RENEWED ENVIRONMENT FOR TEACHING TECHNICAL ENGLISH

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Abstract: Teaching technical English raises numerous challenges for the language teacher who holds merely linguistic expertise and not specific engineering training. The introduction of an e-learning dimension into the foreign language class contributes to the reform and innovation of education at tertiary level. In the particular case of English for Aviation, the use of computers in and out of the class ensures a new level of collaborative learning and an increased engagement of both student and teacher as technology users. Furthermore, the change from a conventional teaching approach to a post-modern Content and Language Integrated Learning (CLIL) strategy contributes to a more efficient practice in the classroom. The current paper will make considerations about the instructional function of the computer, its role in supplementing the traditional teaching materials with videos, authentic listening and updated information. It will also highlight the valuable assistance of e-learning in guiding students towards more effective storage and retrieval of specific information and, last but not least, of foreign language competency.

Keywords: Aviation English, CLIL, instructional use, authenticity

Introduction

Stemming from the real experience of the author's teaching practice, the current paper has been written without the ambition of approaching the modern aspect of e-learning from a very specialized and detailed perspective. The aim is to highlight the undeniable contribution that technology can bring to empowering the teaching and learning of English as a Foreign Language. The paper will make some considerations about the teaching of English for Specific Purposes (ESP), look at the Content and Language Integrated Learning (CLIL) aspect and will discuss the particular case of

Arhipelag XXI Press, Tîrgu Mureș, ISBN: 978-606-8624-03-7

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teaching English for Aviation to the aerospace engineering students in 'Politehnica' Technical University of Bucharest. The paper presents how and why the computer has been integrated as an instructional means of teaching technical English in the given teaching environment and illustrates two practical instances.

Considerations on the background

In the Faculty of Aerospace Engineering in 'Politehnica' University of Bucharest, English for Aviation is taught to all aerospace engineering students for one semester in both the first and second year of study. Then, in the third and fourth years, only those students who have opted for a specialization in Airport Management/Air Navigation, will study English for one semester each year. Owing to the specific requirements of their future qualifications, the syllabus for the first two years of study covers the technical part of English for Aviation, i.e. structure, engines, avionics, while in the last two years it includes elements of ICAO English. Given the very specialized technical and specific content, English for Aviation and ICAO (The International Civil Aviation Organisation) English, the classes will have specific objectives, content, criteria of proficiency and use of the language. These special curricular requirements set the teaching of Aviation English apart from the teaching of any other kind of English for Specific Purposes (ESP). Of the three types of ESP English identified by Carver (1983), i.e. English for Academic and Occupational Purposes, English with specific topics and English as a restricted language, Aviation English, particularly ICAO, falls into the category of restricted language. This will certainly, raise numerous challenges for the teacher who holds merely linguistic expertise and not content specific training.

One major challenge for the ESP teacher in the context described in this paper arises from the scarcity and inappropriacy of the available teaching materials: the textbook in use for the technical part is a very traditional book with lengthy specialized texts, uncommunicative and grammar-translation exercises, while teaching materials for the ICAO lectures are very few. Thus, without too much available support from the existing resources in the university's Department of Foreign Languages, the practitioners involved in teaching English for Aviation have to compile, update and design materials and tasks. Another provocation comes from the proposition that "ESP is an approach to language teaching in which all decisions as to content and method are based on the learner's reason

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for learning" (Hutchinson & Waters, 1987:19). This has radically impacted the world of English Language Teaching (ELT) in that it has brought up the demand to put the traditionally taught subject-specific language into the context of real life communication tasks. Moreover, Dudley-Evans's reference to ESP as an 'attitude of mind' has geared a new view on teaching the foreign language that allows practitioners to choose what they think is most appropriate under particular teaching circumstances. The choice will certainly depend on the roles that the ESP teacher has to play as 'teacher, course designer and materials provider, collaborator, researcher and evaluator' (Dudley Evans and St. John, 1998). Thus, the greatest challenge of all emerges from the overall task for the ESP teacher who is expected to integrate all these roles into and in the curriculum in order to meet the final aim of the course: catering for the learners' successful communication needs in a target setting. To provide the learners with the efficient training for this, the teacher is to ensure that the students can use the particular 'jargon' characteristic of that specific occupational context, i.e. aerospace engineering and ICAO. Secondly, the teacher needs to pay attention to the development of the learners' ability to use academic skills. Last but not least importantly, the ESP teacher should not neglect the development or exercise of the learners' basic ability to use the language of everyday talk to communicate effectively, no matter what the prospective occupational context may be. Even in the restricted area of aviation, engineers, pilots or traffic controllers need to chat, talk, negotiate or write informal texts such as emails to fellow workers and professional partners. The integration of all these abilities proves to be a complex task and the art is to develop an approach that blends teaching the specialized repertoire with the academic and general language skill development for the learners in question.

The solution

Due to the fact that the ESP teachers, who are not qualified aerospace engineers, face the challenges and the demands mentioned above, the pending question is how they can deal with the issue of teaching successfully what they are expected to teach.

A first relevant point to consider, as mentioned before, refers to the teaching materials to be used. As Jones (1990) points out it is rare that ESP textbooks exactly match particular needs of particular learners and no one ESP textbook can live up to its name. An efficient way to overcome this impediment would be to develop an internal resource bank of materials. Given that ESP is an approach and not a subject to be taught,

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teaching materials for Aviation English will mainly originate in authentic sources, ESP materials, and teacher-generated materials. One way to access the richness of authentic materials is to resort to Information and Communication Technology (ICT). From an ESP-ish pedagogical perspective, ICT provides a way to link the specialized syllabus with authentic input and this would respond to the requirement of the students' real life learning needs. On the other hand, ICT proves to come handy and appeal to the students who are very familiar with the current digital world, and this makes ICT easy and convenient to use in the classroom.

Another point for the teacher to decide upon refers to the most suitable approach to be adopted. In the particular case under discussion, the Content and Language Integrated Learning (CLIL) approach seems to be the one that responds to the majority of the requirements for teaching English for Aviation. The CLIL is an educational philosophy of the noughties (2000-2010) that covers the case in which English as a foreign language is taught for both content and language. The CLIL approach to teaching reflects the educational change that makes the foreign language a 'vehicle' that will enable students to learn content and language in an equal measure in a world in which almost everything depends on the Internet. As suggested in David Graddol's 'English Next', the double aimed CLIL, content and simultaneously language, dictates the view that English is not so much a language but a 'core skill' that responds to the modern, utilitarian demands of a digital and globalized society. Moreover, this stance is very likely to be a suitable response to the three requirements of an ideal ESP course: teach content-specific 'jargon', develop academic skills and provide communication skills. Furthermore, the literature dedicated to this subject points out that, unlike the former conventional approaches and scholarly teaching materials, CLIL is likely to increase the learners' motivation because it provides a feeling of real life achievement.

Thus, the integration of the computer as an instructional tool in the current teaching programme and the CLIL format are intended to build up a modern framework for the specific teaching and learning environment under scrutiny.

English for Aviation in practice

In order to show how theory is put into practice, this part of the paper will shortly exemplify instances of teaching Aviation English in the given educational environment. This will illustrate how the author herself tried to modernize and make a change in the teaching of ESP in her tertiary level classes.

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Starting from the CLIL format of the classes, in which to language is used to learn content and communication uses a language determined by the subject, the classes for both Aerospace Engineering and ICAO English have been constructed around the use of website authentic materials, content and communication that includes all the four language skills. A first relevant thing is that with each group of students that I have been teaching in the last years, the class has a Yahoo Group, sometimes a blog site, that is used to communicate in-between classes (classes are once a week).

The appendix at the end shows a sample of the existing available materials for teaching technical, i.e. aerospace engineering English – Unit 3 'Wing'. In a conventional approach we can use the textbook to read the text, answer the three questions, make a very specialized account of a shorter text, deal with grammar in terms of tenses and specific constructions and translate from the mother tongue (Romanian) into English.

What I have been currently doing with my students is to design specific assignments for them. Students can work individually or in small groups, very often in pairs. Using the Yahoo Group, I ask them to 'google' in advance, that is to collect information from the Internet on particular content-related points that I, as a lay person, identify in the textbook input on the subject. In the case of the broad topic of 'Wing', I have proposed assignments on the structure of the wing, component parts and their function, types of wings, aerodynamics related to the wing and the development of wing design since WWII.

On submitting my own list of subtopics, I often ask students to propose other areas of interest to them related to that particular theme and the Yahoo Group records written responses and the students' comments, discussions or negotiations regarding a proposal made by one of them. For instance, in the case of 'Wing' students came up with a list of topics that included Bernoulli's principle which is related to lift, the future development of the wing or the materials used to manufacture the aircraft wings.

Then, the students are requested to organize the information into a Power Point presentation on slides and deliver it during the class. One specific requirement of their task is to present the information in a clear, coherent and logical way using visual aids. They must also tailor the content input to their peers' level of knowledge. Mention should be made of the fact that the class had covered the 'Oral Presentation' module during the first semester of their first year of study and they are aware of the major elements such as 'audience, objective, structure, body, visual aids and ending' involved in preparing and

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delivering a professional oral presentation. Another requirement is that their presentation must include references and a list of specialized content vocabulary items at the end.

The second example to be presented covers the instance of teaching ICAO English to 3rd and 4th year students. The author has her own private copy of a book called 'English for Aviation' which is provided with an audio CD. The book is communicative, with lively tasks for all the four language skills, with good listening exercises and focus on language functions. However, except for the listening input, it does not strike a balance between content and language: it relies on language structures and functions while the specialized content is very general. That is the reason why I felt the need to supplement each unit with authentic, content focused input. Apart from the Yahoo Group used for assignments, comments and feedback and the request for Power Point presentations on air navigation procedures, videos, either from U-Tube or the Internet have been used in class to present complex air navigation procedures. Using EduCanon, embedded questions were embedded and this allowed the transformation of each video into a structured learning task. The videos are collected by groups of students who are asked to obtain relevant material on a certain topic, e.g. take-off, descent, landing procedures, emergencies and even air disasters.

Discussion

Looking at what can be achieved through refreshing the educational context in the ways shown above, we can state thatthe use of technology is intended to provide engaging learning experiences that support and focus the learners on concrete learning outcomes. Students have the opportunity to use technology to complete specific assignments. Finding, selecting, ranking, classifying and coping with new information exposes them to the 'jargon' of aviation and contributes to the development of the students' academic skills, e.g. reading proficiency, written communication with the teacher and peers, research abilities and analytical thinking through reflection on the experience they had with the website, in both audio and text. In addition, the use of Power Point and an overhead projector is another use of technology that makes learning more attractive and stimulates creativity since students include pictures, sounds and even music to enhance the impact of the information presented. Moreover, PP presentations increase the learners' proficiency in oral communication and develop the academic skills of making and speaking from notes as well as of summarizing relevant information. The list of content-

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based vocabulary at the end ensures that the learners enhance their lexical proficiency in aviation.

Embedding questions in videos enables the teacher to actively engage the learners with the content and in this way provide multiple opportunities for learning both specific content and language.

Overall, computer technology enhances the opportunities for students to communicate and collaborate with peers beyond the physical and time constraints of the classroom when they prepare assignments.

In addition, the use of the Internet fosters the development of the students' learning autonomy because they can initiate searches more and more independently or they can create their own archives and knowledge constructions. This is likely to increase the learners' motivation for learning and assist the fulfillment of the proposed curricular goals.

Closing Remarks

To sum up, we can state that one of the major benefits of integrating technology is that the conventional class is restructured so that students area engaged to participate as 'producers' of their own learning, researchers and collaborators of their peers. Besides, the language of the Internet is more 'real' than the language of textbooks and browsing and accessing sites provides opportunities for numerous contacts with the language. The CLIL approach, on the other hand, endorses the reasons for learning the language because subject content must be understood and processed. Thus, the learners are given a feeling of real life achievement: they cope with specialized content in the foreign language and use the language to talk and write about it. In other words, the students are engaged to develop the competences for authentic communication within an approach that prioritises vocational efficiency.

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Appendix 1

I. Wing (Aerospace Engineering English)

Reading:

For aerodynamic reasons, the wing cross-section must have a streamlined shape, commonly referred to as an airfoil section. The aerodynamic forces in flight change in magnitude, direction and location.

To provide strength efficiency, spanwise stiffening units, commonly referred to as flange stringers are attached to the inside of the surface skin. To hold the skin surface to the airfoil shape and to transfer large concentrated loads onto the cellular beam structures, heavy ribs (commonly referred to as bulkheads) are used. The ribs act as a transfer and distribution unit. They can vary from a very light structure to a heavy one, which must

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receive and transmit transfer loads involving thousands of pounds. Since the airplane control surfaces (vertical and horizontal stabilizer) are nothing more than small size wings, internal ribs are likewise needed in this structure.

EXERCISES

I. Comprehension

1. What is an airfoil section?
2. What stiffening units are used to provide strength efficiency?
3. Speak about the progress of wing design after the World War II.

II. Translate into English using the Nominative+Infinitive construction.

III. Put the verb in brackets in the right tense

1. Flying tests….. (not yet complete) on the first prototypes.

IV. Give an oral account of the following text:

The wing of a commercial supersonic aircraft is a delta wing. Its five sections are: the centre wing box, integral with the fuselage and changing from a multi-spar construction to a multi-web-box construction……
…….

V. Distinguish between:

to set-to sit; to design-to designate; to proceed-to precede;

V. Translate into English.

(English for Engineering, Unit 3, 25-31)

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