International Conference
"ICT for Language Learning" 4th edition
PIXEL

# Vacancies and Employment Profiles in the Aerospace Industry: Content and Language Integrated Learning through the Internet

**Dietmar Tatzl**
FH JOANNEUM University of Applied Sciences (Austria)
dietmar.tatzl@fh-joanneum.at

## Abstract

*In a global industry, information and communication technologies are becoming increasingly important as resources and mediators bridging distances and borders. Owing to their rapid spread and worldwide availability, they bear a great potential for language learning and teaching. This holds true for general as well as specialised pedagogical settings, such as aeronautical engineering education. This contribution presents a teaching module that merges content and language instruction by means of a web-based group task in the field of aerospace vacancies and employment profiles. Students investigate professional resources on the Internet in order to gain insights into the aviation industry's requirements for employment-seeking candidates. By comparing their strengths, skills and qualifications with the demands of the aerospace industry, learners develop an awareness of their own educational needs as well as employment prospects after graduation. The module enhances learner motivation in a twofold way: first, through the use of information and communication technologies in the classroom and, second, through the integration of authentic industry materials into a language-learning task. These electronic materials form the core of a multi-phase activity that covers five 45-minute teaching units. Professional vacancies offer a rich source of terminology and examples of up-to-date industry-specific skills and qualifications. By working with such text types, learners become familiar with the register of employment and recruitment in the aeronautical industry and gain insights into the working environment and main activities of various aviation professionals. Their future fields of occupation are presented from a current and content-driven perspective, so that the engagement of students is extremely high. The module described allows for multiple adaptations to varying learning situations, professional contexts and student groups. It thus facilitates the integration of content and language by information and communication technologies.*

## 1. Introduction

The increasing global availability of information and communication technologies has facilitated language learning and teaching in general and English as a Foreign Language (EFL) instruction in specialised industries in particular. The present contribution introduces a Content and Language Integrated Learning (CLIL) module in the field of aeronautical engineering developed at the FH JOANNEUM University of Applied Sciences, Graz, Austria. This teaching module pursues the content goals of familiarising first-year students with their professional disciplines and providing them with orientation, motivation and industry insights, while linguistically it aims at improving learners' technical vocabulary knowledge and communication skills.

## 2. Information and communication technologies in language teaching

Language teaching professionals have recognized the value of information and communication technologies in pedagogical settings. Sharma and Barrett [1], Sayers [2] and Lewis [3], for instance, acknowledge motivation as a major reason for employing technology in language teaching. Similarly,

Chisholm and Beckett [4] promote the use of technology because among other things it fosters academic achievement, language competencies, motivation and higher-order thinking skills. In the context of writing, Benson [5] emphasises the Internet's advantages for learning through group work because it offers "opportunities for interaction among learners, between learners and target language users, and between learners and teachers that could otherwise be difficult or impossible to achieve in the classroom or in self-access". A further benefit of the Internet is its capability of engaging students in a task. Active learner involvement remains an essential component of successful teaching, as already Barnes [6] implied in his call for "action knowledge", that is knowledge people use to reach their aims and thus base their actions on. In times of the net generation, this thought is strengthened, since "research points to the importance of learning environments which are active, social, and learner-centered" [7]. Finally, the Internet provides opportunities for setting authentic language learning tasks which are tailored to the predicted or current needs of learners and thus become meaningful assignments. One appropriate application of information and communication technologies in language teaching is the webquest, as first created by Dodge [8] and later adopted by professionals in various forms ([9]; [10]; [11]; [12]; [13]). Apart from their motivating potential, webquests also offer a framework for the integration of content and language learning in specialised settings.

## 3. A CLIL module for aeronautical engineering education

The teaching module described in this section revolves around a web-based group task in the field of aerospace vacancies and employment profiles. Students analyse professional resources on the Internet in order to learn about the aviation industry's requirements that applicants for employment must meet. By comparing their strengths, skills and qualifications with the demands of the aerospace industry, learners gain insights into their own educational needs as well as employment prospects after graduation. In this way, they develop an awareness of practising engineers' working environments. The module strengthens learner motivation in two ways: first, through the use of information and communication technologies in engineering education and, second, through the incorporation of authentic industry materials into a language-learning task. These electronic materials constitute the essence of a multi-phase activity that comprises four to five 45-minute teaching units.

### 3.1 Researching industry requirements

The first phase of this module lasts 90 minutes and asks learners in groups of three to five to analyse several aerospace vacancies. For this purpose, learners receive an instructional handout that contains links to a selection of appropriate websites. These websites cover a wide range of sectors in the aerospace industry, so that they address students' individual interests and preferences on the one hand and provide a comprehensive overview of employment options on the other.

http://www.aeroindustryjobs.com/
http://www.aerospacejobs.co.uk/
http://www.theaerospacejob.com/
http://www.aia-aerospace.org/resource_center/aerospace_jobs/
http://www.aircraftengineers.com/
http://www.aviationjobsearch.com/
http://www.careerjet.com/jobs-aerospace-defence.html
http://www.flightglobal.com/jobs/default.aspx

Professional vacancies offer a rich source of terminology and examples of up-to-date industry-specific skills and qualifications. As a consequence, the specialised lexical range of this task is limited only by the sectors and companies investigated. In other words, the activity encompasses technical vocabulary specific to certain disciplines and professions, such as aerodynamics or avionic systems engineering, as well as more generic phrases common in employment advertisements across sectors and businesses. By working with such electronic text types, learners become familiar with the register

of employment and recruitment in the aeronautical industry and gain insights into the working environment and main activities of various aviation professionals. The principal objectives of this phase are, hence, the improvement of students' industry- and employment-related vocabulary knowledge on the language side and an understanding of the demands and requirements inherent in aeronautical engineering on the content side.

As part of the first phase of this module, learners analyse which titles are used to describe vacant positions in different aerospace sectors. This step is linked to a table that learners need to complete. Table 1 illustrates which kind of information students are supposed to enter into the rows. In class, this table only contains the headings in bold.

Table 1. Typical positions in various aerospace sectors

| **Aerospace positions** | **Related aerospace sectors** |
|---|---|
| airline transport pilot | airline operations |
| electronics development engineer | aircraft electronics engineering |
| engineering manager aerospace | aerospace engineering process management |
| landing gear mechanical engineer | … |
| … | … |

As a next step, learners decide in their groups in which sector of the aerospace industry they would like to work after their studies. They analyse several online vacancies in this area and compile a list of characteristics, skills and qualifications which applicants interested in these positions need to possess. They should pay attention to the responsibilities these positions involve and critically reflect on the question which personal characteristics and skills are required in order to be successful in these professions on a daily basis. Table 2 represents a model analysis of a selected aerospace position and its corresponding responsibilities.

Table 2. Candidates' strengths, skills and qualifications related to responsibilities involved in a sample aerospace position resulting from the group research phase

| **Landing Gear Mechanical Engineer** | |
|---|---|
| **Strengths, skills and qualifications** | **Responsibilities** |
| experience of technical leadership of projects | defining system specifications and requirements |
| landing gear domain knowledge | reviewing and approving design documents |
| technical awareness in aero structures | conducting technical investigations and analyses |
| communication skills | preparing technical reports |
| adaptability and innovative thinking | supporting production, pre-flight and flight tests |

### 3.2 Group presentation

The second phase of this module covers 45–90 minutes and consists of the preparation and delivery of a short group presentation. Groups select an aerospace position and list the top five strengths, skills and qualifications candidates should have if they want to succeed in this area. Students should agree on a common list in each group and prepare one Microsoft® PowerPoint slide that they are going to present to the whole class. The slide should contain:

- Name of aerospace position chosen
- Aerospace sector related to this position
- Top five strengths, skills and qualifications required for this position in students' own view
- Key responsibilities involved

A volunteer group member presents the slide, and the whole class briefly discusses the information given. This phase should stimulate critical thinking, drawing analogies and comparing findings related to the task.

### 3.3 Writing a personal profile of strengths and skills

The third phase of this module again lasts 45 minutes and requires students to produce their own personal profile of strengths and skills. Individually, learners think about their strongest characteristics, skills and qualifications and write them down in a list. They should collect at least five points. Then they write a personal profile of skills based on their list of strengths and the group analysis of industry requirements from the first phase of this module. In other words, they try to match their strengths with industry requirements. In order to facilitate this step for students, they are provided with a sample profile taken from a professional's curriculum vitae (Table 3).

Table 3. A sample profile [14]

| **Mechanical Engineering Professional** |
|---|
| • Well versed in the real world, and believes that hands-on reality will do quite well. Motivated to oppose the trend and be hands-on … to take something apart … to build the new.<br>• Well trained in experimental and computational techniques. Communicates technical information effectively.<br>• Successful at working on multidisciplinary design teams to meet the needs of the 21st century workplace.<br>• Professionally and ethically responsible; is able to adapt to emerging technologies through life-long learning. |

After they have composed their profile, students exchange it with their neighbour and check each other's texts for vocabulary, grammar, spelling and punctuation. Learners highlight or underline any passages and words that should be rewritten to increase the impact of the profile on potential employers. They read their own profile again carefully after it has been checked by their colleague and ask their neighbour for advice on improving it. The objectives of this phase consist in the consolidation of the technical and employment-related vocabulary acquired during the first two phases of this teaching module. Furthermore, students should develop an awareness of how they could meet today's authentic industry requirements.

## 4. Conclusions

By means of the teaching module described, learners' future fields of occupation are presented from a current and content-driven perspective, so that the engagement of students is extremely high. Spontaneous learner comments during class suggested that the pedagogical goals of this task could be achieved. The module discussed allows for multiple adaptations to varying learning situations, professional contexts and student groups. It thus facilitates the integration of content and language through information and communication technologies.

## References

[1] Sharma, P., & Barrett, B. (2007). *Blended Learning: Using Technology in and Beyond the Language Classroom*. Macmillan Books for Teachers. Oxford, UK: Macmillan, p. 10.

[2] Sayers (1993), cited in Niño, A. (2009). "Internet and Language Teaching/Learning: Reflections on Online Emerging Technologies and Their Impact on Foreign-Language Instruction". In R. Oxford & J. Oxford (Eds.), *Second Language Teaching and Learning in the Net Generation* (pp. 23–30). NFLRC Monographs. Honolulu, HI: National Foreign Language Resource Center, University of Hawai'i, here p. 24.

[3] Lewis, G. (2009). *Bringing Technology Into the Classroom*. Into the Classroom. Oxford, UK: Oxford UP, p. 46.

[4] Chisholm, I. M., & Beckett, E. C. (2003). "Teacher Preparation for Equitable Access Through the Integration of TESOL Standards, Multiple Intelligences and Technology". *Technology, Pedagogy and Education, 12* (2), 249–275; here p. 257.

[5] Benson, P. (2001). *Teaching and Researching Autonomy in Language Learning*. Applied Linguistics in Action. Harlow, UK: Longman-Pearson, p. 139.

[6] Barnes, D. (1976/1992). *From Communication to Curriculum*. London: Penguin. With an Afterword by K. M. Pierce. 2nd ed. Portsmouth, NH: Boynton/Cook Publishers, Heinemann, p. 81.

[7] Ramaley, J., & Zia, L. (2005). "The Real Versus the Possible: Closing the Gaps in Engagement and Learning". In D. G. Oblinger & J. L. Oblinger (Eds.). *Educating the Net Generation* (pp. 8.1–8.21). N.p.: Educause, here p. 8.7. E-book retrieved on 20 July 2011 from http://www.educause.edu/educatingthenetgen

[8] Dodge, B. (1995/1997). *Some Thoughts About WebQuests*. San Diego State University. Retrieved on 7 April 2011 from http://webquest.sdsu.edu/about_webquests.html

[9] Luzón Marco, M. J. (2002). "Internet Content-Based Activities for English for Specific Purposes". *English Teaching Forum, 40* (3), 20–25; here pp. 21–24. Retrieved on 25 March 2011 from http://exchanges.state.gov/englishteaching/forum/archives/docs/02-40-3-g.pdf

[10] Frendo, E. (2005/2009). *How to Teach Business English*. How to … Series. Harlow, UK: Longman, Pearson Education, pp. 108–109.

[11] Dudeney, G. (2007). *The Internet and the Language Classroom*. 2nd ed. Cambridge Handbooks for Language Teachers. Cambridge, UK: Cambridge UP, pp. 122–125.

[12] Lewis, 2009, pp. 54–55; see [3] for full bibliographical information.

[13] Millward-Sadler, A., Casey, A., & Bratschitsch, E. (2009). "Using Web 2.0 Technologies in the Automotive Engineering Language Classroom as a Tool to Improve Writing Skills and Prepare Undergraduate Students for the International Workplace". Proceedings of the 2009 American Society for Engineering Education Annual Conference and Exposition. 14–17 June 2009, Austin, TX. AC 2009-247. Retrieved on 13 March 2010 from http://soa.asee.org/paper/conference/paper-view.cfm?id=10201

[14] Block, J. A., & Betrus, M. (2003). *101 Best Resumes for Grads*. New York, NY: McGraw-Hill, p. 162.

Vacancies and employment profiles in the aerospace industry: Content and language integrated learning through the internet. In Pixel (Ed.), International Conference ICT for Language Learning: Conference Proceedings (4th Conference Edition, p. 13). Milano: Simonelli Editore. Abstract book, full paper retrieved from http://www.pixel-online.net/ICT4LL2011/common/download/Paper_pdf/CLIL02-133-FP-Tatzl-ICT4LL2011.pdf. Tatzl, D. (2015a). Case meetings for teaching English for specific academic purposes in a tertiary aeronautical engineering programme. Innovation in Language Learning and Teaching, 9( Empirical evaluations of practical teaching units integrating content and language in higher education are rare and deserve more attention. The current article aims to narrow this gap by providing an empirical study of an integrating content and language in higher education (ICLHE, Smit & Dafouz, 2012) teaching module.Â Vacancies and employment profiles in the aerospace industry: Content and language integrated learning through the internet. In Pixel (Ed.), International Conference ICT for Language Learning: Conference Proceedings (4th Conference Edition, p. 13). Milano: Simonelli Editore. Content and language integrated learning (CLIL) is an approach for learning content through an additional language (foreign or second), thus teaching both the subject and the language. The term CLIL was created in 1994 by David Marsh as a methodology similar to but distinct from language immersion and content-based instruction. The idea of its proponents was to create an "umbrella term" which encompasses different forms of using language as the medium of instruction. The methodology has been applied The European space industry has raced ahead of American industry, thanks to the US government's regulatory barriers on defense and space goods sales. Europe's satellite manufacturing industry lags slightly as compared to the American one, thanks to presence of the giants Boeing and Lockheed Martin, but it beats the US comfortably when it comes to launch services because of Arianespace, which posseses the heavy launcher (and overpriced) Ariane V, and the medium sized launcher Soyuz.Â  What I can tell you is that you will make a lot more money as an Aerospace Engineer in the USA than in Europe by a factor of 2x-3x over time with seniority. It isn't uncommon to make $250k a year as a senior engineer.