

# CLIL ACTIVITIES IN PHARMACY DEGREE COURSES

MONIKA WOŹNIAK  
*Universidad de San Jorge*

## 1. INTRODUCTION

The aim of this paper is to describe Content and Language Integrated Learning (CLIL) activities within the degree programme of Pharmacy at San Jorge University (USJ), a private university in Zaragoza, Spain. The CLIL project is coordinated by the Institute of Modern Languages (IML), one of the university's transversal institutes. According to the Language Policy for the years 2010-2014, developed by the IML and adopted by the university, in the first two years of an undergraduate degree programme at least 1 ECTS (i.e. 25 hours) in at least three subjects are taught through English each year. This paper focuses on methods and teaching ideas proposed for the present academic year from the perspective of the English language teacher who cooperates with content teachers who integrate English in their subjects.

As noted by Mehisto *et al.* (2008: 27), teaching through a foreign language may be difficult for content teachers and likewise, language teachers may not be able to provide their language classes with adequate support for content subjects. These problems are even more difficult to face at university level, where future professionals are educated.

Co-operation and skills exchange among language and content teachers thus becomes an important strategy for implementing CLIL. This requires the time and the will to agree collectively on common teaching strategies and student learning activities. (Mehisto *et al.* 2008: 28)

Taking the above into account, the implementation of the CLIL methodology at USJ is based on close cooperation between English language lecturers from the IML

and lecturers of content subjects from other faculties integrating English into their courses.

The cooperation between teachers of English and content specialists participating in the project is supposed to take place at several levels. First of all, English teachers and subject teachers have regular sessions, preferably once a week, aimed at planning together how to integrate English into content subjects, designing activities together or reflecting on past classes. All the CLIL teachers within a given degree programme work with the same English teacher. Secondly, content teachers attend a series of workshops on CLIL methodology organized and delivered by IML teachers. Finally, English teachers carry out class observations in some of the classes taught by the content teachers they work with.

English language courses for particular degree programmes are tailored and content-based. In this paper the focus is on CLIL activities undertaken within content subjects in cooperation with the English language teacher, but the role of the teacher of English for Pharmacy for 1<sup>st</sup> year students should not be forgotten in the whole process of implementing CLIL in this programme.

I first outline the tasks and activities proposed for Pharmacy courses for the present academic year 2011-2012. In the following sections I describe some of these activities in relation to the theoretical framework of 4 Cs (Coyle 2005, Coyle *et al.* 2010) with special attention to the cultural element of this framework.

## 2. CLIL IN THE DEGREE OF PHARMACY

This academic year, five pharmacy teachers are participating in the project. It is they who decide in which courses and for which contents the CLIL approach is applied. In general, the five lecturers decided to integrate 1 credit in English into the following courses:

### 1<sup>st</sup> year:

- Introduction to laboratory work (semester 1)
- Organic chemistry (annual course)
- Inorganic chemistry (annual course)

**2<sup>nd</sup> year:**

- Physical chemistry II (semester 1)
- Pharmaceutical chemistry I, II (semesters 1 and 2)
- Parasitology (semester 2)
- Human physiology (semester 2)

**4<sup>th</sup> year:**

- Pharmaceutical biotechnology (semester 1)

Three of the lecturers teach two courses: Introduction to laboratory work and Pharmaceutical Biotechnology, Organic chemistry and Physical chemistry, or Organic Chemistry and Pharmaceutical Chemistry. All the Pharmacy lecturers are native speakers of Spanish but their command of English, although varied, is good enough to be able to integrate English in at least some parts of their subjects or classes. To improve their language skills, some of the lecturers attend in-service courses of general English organised by the IML.

Students' levels of English are even more varied, which makes it difficult to plan and develop activities with both content and language learning in mind so that the activities are cognitively demanding but at the same time linguistically accessible to all the students (see Coyle 2005). There are about 50 students in class and it is difficult to involve all the students in speaking tasks. In this context, I agree with Dalton-Puffer (2007: 11) who states that "CLIL students are listeners most of the time". To make classes more effective, some groups are divided into two subgroups taught by two teachers or students work in pairs or small groups. As we are not able to allow students more time for whole class discussion or debate, their evaluated assignments are in written form. However, some teachers plan their activities so that listening and speaking skills can be assessed and evaluated; for example, students define and guess laboratory equipment terms, or attend practical laboratory sessions taught entirely in English.

At the beginning of the academic year, the IML asks the content teachers participating in the project to plan their activities for at least 1 credit of the total workload. This year the activities were planned as follows:

Course	Class hours	Autonomous learning
Introduction to laboratory work	10 (3, 7)	15 (5, 5, 5)
Pharmaceutical biochemistry	16 (4x4)	9 (4, 5)
Physical chemistry II	8 (2, 4, 2)	17 (1, 1, 10, 5)
Organic chemistry	18 (2, 4x4)	9 (1, 8)
Pharmaceutical chemistry I, II	10.5 (0.5, 1.5, 0.5, 0.5, 2, 2, 2.5)	14.5 (5, 4, 0.5, 3, 2)
Inorganic chemistry	20 (6, 2, 2, 3, 2, 3, 2)	5 (4, 1)
Parasitology	9 (2, 4, 2, 1)	16 (3, 8, 3, 2)
Human physiology	7 (1, 2, 1, 2, 1)	18 (1, 2, 4, 4, 4, 2, 1)

The teachers had the freedom to distribute the 25 hours as they wished between class hours and student's autonomous learning time. The above table shows that some teachers planned longer blocks to be taught through English, whereas others preferred shorter but more frequent activities, sometimes even occupying only half an hour. In two courses, Pharmaceutical Biotechnology and Organic Chemistry, four four-hour practical sessions in the laboratory were planned to be taught through English. For that purpose, the lab book in English was prepared together with the English teacher. In this particular case, the cooperation also involved the teacher of English for Pharmacy, who planned a series of classes that practiced the skills required to work in the laboratory and complete the lab book in English.

All the CLIL tasks and activities are designed on the basis of authentic materials carefully selected by content teachers. Pharmacy teachers keep up with latest scientific advances in English since the majority of publications in natural sciences are in this language (Hamel 2007, Ahumada 2011), so they do not need any assistance in this respect. They sometimes do, however, in what refers to designing a task and assessing the level of language skills required from students to accomplish the task based on a text or a video, often a highly specialised one. In some cases, when language learning support is required, we teach the class together as 'team teachers'. Materials are usually not adapted in any way and we use scaffolding strategies as understood by Llinares *et al.* (2012: 17): "the variety of ways in which teachers can use talk to provide temporary support for CLIL learners to express meaning in the classroom".

### 3. THE 4Cs FRAMEWORK IN PHARMACY TASKS AND MATERIALS

According to the CLIL methodology, subject learning and mastering language skills occur simultaneously. For the implementation of CLIL we apply the framework of 4Cs (Coyle 2005, Coyle *et al.* 2010). The 4Cs stand for four interrelated elements: content, communication (language of learning, language for learning, and language through learning), cognition, and culture. Let us examine the activities planned for this academic year in relation to the theoretical framework of 4Cs (Coyle 2005, Coyle *et al.* 2010). Finding and applying a balance between all these four principles may seem difficult in some pharmacy courses, particularly in regard to the element of culture, as a considerable amount of contents involve symbols, formulas and equations.

The content teachers in the Pharmacy degree programme admit that the decision to apply CLIL in their subjects meant changes not only in the language of instruction but also in methodology. Their classes taught in Spanish are not typical lectures and students' active participation is expected and encouraged in all classes but at the same time lecturers admit that their classes taught through English are not typical of the classes they normally teach.

Teachers' creativity in their approach to teaching is crucial then if we want to find effective techniques and follow CLIL principles. Many of the tasks and activities involve writing abstracts, summaries, developing concept maps, or conducting webquests.

Science units often focus on investigations, because they require students to talk, compare and contrast, discuss and draw conclusions –initially orally and then in written formats–. The importance of designing multi-stage and multi-layered tasks which enhance the active role of the student seems clear. (Coyle *et al.* 2010: 88)

Indeed, many of our science units are designed in line with these statements. Teachers are encouraged to apply project and problem based learning, use open-ended questions, visuals, etc. These kinds of tasks also develop other skills and competences related to CLIL such as collaborative group work, hypothesis formation, or text processing. In addition, they promote the use of ICT. Classroom activities are based on authentic materials that were created for real communicative purposes such as websites, videos, and authentic conference posters. The activities should aim at encouraging students' active participation in authentic communicative acts without forgetting about

the language. As Llinares *et al.* (2012: 197) point out: “Although most CLIL programmes in Europe focus primarily on content, [...], it is necessary for CLIL teachers to be aware of the language students require to express that content and to participate in classroom interaction”.

Some project-based multi-stage tasks proposed by our teachers involve writing a scientific manuscript or preparing a conference poster describing a simple experiment conducted during laboratory sessions. These two multi-stage tasks were planned by the same content teacher for two courses: Organic Chemistry (1<sup>st</sup> year, conference poster), and Physical Chemistry (2<sup>nd</sup> year, scientific paper). Additionally, both projects were prepared and carried out together with the English language teacher, either as a team teacher or an observer. One of the stages of both activities is a webquest on participating in a scientific conference or submitting and publishing a scientific paper respectively.

A real WebQuest is a scaffolded learning structure that uses links to essential resources on the World Wide Web and an authentic task to motivate students' investigation of an open-ended question, development of individual expertise, and participation in a group process that transforms newly acquired information into a more sophisticated understanding. The best WebQuests inspire students to see richer thematic relationships, to contribute to the real world of learning, and to reflect on their own metacognitive processes. (March 2003: 42)

Using a webquest in these activities is a wise technique since nowadays all the process of reporting scientific findings in journals or at conferences involves consulting relevant websites of particular conferences, scientific associations or journals by potential authors who want to find all the relevant information. The fact that the most important scientific journals and conferences are in English makes the task even more authentic. In class, students carry out webquests on the process of publishing a scientific article or going to a conference. In groups students discuss and write answers to a series of questions related to the most relevant journals in their field, submission guidelines, or writing conventions. The English language teacher present in the classroom offers scaffolding techniques when needed, especially in reference to new terms such as scope, impact factor, or peer review.

To complete these tasks, i.e. to write a manuscript or prepare a poster, students work in groups of 4 and each group can choose one of the topics proposed by the content teacher and related to experiments carried out in laboratory sessions (Organic Chemistry), and to the work in a laboratory (Physical Chemistry). In the case of the

scientific poster, it is presented in the class of Introduction to Laboratory Work. These tasks are not only multi-layered but they link two content courses and thus encourage students not to see each subject as a separate unit. Such interdisciplinary projects require a close cooperation not only between content and languages teachers but also between various content lecturers and the contents they teach. From the CLIL point of view, these tasks are cognitively challenging, students learn new content and communication processes are evident. But what about culture, the 4<sup>th</sup> C?

#### 4. CULTURE IN PHARMACY?

During one of our CLIL workshops for content teachers, the comment of one of pharmacy lecturers in reference to the 4Cs framework was: “But how can I integrate culture in chemistry? If you make a solution in a laboratory, you do the same thing all over the world”. Indeed, teachers may find cultural issues irrelevant to contents full of symbols and formulas. As pointed out by Wiesemes (2009: 50), culture is “probably the most difficult and the vaguest element in Coyle’s model”. Coyle *et al.* (2010) note that it is sometimes viewed as the “forgotten C” and recognise the need of its further exploration as in today’s world its importance will increase.

Including the cultural component does not mean teaching facts about the target language culture if we understand the concept of culture as, for example, shared “beliefs, meanings and behaviours” (Byram 1997: 39). The 4<sup>th</sup> C refers to intercultural awareness and citizenship and aims at developing intercultural competence and understanding in our students. Our task is to change the idea of culture not only in students but first of all, in content teachers. Apart from that, the link between language and culture is inseparable and therefore “(t)eachers of language need to become teachers of language and culture” (Byram 2009: 331). In the above-described tasks, the cultural component may refer to differences in research interests or conventions related to reporting research findings. Even very technical and seemingly culture free contents may involve cultural elements students need to be aware of as future pharmacists.

Students need to see that “real world is not a laboratory” (Futter 2007). To provide high quality care, pharmacists need to be culturally competent as patients from different cultures may not share their health values. Cultural differences may refer to

beliefs about illnesses; attitudes to medications and treatments as well as pharmacists, or communication patterns (O’Connell *et al.* 2009). Even though most people relate culture to race and ethnicity, one’s identity is defined by various social groups one belongs to, for example, academic or professional culture. As noted by O’Connell *et al.* (2007: 1063-1065):

[...] students must also understand that they belong to a professional culture –a culture of biomedicine–. [...] This culture has its own language, a strong belief in technology and medical science [...] (t)hus, in addition to personal cultures, the biomedical professional culture itself can create ethnocentrism.

We should also bear in mind that not all the members of a given group are the same and there is a risk of cultural stereotypes which in this case may lead to inappropriate decisions on pharmaceutical care (O’Connell *et al.* 2007: 1063, Bazaldua & Sias 2004: 163).

Concerning the 4<sup>th</sup> C in our Pharmacy courses, I would like to mention one article selected by the content teacher of Parasitology for its content but which proved to have cultural implications. This up-to-date and linguistically accessible article entitled “Chagas disease in European countries: the challenge of a surveillance system” (Basile *et al.* 2011) is a report on Chagas disease among Latin American migrants in the nine European countries with the highest prevalence of this disease, including Spain. The article highlights the need to provide efficient detection and management of this disease as well as other problems that a pharmacist may face in his professional life. 75% of cases in Europe are expected to occur in Spain, and the article emphasises Spain’s role in its prevention and control, also due to its linguistic and cultural links with Latin American countries. Finally, one of the proposals for affected countries is “(t)o reinforce the teaching on international health and tropical diseases in the curricula of health sciences in European Universities” (Basile *et al.* 2011: 8). Thus, students learn through English about their own country and its situation in Europe. They learn not only facts about the disease in question but may be encouraged to reflect on migration and cultural implications related to illnesses and their treatment. Considering the above-mentioned cultural issues concerning Pharmacy, this article is a good example of a resource that may contribute to raising cultural awareness and understanding in students.



## 5. CONCLUDING REMARKS

To conclude, the present paper has described only some of the activities planned by content teachers of Pharmacy in cooperation with the English language teacher and further analysis is required to fully evaluate their didactic potential. It may seem difficult to apply all the principles of the 4Cs framework for CLIL in tasks and activities for pharmacy students, but all in all, some balance can be found between all of them, including culture. The fourth C may seem fuzzy at the beginning or even irrelevant, but careful selection of materials may help us educate culturally sensitive and competent pharmacists, and the CLIL methodology seems to offer a valuable contribution towards this aim.

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