

CLIL in Pharmacology: Enabling Student Voice

AICLE en farmacología: atendiendo la voz de los estudiantes

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CLIL em farmacologia: ouvindo a voz dos estudantes

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PP. 313-338

DOI: 10.5294/laclil.2020.13.2.7

VOL. 13, No. 2, JULY-DECEMBER 2020

e-ISSN: 2322-9721

LACLIL ISSN: 2011-6721

Received: 24/04/2020

Sent to peer review: 26/05/2020

Accepted by peers: 01/07/2020

Approved: 10/08/2020

DOI: 10.5294/laclil.2020.13.2.7

To reference this article (APA) / Para citar este artículo (APA) / Para citar este artigo (APA)

Filice, S. (2020). CLIL in pharmacology: Enabling student voice. *Latin American Journal of Content & Language Integrated Learning*, 13(2), 313–338. <https://doi.org/10.5294/laclil.2020.13.2.7>

ABSTRACT. Over the past decades, the integration of content and language in education has been gaining ground in different design formats and at various levels of education worldwide. This study describes a pilot project carried out at the School of Pharmacy of an Italian University, using a partial-CLIL format, as this was the only model accepted for experimentation by the School. The terms *partial CLIL* and *adjunct CLIL* describe different degrees of integration. Since this was the first trial with students from the Pharmacy program, the main concern was finding out how they would respond to such an “innovative” approach. Despite the plethora of literature available on CLIL in higher education, there is a lack of research regarding students’ views on the issue; no consideration seems to be given to the main protagonists who undergo this “novel” approach. Hence, the aim of the study was to seek students’ voice on the experience—their thoughts and feelings. Student perceptions are essential for future didactical applications. A mixed method approach to data collection was employed to give strong validity to the data (direct observation, focus group interview followed by a survey questionnaire). The preliminary findings gathered from the qualitative and quantitative analysis contribute positively to the organization of CLIL courses in higher education. Overall, the results reveal positive student views, but, at the same time, encourage reflections for teachers and stakeholders on how to prepare students for CLIL lessons and on structuring CLIL programs for future implementations.

Keywords (Source: Unesco Thesaurus): Partial CLIL; modular CLIL; student voice; internationalization; lecture modality.

RESUMEN. En las últimas décadas, la integración del contenido y el lenguaje en la educación ha ido ganando terreno en diferentes formatos didácticos y a varios niveles de educación en todo el mundo. Este estudio describe un proyecto piloto realizado en la Facultad de Farmacia de una universidad italiana, utilizando un formato de Aprendizaje Integrado de Contenidos y Lenguas Extranjeras (AICLE) parcial, el único modelo aceptado por la Facultad para la experimentación. Los términos *AICLE parcial* y *AICLE modular adjunto*, describen diferentes grados de integración. Dado que se trataba de un primer ensayo con estudiantes de farmacia, la preocupación principal era descubrir cómo responderían a un enfoque tan “innovador”. A pesar de la gran cantidad de literatura disponible sobre AICLE en educación superior, existe una falta de investigación respecto de las opiniones de los estudiantes sobre el tema. Es como no tener en consideración a los principales protagonistas que se someten a este enfoque “innovador”. Por lo tanto, el objetivo fue investigar sobre las mencionadas opiniones, sobre sus experiencias, pensamientos y sentimientos. Las percepciones de los estudiantes son esenciales para futuras aplicaciones didácticas. Para la recopilación de los datos, se empleó un método mixto con el fin de proporcionarles mayor validez (observación directa y entrevista a grupos focales con sucesivo cuestionario de encuesta). Los resultados preliminares obtenidos del análisis cualitativo y cuantitativo contribuyen positivamente a la organización de los cursos AICLE en la educación superior. Los mismos revelan, en general, opiniones positivas, pero al mismo tiempo estimulan reflexiones en los maestros y en las partes interesadas sobre cómo preparar a los estudiantes para las lecciones de CLIL y sobre la estructuración de los programas de CLIL para implementaciones futuras.

Palabras clave (Fuente: tesauro de la Unesco): AICLE parcial; AICLE modular; voz de estudiante; internacionalización; modalidad de conferencia.

RESUMO. Nas últimas décadas, a integração de conteúdo e linguagem na educação vem ganhando espaço em diferentes formatos de ensino e em diversos níveis de ensino no mundo todo. Este estudo descreve um projeto piloto realizado na Faculdade de Farmácia de uma universidade italiana, usando um formato parcial de Aprendizagem Integrada de Conteúdo e Línguas Estrangeiras (CLIL), o único modelo aceito pela Faculdade para experimentação. Os termos *CLIL parcial* e *CLIL modular adjunto* descrevem diferentes graus de integração. Como se tratava de um primeiro ensaio com estudantes de farmácia, a principal preocupação era descobrir como eles reagiriam a uma abordagem tão “inovadora”. Apesar da grande quantidade de literatura disponível sobre CLIL no ensino superior, faltam pesquisas sobre as opiniões dos estudantes sobre o assunto. É como não levar em consideração os principais protagonistas que se submetem a essa abordagem “inovadora”. Portanto, o objetivo foi investigar as referidas opiniões, suas experiências, pensamentos e sentimentos. As percepções dos alunos são essenciais para futuras aplicações de ensino. Para a coleta de dados, foi utilizado um método misto para conferir maior validade (observação direta e entrevista a grupos focais com questionário de levantamento sucessivo). Os resultados preliminares obtidos na análise qualitativa e quantitativa contribuem positivamente para a organização dos cursos CLIL do Ensino Superior. Estes geralmente revelam opiniões positivas, mas ao mesmo tempo estimulam a reflexão de professores e partes interessadas sobre como preparar os alunos para as aulas CLIL e sobre a estruturação de programas CLIL para futuras implementações.

Palavras-chave (Fonte: tesauro da Unesco): CLIL parcial; CLIL modular; voz do estudante; internacionalização; modo de conferência.

Over the past decades, the integration of content and language has become a very popular trend in education worldwide. Various types of experimental projects are being carried out in Italy at different levels of education, usually with some caution. In fact, first steps toward this methodology have been of the partial CLIL-types, especially in higher education. Greere and Räsänen (2008) use the terms *partial CLIL* and *adjunct CLIL* to describe different degrees of integration. The term *partial CLIL* refers to courses that are offered by subject specialists, in which language learning is expected to take place due to exposure. In this attempt, the outcomes are not specified, and the aims and criteria remain implicit. However, one aspect that is often not taken into consideration when experimenting with innovative approaches is student views on its implementation, whereas studies do exist regarding teachers' perspective on CLIL practices (see McDougald, 2015; Perez-Crespo, 2015; Verjano-Chicote, 2017; Milla-Lara & Casas-Pedrosa, 2018). Yet, receiving feedback from the students is vital for any future applications. This prompted us to investigate how the students perceive and or accept the inclusion of this methodological approach in their non-linguistic discipline degree courses.

In the Italian University context, the instructional method commonly used is the lecture format, usually accompanied by visual aids such as PowerPoint presentations. In addition, since the final exam involves two parts, i.e., a written section followed by an oral component, discussions and open-type questions are encouraged during lessons. Thus, to a certain extent, during the lectures, there is some interaction: some degree of active participation despite the current teacher-directed lecture format. Yet, traditional teacher-led lessons that impart knowledge to the learner is not a characteristic of the constructivism-based CLIL approach. For this reason, the experiment involved a partial CLIL-type project in a core program of study with the presence and collaboration of both the discipline professor and the language instructor. Moreover, the CLIL programs implemented over short periods of time are called "modular CLIL" (see Wolff, 2009) and defined by Wolff (2009) as "an approach to teaching content in a foreign

language in non-language subjects over shorter periods of time” (p. 552). It has been introduced in many schools recently because of time and financial factors: It can be implemented fairly quickly, and it is not very expensive. A teacher decides to teach part of the curriculum/syllabus of a non-language subject (organized in modules) in the learners’ mother tongue and another part in a foreign language. In modular CLIL, teachers are responsible for the choice of the topics they intend to work on in the foreign language. According to Wolff (as cited in Papaja, 2014, p. 12), modular CLIL makes learners understand the importance of a foreign language, especially when dealing with different content subjects, and helps learners to become more aware of language register; moreover, it can be attractive and motivating for the language learning processes. Modular CLIL “serves as a bridge between traditional language teaching on the one hand and regular CLIL on the other” (Wolff, as cited in Papaja, 2014, p. 12). Wolff (2005) adds that “in order to deal with the content in the foreign language learners have to acquire both knowledge and skills which are necessary to manipulate this content” (Wolff, 2005, p. 10).

After discussing why CLIL should be introduced in the School of Pharmacy and why student voice is so important in education, implementation of the CLIL project in the University’s instructional setting will be briefly contextualized. Finally, a focus will be placed on the pilot study using a mixed method research approach with discussion on its findings.

Why CLIL in the School of Pharmacy?

Significant changes have occurred over the past decades in socio-economic and educational contexts worldwide. Factors such as a rise in mobility, technological advances, the globalization phenomenon, and the move towards internationalization of education have had a definite impact on education, in general, and on language teaching, in particular (Filice, 2012, p. 32). Indeed, the current globalized multilingual world environment requires university graduates to be communicatively competent in a foreign language in order to succeed in their professional field (see Atamanova & Bogomaz, 2011, p. 102). The fact that today’s societies are becoming increasingly interconnected and

interdependent has influenced educational curricula at all levels of instruction (Filice, 2012, p. 33). Furthermore, such intensified interaction and integration imply that, in order for individuals to relate to one another, they must be knowledgeable: They should be able to communicate content in “the language of the other” within diversified contexts. The objective behind this is to create informed citizens “able to discuss, debate, legislate and appropriate intelligently” (Stavrianeas & Stewart, 2011, p. 35) with regard to subject specific matters such as health issues, global warming, digital economy, or stem cell research.

The need to attract international students, promote teacher-student exchanges and ultimately adapt higher education institutions to the new demands of the job market, have favored the rapid implementation of content and language integrated classrooms (CLIL) in a myriad of contexts (Dafouz et al., 2007). Moreover, this method is expected to empower students with skills that enable them to gain access to the increasing amount of specialized, first-hand information published in English.

CLIL serves as a route from a language oriented to everyday content to a formal language of professional and international content. However, “knowing how to use language in one context does not necessarily mean knowing how to use it in another”, says Genesee (1994, p. 9). Regarding scientific education, it implies taking possession of specific meanings, domains and registers. For instance, some advanced academic domains, such as pharmacology or pathology, need narrative registers in order to be expressed. In addition, Pharmacy students need to be prepared to understand the latest literature and look for information about scientific advances, which nowadays are published mainly in English (Alberch, 1996; Hamel, 2007).

As a result of international and global collaborations, English has, for decades now, become the lingua franca for information exchanges in practically every field of study. Moreover, English as a scientific language is pervasive and is required in all spheres of professional life worldwide. However, only recently has it become the most widespread instructional language in higher education (Wilkinson, 2004; Seidhofer, 2004). Indeed, in formal international scientific settings, English facilitates global academic exchange, advancement of knowledge, and career advancement and mobility (Montgomery, 2004, p. 1334).

English comprehension in the medical sector is vital for health practitioners in order to be up-to-date with current innovations, understand ongoing discourses and participate in the medical community. Moreover, pharmacists are increasingly confronted with English in their daily actions, since medical documentations within hospitals and pharmacies are sometimes conducted in English, and information or recommendations on the use of medicines are often provided in English. More importantly, English is the bridging language for collaborating with international teams, for communicating with colleagues of different backgrounds and interacting with non-native patients who might not be able to communicate in the official mainstream language.

The value of student voice

Why is student voice so important? Since there is always a significant gap between what works in *theory*, and what happens in *classrooms*, nothing should be taken for granted, and what might seem obvious needs to be verified.

Leanne Martin (2017), in “Why student feedback is so important?” asserts the following:

There should be no debate in education as to the value of student feedback in improving outcomes. Since John Hattie’s (2009; see also Hattie & Timperley, 2007) comprehensive meta-analysis of “what works” in driving student outcomes, “feedback” has been empirically established as the single biggest driver of improvement. Given the persistent recurrence of “feedback” as a vital component of successful learning and development across fields, there is little cause to question whether or not the value of feedback would translate to be as valuable for teachers as it is for their students. And, indeed, evidence shows that to be true. (March 20, 2017).

Strengthening student voice allows students to give their input to what happens in the classroom, empowering them to become active members of their academic community. Undeniably, student-feedback is a valuable source of information that provides a wide range of benefits (see Rudduck 2005; Toshalis & Nakkula, 2012), among which are: 1) improving teacher effectiveness because teachers gain comprehensive insight into how students are learning and responding to teaching practices; and 2) improving students’ outcomes because increasing

teacher effectiveness impacts positively on student outcomes (see Martin, 2018). Feedback gives students a voice and makes them feel strongly engaged with their learning because they feel their voice matters. This can be done, for example, through student surveys, as well as providing them with opportunities for discussions and reflection on how learning takes place. Engaging everyone helps build positive relationships in addition to improving teaching practice and, ultimately, student outcomes.

According to Fleming (2013), student voice is an emergent and complex concept that refers to students in dialogue, discussion and consultation on issues that concern them in relation to their education, but, in particular, in relation to pedagogy and their experiences of schooling. The concept describes a wide range of themes, such as that of teachers seeking advice and inviting opinion, perspectives and perceptions from students, a theme that emerges throughout student voice literature (Rudduck, 2007, 2005; Rudduck & Flutter, 2000, 2004; Fleming, 2013, 2015; Cook-Sather, 2006; Mitra, 2003; Fielding & McGregor, 2005; Fielding, 2011; Czerniawski & Kidd, 2011; Grion, 2017). In fact, Fielding and McGregor (2005) specify: “student voice covers a range of activities that encourage reflection, discussion, dialogue and action on matters that primarily concern students” (p. 2). Likewise, Grion and Dettori (2014) emphasize the fact that inviting student voice provides sources of information and points of view to take into consideration when reflecting on how to improve teaching and learning practices.

It should be our responsibility to create opportunities to enable student voice and participation within our pedagogies to increase student ownership and create space for practices to be challenged. The purpose of such case studies is pedagogic: with the intent to illustrate a range of practices and principles, to create rapport with students and encourage open communication, to give students an active and explicit role in facilitating changes to enhance or improve their learning.

Contextualizing the CLIL project

A brief note on the university teaching format

In general, the university teaching context is extremely broad and complex. In the 21st century, lecturing is still the most widely used

instructional mode in which the speaker imparts his view on a subject. Lectures can be challenging, even for mother tongue speakers. In scientific education, this implies taking possession of specific meanings, domains and registers. In this respect, Short (1994) emphasizes that the way language is used in some academic domains, such as mathematics, is not the same way it is used in other academic domains, such as pharmacy and nutritional science. What results from CLIL contexts is not the passage from one academic domain to another, but the passage from a language that is oriented to everyday content to a formal language content. As Keck and Biber (2004) point out, “students encounter a wide amount of registers in university settings, lectures, textbooks, study groups, course syllabi and other contexts and understanding the stance expressed in these various settings is obviously crucial to academic success” (p. 4). This represents a tremendous challenge in a university’s updated curriculum, sometimes leading teachers to consider that learners who are taught content subjects through a foreign language are not able to grasp the key scientific concepts. On the other hand, being able to speak and reason about academic content in a language different from their own gives students the chance to expand their cognitive skills and use more sophisticated language. Kasper (1997) further states, “Each time students read a discipline-based text, they learn something new about the English language and the academic discipline” (p. 318).

Although it is not our intention herewith to discuss the value of lectures as a mode of academic teaching (for further insights on the issue, see French & Kennedy, 2016), it is, nevertheless, important to underline the fact that the reasons why lectures predominate in higher education are varied: “lectures can accommodate large numbers of students, they can convey considerable amounts of information to large audiences with relative efficacy, and they can be adaptable to divergent needs” (Dafouz et al., 2007). By contrast, they do not seem to promote higher-order skills, such as conceptual understanding, independent learning or problem-solving activities, and they are seldom interactive (Saroyan & Snell, as reported in Dafouz et al., 2007).

CLIL set-up

This pilot project spanned a three-week period over the entire semester. A pharmaco-biologist professor and the English language teacher decided to work together on part of the Pharmacology module. The content professor, who speaks English fluently, delivered his regular 2-hour lessons in lecture format in English (total of 12 hours). To facilitate comprehension of science concepts, the English instructor pre-taught key vocabulary in the regular 2-hour English class prior to each content lecture. During the content lesson, the science professor would ask questions to ascertain that students were following the content discourse. Likewise, students were encouraged to interrupt and ask questions whenever a concept was not clearly understood. Naturally, all discourse took place in English. The English teacher was always present and intervened only when absolutely necessary, i.e., complete misunderstanding of a scientific concept. During the post-lecture English lessons, the English teacher discussed the content by reviewing some aspects that were difficult to grasp in the L2.

Pilot study

Aims

The focus of this small-scale research was to obtain feedback from students to find out their points of view, their feelings and perceptions about the overall experience, as well as get insights for preferences for future initiatives of this type. Thus, the general objectives of the study were basically threefold:

- to find out the viewpoints of Pharmacy students on the CLIL approach implemented in their degree program (in terms of effectiveness, comprehensibility, satisfaction, usefulness, etc.);
- to discern how confident they felt about receiving their subject in English and identify any difficult aspects they encountered;
- to ascertain their preferences and expectations about future initiatives in this direction.

Participants

The participants involved in the study were enrolled in the second year of their 5-year degree in Pharmacy. In their program of study, they

had a mandatory 5-credit English course, as well as the Pharmacology course. The students following the Pharmacology course were 150, subdivided into groups of 40-50 for English language classes, and came from different backgrounds: The majority were Italian native speakers from southern Italy, but there were also 6 Africans from Burundi and Kenya, 30 Chinese, and 6 Indonesians. The level of English ranged between A2-B2 Lower including the foreign students who also had the added disadvantage of not understanding the Italian language. Essentially, from an initial screening of the students by the English teacher (a common practice in the English classes), two linguistic profiles of students emerged in this course:

1. Students who had acquired Common European Framework (CEF) level B1 communication skills (i.e., Basic Interpersonal Communication Skills [BICS]—see Cummins, 1979, 1981, 2008) from introductory ESL courses but who had yet to acquire the academic language skills related to their degree course;
2. Students who, while having developed basic academic language skills in their mother tongues and CEF level B1 proficiency in English, still had difficulty in transferring concepts and skills from their first language to English.

It is important to underline that, although the majority had reached a desirable level of basic interpersonal communication skills, no one had acquired any Cognitive, Academic Language Proficiency (CALP—see Cummins, 1979, 1981, 2008) in L2, in fact, this was their first experience with content lectures in English.

Method and procedure

This study employs a mixed method approach to data collection in which both qualitative and quantitative phases of research are mixed to achieve complementarity (Riazi & Candlin, 2014). This expands the explanatory power of the study, since different methods are used to examine different levels of the issue and interpret different aspects or layers of the phenomenon (Mark & Shotland, 1987). A multilayered and multi-dimensional view allows drawing information from various sources enriching and adding to previous data. In the present study, a quantitative survey instrument is used to compare its data

with interview-generated data and teacher observations challenging both corroborative (as in triangulation) and integrative (as in complementarity). Such integration enhances explanatory and interpretative standpoints. Howe (2012) departs from triangulation and extrapolates to other purposes, such as complementarity, both of which require researchers to explore the dynamic relationship between different layers and facts of the issue under study. Such an approach, according to Mason (2006, p.10), forces the researcher to “think outside the box,” to develop multi-dimensional ways of understanding and to deploy a creative range of methods in the process.

At the end of the CLIL experimental lectures, a qualitative enquiry was carried out by means of a discussion group to document feelings and impressions of the students. As Morgan (1997) puts it: “the hallmark of focus groups is their explicit use of the group interaction to produce data and insights that would be less accessible without the interaction found in a group” (p. 2). The group discussion, sometimes called a “focus group interview” (Hatch, 2002, p. 134), served as a preliminary stage of the research process. The participants were asked to freely express their perspectives and concerns about their first CLIL experience: in other words, an open-ended approach with no forced-choice answers. The research instrument in such a case was the teacher as participant-observer with an unbiased involvement interested in listening to the students’ voice, exploring and discovering the outcome of the CLIL situation.

The first part of the study was followed by a questionnaire in which students quantitatively voiced their opinion on several pre-established points. The questionnaire was organized in statements using a 5-point Likert scale indicating degrees of agreement (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree).

This study is based on original data, which, according to Brown and Rodgers (2002), means that the researcher collects data himself by using questionnaires, interviews, observations and even students’ journals. This helps teachers gain a rich understanding of interrelated factors involved in promoting learning. It further aids teachers to see how the ways they organize learning environments can promote or inhibit growth (Johnson, 1992, p. 5) and, as McKay (2006) asserts, it can contribute to more effective teaching.

Findings: Student views

Qualitative phase

The first part of the study, which involved qualitative feedback from teacher observation and from the discussion groups (i.e. for the language lessons, the 150 students were divided into 4 groups, each group meeting twice a week for 2-hour lessons), yielded numerous feelings and opinions. The handwritten observations made by the teacher during the lectures were all corroborated by the voiced comments made by the students during the focus group interview. The most significant and recurrent student comments relevant to the CLIL experience are reported in their authentic version in Table 1 below. Each comment was voiced by a minimum of 10 students or more.

Table 1. Qualitative feedback: Key student-comments

No. of Comment	Student Comment
1.	"At the beginning, I was afraid and anxious of not understanding the professor."
2.	"Having the course in English constitutes an advantage for my future."
3.	"Provides a broader access to content material."
4.	"Aids/simplifies accessing information on a global scale."
5.	"Can contribute to job market competition."
6.	"Each time I felt a bit more competent in English."
7.	"It gives me the opportunity to see things from a different perspective."
8.	"I feel a bit more confident now about my English abilities."
9.	"The visuals used by the prof really helped me understand the material better."
10.	"Studying the vocabulary with the English teacher in advance helped me understand the lectures."
11.	"We should not be forced to take content courses in English."
12.	"It was fine because I didn't have to worry about my English grammar."
13.	"I didn't feel comfortable speaking in front of a large group."
14.	"Reviewing the content of lectures in English class with English teacher after the lectures was really useful."
15.	"Following the lecture in English was not easy especially because I was trying to take notes."
16	"I was more concerned about the science concept than the correct grammar structures."

No. of Comment	Student Comment
17.	"I found it very different from the general English course we took previously."
18.	"I would prefer short seminars during the English classes so that I can internalize better the concepts in the foreign language."
19.	"I would feel more comfortable if CLIL lessons were conducted as seminars in smaller groups rather than big lecture style format."
20.	"I would like to do experiments in English in the science laboratory."
21.	"It was difficult to listen and concentrate for 2 hours in English. Sometimes I missed some points."

Source: Own elaboration.

As Table 1 illustrates, most of the comments that emerged from the discussion group were positive in that they felt CLIL courses were an advantage for their future careers. However, a few students, mostly the weakest, felt they should not be forced into following content courses in English (comment 11), as they have no intention of working abroad, and that it is their right to have courses delivered in Italian. They also voiced comments on the difference between the EFL English classes and CLIL classes (comments 16, 17). In fact, the students pointed out that, in the EFL classes, the focus was more on grammar and proper English, whereas, in a CLIL context, understanding the science concept was more important than using English properly. In the EFL class, students try to communicate in grammatically correct phrases and to add more elaborate expressions. However, in the CLIL context, the aim is to remain technically and conceptually correct. In other words, the science concept must be understood and, in turn, transmitted correctly by the student. Even though the grammar structure is not correct, the content words must be correct (form becomes less important than function). In addition, some students did not feel comfortable asking questions in English and participating actively due to the large-size class group and the feeling of embarrassment about making mistakes in the target language (comments 1, 8, 13 and confirmed by direct teacher observation). Moreover, they found the visual aids and the extra support on the part of the English teacher an advantage. A very important and recurrent point is the fact that they found

it difficult to take notes in English (comment 15 and observed also by the teacher), in part due to the length of the seminar, and hence, consequent concentration on the part of the students. However, one student with advanced English competence voiced her own opinion, highlighting the fact that the challenge of CLIL lessons increased her personal expectations. They also voiced suggestions and preferences for future CLIL inclusion in their curricular modules. In fact, they specified the preference for shorter seminars in smaller groups, rather than the long lectures, and they suggested bringing CLIL into the science laboratory (for example, chemistry lab) in the future for carrying out experiments in English. Latching on to the lecture mode of delivery, it is possible to consider Bligh's (1971, p. 162) proposal to promote thought in large lectures, i.e., through the inclusion of visual displays, handouts, and pre-reading requirements, as well as a reduction in speed to allow for thinking time. He further suggests that thought can also be stimulated by problem-centered lectures that present a chain of argument and require students to follow a line of reasoning.

Quantitative phase

In the survey follow-up, 139 out of 150 students submitted the anonymous questionnaire comprised of 22 statements using the 5-point Likert scale (as previously indicated). As we can see in Table 2, EFL lessons are considered easier (76%), more important and necessary for the students' everyday life (85%), and more beneficial (85%) than the CLIL lessons. At the same time, students describe CLIL lessons as being more stimulating (83%), hence more motivating and inspiring, and more challenging (87%), thus more thought-provoking and equally more demanding (87%); in other words, harder yet more useful for their career (93%) with respect to general English lessons.

Interestingly and unexpectedly, almost all the students feel strongly (97%) about the fact that Content and Language Integrated Learning should start prior to tertiary education at all levels of the education system (Table 3). More specifically, they place high school at the top of the list (95%), followed by middle school (86%) and, finally, 76% think it should start at the primary-school level. Surprisingly, however, when asked if CLIL courses should be optional or compulsory at university, 90% replied "optional" (comment 12).

Table 2. Descriptive evaluation of EFL vs. CLIL

Item	Likert scale: 1 = strongly disagree, 5 = strongly agree				
	1	2	3	4	5
1. I find EFL lessons easier than CLIL lessons.	6%	8%	10%	6%	70%
2. I think general English competence is more important and necessary in my life than CLIL lessons.	4%	4%	7%	10%	75%
3. I think EFL lessons are more beneficial for me than CLIL lessons.	3%	3%	9%	9%	76%
4. I find CLIL lessons to be more useful for my future career.	0%	2%	5%	12%	81%
5. I find CLIL lessons more stimulating than EFL lessons.	3%	5%	9%	18%	65%
6. I find CLIL lessons more challenging than EFL lessons.	4%	4%	6%	19%	67%
7. I find CLIL lessons more demanding than EFL lessons.	3%	4%	6%	16%	71%

Source: Own elaboration.

Table 3. CLIL inclusion in Education

Item	Likert scale: 1 = strongly disagree, 5 = strongly agree				
	1	2	3	4	5
8. I think CLIL courses should start prior to tertiary education.	0%	1%	2%	10%	87%
9. I think CLIL should be introduced at the primary-school level.	8%	7%	9%	6%	70%
10. I think CLIL should be introduced at the middle-school level.	5%	4%	6%	5%	81%
11. I think CLIL should be introduced at the high-school level.	0%	2%	3%	7%	88%
12. I think CLIL courses in university should be optional not compulsory.	1%	4%	5%	10%	80%

Source: Own elaboration.

In Table 4, we can see that the majority of the students (88%) were able to understand the global meaning of the lectures. As was

expected, they found the lectures easy to understand when simple language structures and familiar scientific lexis were used (see statements 14 and 15). On the other hand, comprehension was problematic when unfamiliar technical vocabulary and complex language structures were employed (see statements 16 and 17). Interestingly, 29% found their English language knowledge insufficient to follow the content course. More importantly, 79% indicated that they had problems in taking notes in L2. This could be due to several reasons: They had not mastered note-taking skills in L2 (which implies lack of listening skills), length of the lecture and thus, concentration levels in L2, or lack of advanced language competence. Although 75% managed to grasp all the conceptual content, 95% admitted that they are not used to listening to long lectures in real-time in English and 93% highlighted the difficulty in listening and taking notes simultaneously in L2 because of the immediate concentration required.

Table 4. Learner comprehension/learner descriptors/learner strategies during CLIL lectures

Item	Likert scale: 1 = strongly disagree, 5 = strongly agree				
	1	2	3	4	5
13. I understood the global meaning of the lectures.	1%	4%	7%	9%	79%
14. I understood the simple language structures used in the lectures.	1%	7%	7%	8%	77%
15. I understood the familiar scientific lexis used in the lectures.	1%	6%	6%	9%	78%
16. I understood the unfamiliar technical vocabulary used in the lectures.	20%	15%	4%	7%	54%
17. I understood the complex language structures used in the lectures.	18%	12%	5%	6%	59%
18. My English knowledge was sufficient to follow a content course in L2.	15%	14%	4%	5%	63%
19. I had difficulties taking notes in English during the lecture because it required more effort on my part.	7%	8%	5%	8%	71%
20. I was able to grasp most of the content concepts in English.	8%	13%	4%	5%	70%

Item	Likert scale: 1 = strongly disagree, 5 = strongly agree				
	1	2	3	4	5
21. I am not used to listening to long lectures in English in real-time.	0%	0%	5%	12%	83%
22. It was hard to listen to lectures and at the same time comprehend everything in English because it requires here-and-now concentration.	1%	2%	4%	11%	82%

Source: Own elaboration.

Discussion

Although no one mentioned difficulty in decoding the English pronunciation of the subject professor, mention was made regarding difficulties connected with text and lecture length and their syntactic complexity (in both oral and written contexts). Lectures can be hard work because they are a one-off performance and, therefore, lapses in concentration may occur.

Another evident weakness that arose from direct teacher observation during the lectures is that students have difficulty in transferring concepts and skills from their first language into English. Overall, the fundamental difficulties that emerged from the focus group discussion, the survey and in-class observations can be grouped in three dimensions:

- linguistic: essentially related to L2 competence, L2 comprehension, use of L2;
- discipline: related to the course content (Pharmacology) and its conceptual complexity;
- learning: connected to the situation/format of the lesson, large group size, duration of each lecture.

At a more general level, the focus group interviews demonstrated that students are very capable of reflecting on their educational experience in terms of its material and organizational conditions, in addition to their own learning strategies (for example, note-taking skills) and behaviors (for example, managing study skills, level of propensity

towards innovative approaches), which could be further investigated in future studies. Though the results provided by the survey are not conclusive about the success of English Content courses in Pharmacy, they provided interesting preliminary indications about the significance and perception of the course typology.

Although the CLIL experiment was positive, the study revealed a few drawbacks. It was evident, through teacher observation during the CLIL lesson, as well as the group discussion, that difficulties on the part of the weaker students were in language production, especially in formulating questions and in describing science concepts. Most of the students demonstrated difficulty in using the language spontaneously during the lecture. Thus, it is advisable to prepare students in advance by arranging specific guided activities on the topics of the lecture (e.g., debates, discussions, etc.) to encourage spontaneity in smaller groups during their ELT lessons. These types of activities are, for the most part, generally avoided in the ESL class, as they are time-consuming, given the time-constraints of the English course syllabus. Yet, such prior practice would not only help students transfer their cognitive abilities in L1 into the target language, but also aid in overcoming shyness in front of a larger audience. Moreover, the findings vividly indicate that pedagogical practices need to incorporate note-taking skills, which means more listening activities in the English lessons; listening activities are also very often neglected due to limited time factors.

CLIL is also referred to as education through *construction*, rather than *instruction*. Unfortunately, the lecture-style CLIL module that was realized in this project does not reflect such a concept. This experience revealed that CLIL classrooms require interaction, dialogue, and learning-by-doing activities, which can be best carried out in smaller class groups. As expected, the lecture-type situation was not conducive to engaging students in collaborative enquiry, constructing learning, working in groups effectively and working with problem solving through the medium of another language. The large-lecture-style format constituted a weakness that highlights the need for scaffolding techniques to facilitate comprehension. In light of the above, it is important to point out that, after a first attempt with f2f lessons in lecture format, it would be interesting and beneficial, in the School of Pharmacy, as a future initiative, to move a step further and bring CLIL on the field. By

contextualizing the use of the language in the science laboratory, it becomes a real and not artificial setting. In fact, the students suggested that this would help them feel that the language they use has a concrete goal, which latches on to the third aim of expectations.

Learning content (inherent in naturalistic language learning) represents a meaningful, contextualized activity that increases interest and encourages students. However, merely integrating language and content in the classroom is not a guarantee for success. Further experimentation is needed with different models of CLIL, and consideration should be given to outcomes of such empirical studies. Specification of language objectives and careful and systematic planning as well as coordination of the language and content curriculum and/or teachers must also be carried out (Snow et al., 1989, p. 204). It is hoped that the findings of this pilot project will contribute to finding the most effective approaches for successful CLIL implementation in university settings in order to enhance learning. Besides, enabling “voice” empowers participants as agents within teaching and learning cultures, and allows for reciprocal learning experiences. By recognizing the importance of students’ investing and exploring their personal stance in the learning process, it is possible to generate opportunities for increased student ownership, responsibility and coproduction in teaching-learning processes (see Belluigi, 2015).

Conclusion

Learning pharmacology in a foreign language requires a shift in language knowledge, skills and understanding needed—not only the language of the science content, but also language for learning. In fact, Wolff (2005) states that “in order to deal with the content in the foreign language learners have to acquire both knowledge and skills which are necessary to manipulate this content” (p. 10). Thus, CLIL invites a re-conceptualization of how we consider language use and learning. It should enable expanding an integrated educational approach which actively engages the learner in using and developing the language of learning, the language *for* learning, and language *through* learning.

The most significant point, as Cummins (1994, p.42) remarks, is that all teachers are teachers of language and content. A CLIL context, even at university level, which is set up according to modern educational principles is a kind of workshop in which learners are not simply swamped with knowledge, but also in which the reality of the classroom is connected with the reality of the world outside (see Barnes, 1976), for example, the world of medicine and health sciences. Using English as a vehicular language to teach a particular biopharmaceutical course corresponds to the need for more contextualized language teaching, which, in this case, situates language teaching in the subject matter classroom first and then on the field (i.e., laboratory and healthcare updates) and, in return, engage students in the discussion of bio-pharmaceutical content through the vehicular language.

Pharmacy students read English texts from the first year, not only to learn the language, but mainly to begin to acquire and store “knowledge” of the subject-content. This makes the whole learning process skill-oriented with respect to both language and content. However, in an English class, communicative competence is the ultimate aim of teaching and involves both accuracy and fluency; the main aim of healthcare language teaching is to develop healthcare thinking. For this reason, students need to strengthen language skills while learning specialized pharmaceutical terms. In fact, the partial CLIL experience represented a concrete opportunity and challenge for students to improve their proficiency in the foreign language without weakening content acquisition. Integration of content and language teaching should be organized in such a way that the foreign language is not used without, at the same time, referring to the learner’s native language, while dealing with a subject based content-topic, structures and lexemes are worked out contrastively. It also leads to the promotion of the learner’s first language rather than its impoverishment (see Wolff, 2005).

In times of internationalization, higher education needs to keep up with current developments and seeks to encourage students to develop professional communicative competence. In addition, it is necessary to recognize that the number of universities offering courses or programs taught exclusively in English is increasing. If it is committed to ensure outstanding learning and teaching experiences and challenging programs of study that are of international caliber, then teachers

need to know how well they are doing and what they would like to see done better. This entails activating reflective teaching practices, which involves a process of evaluation leading to modification and further investigation (see Parker, 1997). Student feedback is an important part of this process because it provides teachers with ideas and incentives to make further improvements in what teachers do in the pedagogical process. Therefore, it would be beneficial to revise current higher-education programs in order to provide high-quality education and to be competitive at a global level. Finally, university faculties should effectively consider shifting to a program that exposes them to a wide international and multilingual environment if they want their students to enter in the constantly changing society as future professionals.

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