO has established that, whenever working in locations involving international air operations, these professionals should be able to speak and understand English language competently, in those cases where ATCO phraseology is not enough (BRASIL, 2018). ICAO specified an English language proficiency scale at six levels (1 to 6) and established level 4 as the minimum operational level.

In response to the ICAO's establishment of English language proficiency requirements, Brazil, a State member, adopted systemic measures in the training/post-training schools, in order to adapt training and assessment actions to ICAO's stipulated requirements (BRASIL, 2018).

The National Civil Aviation Agency (ANAC) is responsible for pilot certification, while the Airspace Control Department (DECEA) has authority over air traffic controllers. Under DECEA, the Airspace Control Institution (ICEA), located in São José dos Campos in the Paraíba Valley area, is responsible for planning, developing, and implementing the instruments of training and assessment applied to air traffic controllers in order to comply with ICAO requirements (TOSQUI-LUCKS et al, 2018).

It is important to highlight how much has been done in the last decade about this paramount issue.

According to Tosqui-Lucks (2018), all efforts were made to comply with ICAO language proficiency requirements. The author covered crucial facts related to air traffic controllers' training and testing in Brazil, such as information on courses, language training and testing, and, last but not least, the academic research group and stakeholders' experts responsible for supporting the practices.

To visualize this trajectory, a timeline is herein presented:

**Table 1:** a timeline

2005	ATCO proficiency assessment developed by DECEA, ICEA and CIEAR <sup>4</sup> for all personnel involved in international air traffic services.
2006	- Development of the course <i>Preparation of English Instructors for Air Traffic Control</i> (CTP009) allowing the instructors to teach a course named <i>Aviation English Intensive Course</i> (CTP010). - Publication of DECEA's <i>Level Up Program in the English Language</i> program whose aim was to make the personnel trained undergo a proficiency examination by the end of 2007.
2007	Application, for the first time, of ANAC's and ICEA's proficiency tests to assess the English level of Brazilian pilots and controllers. ANAC's was called <i>Santos Dumont English Assessment</i> (SDEA), and ICEA's, <i>Aeronautical English Proficiency Examination of the Brazilian Airspace Control System</i> (EPLIS).
2008	- Improvement in CTP009 due to an increase in aviation English content, giving birth to the new course known as <i>Pedagogical Practice for Aviation Instructors</i> (CTP 011). Its focus was to reinforce the pedagogical skills for Communicative Language Teaching, classroom management and language proficiency. - Publication of the first edition of <i>Plan for the Implementation of Proficiency Requirements in Aeronautical English</i> (PCA 37-9) <sup>5</sup> . - Introduction of <i>intermediate-level English testing</i> for Air Traffic Controller candidates of the Aeronautics Specialist School (EEAR <sup>6</sup> ).
2009	Implementation of EEAR's English Course for Specific Purposes aimed at training Sergeants specializing in Air Traffic Control.
2013	Creation of an academic <i>Aviation English Research Group</i> (GEIA) aimed at gathering research related to different aspects of aeronautical English in the Brazilian environment, and taking into consideration teaching and learning, as well as evaluation.
2014 – onward	Implementation of GEIA's website ( <a href="https://geia.icea.gov.br/geia/inicial.php">https://geia.icea.gov.br/geia/inicial.php</a> ) . All information about the group can be accessed and publications related to the area can be found.

**Source:** prepared by the authors of this article based on Tosqui-Lucks (2018).

The importance of focusing on ESP teacher education programs and on ESP course design in Vale do Paraíba is therefore of the utmost importance and is the topic of the next section.

### 3. Teacher Education: Teaching in the Brazilian Aviation Context

Having in mind that “teaching is an activity where individual personality, attitude, inventiveness, cultural awareness, and general sensitivity to others are particularly important.” (ICAO, 2009, p. 23), an effective teacher is not defined by his/her qualifications alone. A good teacher is one whose impact on a

<sup>4</sup> CIEAR: Center for Specialized Aeronautical Training

<sup>5</sup> PCA 37-9- A document issued by Brazilian Air Force making these training and measures mandatory all over Brazil ATC facilities. That document was repealed in 2018, originating a new one called MCA 37-225- *Manual dos requisitos de proficiência em inglês aeronáutico* (Manual on the aeronautical English proficiency requirements) published in 2018.

<sup>6</sup> EEAR: Escola de Especialistas de Aeronáutica

student's inspiration and learning capacity has been profound and enduring (SHAWCROSS, 2004). Despite the fact that English teachers have been working within the aviation field in Brazil for more than 30 years, the lack of awareness of the isolation in which these teachers have worked, in addition to the unregulated nature of ESP in aviation, have often led to teacher education activities in the area not being sufficiently prioritized.

ESP teacher education programs usually consider that “the ESP teacher becomes an equal with the students, but uses his or her greater knowledge of the language and the nature of communication to help them interpret what is happening in the specialist course or training” (DUDLEY EVANS; ST JOHN, 1998, p. 150). This is not what normally takes place in aviation English language teaching. Due to the nature of the English language used in the aviation context, mainly in air traffic control communications, the necessity of an aviation specific English language educator is argued in this article so that specific language teaching skills associated with the comprehension of the functional operational environment applied to the aviation community can be brought to class (ICAO, 2009).

Although aviation English teachers are not expected to be experts in aviation, it will be helpful for them to have first-hand knowledge of the students' operational environment (SHAWCROSS, 2004). Additionally, it is crucial that teachers receive formal preparation before working as aviation language teachers (ICAO, 2009). Unfortunately, at least in the Brazilian context, this is not a rule, as teachers generally start to work in the area without any prior preparation in the subject matter. This is what happened to the very first professionals who began teaching aviation English in Brazil (CHINI, 2014). They started their careers as English language teachers in the aviation context without being properly introduced to the aviation environment beforehand. Many of them learnt about this peculiar context and about the needs of the students the hard way.

Shawcross (2004) emphasises that teaching is a profession in which the individual has a significant effect. Perhaps, the foremost aspect of an effective aviation English teacher is the enthusiasm for, and a general interest in, aviation. This very specific feature leads to curiosity, receptiveness, versatility, imagination, awareness of operational objectives, among others. This whole package, coupled with the appetite for learning more and more, will give language teachers the necessary understanding to be receptive, to have credibility, and most likely, to be appreciated by their students.

In the final analysis, good teachers are notable for the effect that remains on students after they have left the classroom. This long-lasting effect dwells in the educator's capacity to trigger inspiration – the effective ingredient in successful language learning.

### **3.1. Roles of ESP teachers**

It is not always easy to describe exactly the role of an ESP teacher. As seen by Hutchinson and Waters (1987), ESP practitioners will have to bring about the context of language teaching, as well as concern themselves with needs analysis, syllabus design, material writing or adjustment and, last but not least, evaluation.

Given the above, Dudley Evans and St John (1998) describe the ESP teacher as needing to perform five different roles: 1- Teacher; 2- Collaborator; 3- Course designer/Material provider; 4- Researcher; and 5- Evaluator. It is possible to highlight each of these roles by focusing especially on the aviation English teaching context. In the first role, as a *teacher*, s/he matches the expectation of the learners, adults in pre- or in- service contexts, while acting as a provider and controller of input and activities focused on the learners needs. As a *collaborator*, the aviation English teacher conducts, facilitates rather than controls. This means that this professional is expected to regard the students, and be regarded by them, as a partner, which leads to the next role, i.e., *consultant*. In this role, s/he should work in partnership with sponsors or subject specialists, the ones responsible for the learners' work or study experience outside the ESP classroom (HUTCHINSON; WATERS, 1987). In this case, consultants can be experienced professionals (pilots, air-traffic controllers, etc.) who have good command of the English language in the workplace. Such cooperation plays a very important part in the learning process: ESP teachers can learn more about the learners' target situation, as well as make the subject expert be more aware of the problems faced by the learners. Regarding this last observation, we can find echo in Bell (2002), when he says that ESP teachers are on a more equivalent playing field with their students. In many ways, ESP teachers are expected to learn more about the language and conventions of the field. A crucial discussion on the field of ESP is how specific the materials should be.

According to Bell (2002), two relevant questions should be taken into consideration: 1- How much do the students know about their specialty?; 2- Are the students' pre or post-experience taken into account and incorporated into the ESP syllabus, or are students studying their specialty simultaneously with English?

Depending on the answers, teachers are expected to develop materials based on what is important for students to learn, according to their goals and objectives. The focus on the syllabus should reflect those goals (GRAVES, 2000). That is why a relevant aspect defended in this paper is that ESP teachers develop original materials, with the support of consultants, experienced professionals in the area of aviation, trying to contemplate most of the aspects described by Graves (2000) as shown in the next table:



**Table 2** – A List of Considerations for Developing Materials

<p><b>Learners</b></p> <ol style="list-style-type: none"> <li>1. make relevant to their experience and background</li> <li>2. make relevant to their target needs (outside the classroom)</li> <li>3. make relevant to their affective needs</li> </ol>	<p><b>Social Context</b></p> <ol style="list-style-type: none"> <li>9. provide intercultural focus</li> <li>10. develop critical social awareness</li> </ol>
<p><b>Learning process</b></p> <ol style="list-style-type: none"> <li>4. engage in discovery, problem solving, and critical analysis</li> <li>5. develop specific skills and strategies</li> </ol>	<p><b>Activity/ Task Types</b></p> <ol style="list-style-type: none"> <li>11. aim for real-life tasks</li> <li>12. vary roles and groupings</li> <li>13. vary activities and purposes</li> </ol>
<p><b>Language</b></p> <ol style="list-style-type: none"> <li>6. target relevant aspects (grammar, functions, vocabulary, pronunciation, sentence building, etc.)</li> <li>7. integrate the four basic skills: reading, listening, speaking and writing</li> <li>8. use/understand authentic texts</li> </ol>	<p><b>Materials</b></p> <ol style="list-style-type: none"> <li>14. authentic (texts, realia)</li> <li>15. varied (print, visuals, audio, digital, etc.)</li> </ol>

**Source:** Graves, 2000, p. 156, adapted.

It is important to emphasize the relevance of the aspects presented by Graves (2000) when it comes to focusing on the development of materials for aviation English. Some research has been developed in the area in Brazil, but there is still much to be done.

With regards to pre-service course design and syllabus development, Sá (2010) developed a study to provide guidance to the syllabus designers of the Military Air Traffic Controller English Programme in the selection of appropriate programme content, with reference to the ATCOs target needs presented by the ICAO list. Terenzi (2014), in turn, developed principles to sensitize and guide professionals involved in languages for specific purposes courses in the area of aircraft maintenance.

Chini (2014; 2018) investigated to what extent the English Course at Escola de Especialistas de Aeronáutica (EEAR) caters to the students' learning needs in order to see whether the course design at the institution contributes to the performance of the operational tasks carried out by the controllers in the different air traffic control units. The data in this study indicated that the large majority of respondents were aware of the necessity of the English language in the aviation context. However, the data also revealed the importance to further develop listening and speaking skills in the course, due to the fact that those skills present the highest degree of difficulty, which points to some of the items indicated in Graves (2000).

Cruz (2015), in turn, focused on the learner and on material development to design tasks in order to raise awareness of the importance of English language learning for students attending an air traffic controller training course, which is also indicated in the table above, when Graves (2000) mentions materials, activities and task types.

The work carried out by Bonifacio (2015) also needs to be mentioned. She developed a checklist to evaluate textbooks used in English language courses to air traffic controllers in the Brazilian context. The use of a checklist to evaluate materials enables professionals engaged in English teaching to air traffic controllers to choose the most appropriate textbook, according to their audience and the context where the course is going to be held. It is also an efficient tool to help identify gaps in the book, in order to adapt the material, since there is no such thing as perfect material.

Still in the area of material development, Dias (2016) focused on materials development in the Brazilian context by analyzing the function of images in aviation English textbooks used in air traffic control English language teaching. She concluded that most images used in the textbooks analysed are not adequate to the teaching of English to the air traffic controllers in Brazil.

Finally, Babboni (2017) and Babboni and Quast (2018) had a more careful look at classroom materials. They investigated in what way the pronunciation exercises from three textbooks, used during the Training Course for ATCOs, fulfill the specific needs of speakers of Brazilian Portuguese.

There is no doubt that ESP teachers in the aviation context in Brazil have to face a very big challenge. As shown above, in the past decade or so, research has been done in different areas, such as course design, needs analysis, materials development and course evaluation therefore contemplating many of the aspects indicated as relevant by Graves (2000). However, there is still much to be done. It is therefore important that language teacher education course programs include ESP as a discipline in their curricula.

## **Conclusion**

This article has emphasized the relevance of English teacher education so as to bring their expertise up to the level of English for Specific Purposes related to aviation. It was highlighted that teaching ESP in the aviation context is a journey that requires engagement, boldness, the correct attitude to accomplish the mission. Undoubtedly, ESP teachers have to be agents of their own development and take into account their own situation and the persistent isolation when preparing materials. When making decisions, teachers need to be clear as to why they are doing so and whether they are effective. They also have to be flexible and prepared enough to change instantly, depending on student needs. As ESP teachers involved in aviation, they need to be aware of their roles, how they affect student learning,

and the degree of support that students need. Reflexion is an essential component of material preparation for the ESP teacher, and so is the partnership with consultants, who can be experienced professionals (pilots, air-traffic controllers, etc.) with good command of the English language in the workplace. A critical eye is needed, based on experience in catering materials to specific student needs and knowledge in aviation. It is equally important that ESP teachers get involved with each other, interact with their peers and also with the team of aviation specialists that provide content to their materials.

Given that teacher education has been a long-term process, awareness raising activities have begun to appear as teachers are speaking up and demanding more support.

Clearly, any English teacher working within aviation should have an open-ended commitment to being enthralled by this professional environment. In return, teachers want their profession to become more aware of their specific training needs.

Perhaps a suitable conclusion for this article is a Chinese proverb, mentioned by Hutchinson and Waters (1987, p. 39), which accurately summarizes *Challenges in teaching and learning and in teacher education*:

Give a man a fish and you feed him for a day.  
Teach a man how to fish and you feed him for a lifetime.

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