Exploring professional collaboration at the boundary between content and language teaching from a CHAT approach

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Abstract

Different ways in which the integration of content and language emerges within higher education language policies and classroom teaching and learning are well studied in the literature, as are methods and techniques that could be useful in classrooms to scaffold the accomplishment of dual learning objectives. However very little attention has been paid to exploring the complexities emerging during collaboration at the boundary between teaching professionals from different areas of expertise, and this is potentially even more so in higher education. Attending to this gap, this article presents the first results of a professional development experience being carried out at a Catalan university promoting English medium instruction, which aimed at increasing collaboration between language and subject lecturers at the boundary of content and language teaching across degree programs. The experience involved formalised pairing-up of content and language specialists working within the same degree program for focussed discussion on the planning and implementation of their respective subjects. The experience provides insight into teacher cognition – or what teachers think, know, and believe, and the relationship this potentially has with their classroom action – and into how interdisciplinary dialogue may be supported to prompt its transformation.

Key words: higher education CLIL; interdisciplinary dialogue; teacher cognition; cultural historical activity theory (CHAT).

Resumen

Explorar la colaboración profesional en la frontera entre la enseñanza de contenidos y lengua desde un enfoque basado en la teoría de la actividad

En la literatura académica han sido bien estudiadas las diferentes formas en las que la integración de contenidos académicos y una lengua extranjera emerge en las políticas lingüísticas de las universidades y en la docencia. También lo son los métodos y técnicas que podrían ser útiles en las aulas para la consecución de los dobles objetivos de aprendizaje: contenido y lengua. Sin embargo, se ha prestado muy poca atención a la exploración de las complejidades que emergen en la colaboración entre profesionales de diferentes áreas de conocimiento, más aún si se trata de educación superior. Atendiendo a este déficit, aquí se presentan los primeros resultados de una experiencia de desarrollo profesional que se lleva a cabo en una universidad catalana que promueve la enseñanza de contenidos en inglés y que tiene como objetivo aumentar la colaboración entre profesores de lengua y profesores de contenidos específicos en la frontera entre sus respectivas actividades. La experiencia implica el emparejamiento formal de especialistas de contenido y lengua dentro del mismo plan de estudios para facilitar el diálogo sobre la planificación y ejecución de sus respectivas materias. El análisis empírico de dicha experiencia permite indagar en la cognición de los profesores – lo que piensan, saben y creen, y la relación que ésta podría tener con su acción en el aula – y en cómo el diálogo interdisciplinario podría facilitarse para llevar a la transformación de la misma.

Palabras clave: AICLE en la educación superior; diálogo interdisciplinario; cognición de los profesores; teoría de la actividad.

1. Introduction

1.1. Introducing additional language medium higher education

Different resolutions and action plans coming out of European institutions in recent decades have aimed to address issues of cultural and linguistic diversity and language learning within a context of globalisation. Such policies push for training plurilingual and pluricultural citizens ready for engaging in transnational encounters as a pillar of European cohesion and economic growth. One of the solutions to learning additional languages that has most resonated in recent times as a result of such concerns is the introduction of new languages in classrooms through different immersion approaches, or what is often referred to as content and language integrated learning (CLIL). The term CLIL was coined in the mid-1990s as an umbrella description for good bi/multilingual pedagogical approaches that could be adopted in a wide variety of educational settings, although it is most often identified with compulsory levels of education. CLIL is defined broadly as a dual-focused teaching and learning approach in which an additional language

is used in constructing both content and language knowledge (Coyle, Hood & Marsh, 2010).

The rationale supporting the adoption of this framework is multi-fold. In theoretical terms, the genesis of CLIL can be traced in communicative and socio-cultural approaches to second language teaching. In practical terms and at the institutional level, the main justifications for CLIL are based on the premise that teaching certain subject matter in another language means increasing language learning time but not decreasing content class hours; in other words, CLIL enhances higher language skills at a faster rate and without dominating the curriculum with language classes (Coyle et al., 2010). It also means that students can have higher exposure to the foreign language as well as to authentic subject-related materials and tasks in that language, all of which ultimately leads to more authentic interaction (Escobar Urmeneta, 2004). In terms of content, it is claimed that the potential difficulties or the "opacity" resulting from teaching in an additional language provide novel opportunities for engaging with the "density" of the subject matter and, hence, for knowledge construction (Gajo, 2007; Moore, Nussbaum & Borràs, 2013; Moore, 2014). Furthermore, with such intensive learning of content in other languages, it is thought that students become better prepared for future interaction in a multicultural and linguistically diverse global work force (Marsh, 2002).

CLIL at the university level in Europe remains an emerging educational context that has evolved from the same EU guidelines and language policies. Both globalisation and the Bologna process have changed the expectations for university education and for CLIL approaches to language and content teaching (Smit, 2010). Like CLIL at other educational levels, language and content integration in university curricula can appear in many different forms with models ranging from adjunct courses to simple theme-based lessons or lectures given entirely in an additional language. The choice of model depends on the aims, needs and cultural context of each centre. Unlike CLIL in primary and secondary schools, the student populations have already acquired certain academic and language skills and are preparing to become active members of more globalised professional communities. Therefore, education for students at this level should have a greater focus on language use in relevant academic and professional domains (Dafouz & Núñez, 2009). CLIL practices reflecting these needs have included theme-based language courses, Language for Specific Purposes (LSP), content-based courses and genre-based courses taught by language specialists.

A further CLIL approach that is becoming more prevalent in European university curricula is additional language medium instruction in content courses taught by content specialists (Räisänen & Fortanet-Gómez, 2008). The language that most university programs have chosen as the vehicle for such courses has been English, and thus the denomination English Medium Instruction (EMI) is commonly used (Wilkinson & Zegers, 2008). Decisions to adopt EMI courses have been based on a variety of reasons and influences, such as the impelling force of globalisation (Coleman, 2006) in which English has become a *lingua franca* among international markets and other social communities. Many universities adopt EMI courses to fulfil the student mobility goals of the Bologna process. Coleman (2006) lists further catalysts for these curricular innovations at the higher education level, such as availability of teaching and research materials, staff mobility, graduate employability, and attracting the international student market.

The higher education context in Spain – and in particular in Catalonia, where this study was carried out – parallels trends observed in the rest of Europe. The current decrease in student enrolment has had a further impact on decisions to include CLIL in the curricula; universities have sought to implement courses taught through the medium of an additional language in order to attract local future university students who are keenly aware of the language needs for employability (Dafouz & Núñez, 2009) as well as students from abroad. Undergraduate degrees that include bilingual components were initially introduced in private tertiary institutions in the mid-1990s and have only recently spread into the public universities (Dafouz & Núñez, 2009).

It would seem evident that in order for CLIL to operate effectively in university contexts, educators should recognise a need for interdisciplinary collaboration, specifically between content and language specialists, and advocate for the creation of venues through which such cooperation could thrive. Achieving this type of interaction is not an easy endeavour in a Spanish university setting, where an interdisciplary tradition does not exist (Fortanet-Gómez, 2011).

1.2. The research context

The university where the authors are employed as language specialists and where this research was conducted is no different from other universities in the European context in terms of its aims for internationalisation, though it

is set in a bilingual region where Catalan and Spanish are official, and where Catalan, Spanish and English are working languages at universities. It is a young, private university whose curriculum has included CLIL (LSP, EMI) courses in English since its inauguration in 1997, some of which are taught by language department teachers. Recent action plans have targeted internationalisation as a goal towards which stronger efforts should be placed over the next several years, aiming for at least 20% of teaching to be done in English. This places greater pressure on faculties to increase English medium content teaching. There is further pressure on faculties to ensure the quality of their content teaching in English, which is increasingly translated into a need for official certification of teachers' English level.

Outcomes and experiences of English medium content courses at the university have not been consistent. While many faculty members have expressed interest in giving full or partial courses in that language, some have spoken of disappointing outcomes. Professors and administrators alike have expressed concerns that students do not have high enough levels of English to understand the content. Other professors have perceived their own language skills to be lacking in regards to being able to lecture about material with the normal depth to which they are accustomed. Furthermore, they feel unable to 'ad lib' or share relevant and humorous anecdotes to make the material more interesting. Such views reflect those reported in other studies about CLIL in European university settings (e.g. Airey & Linder, 2006; Dafouz & Núñez, 2010; Jensen & Thøgersen, 2011).

The fact that content teachers are assuming part of the responsibility for additional language teaching places new demands on, and implies a new role for, university language departments. Apart from developing students' scientific and professional discourse competence in English through discipline specific content across degree programs and overseeing language certification processes, the language department at the university studied has also been assigned the task of improving training for professors teaching their disciplines in English; that is, to share know-how as language specialists in training content professors to teach through English. In addition to supporting general communicative competences in English and providing initial training for teaching content in English, the plan developed and put in place in the 2012/2013 academic year was designed to increase collaboration between language and subject specialists in order to boost the quality of CLIL teaching by both faculty and language department teachers. Gustafsson et al. (2011) claim that this type of collaboration is challenging

for faculty for different reasons, including those linked to infrastructural, institutional, epistemological, disciplinary and rhetorical contingencies. Precisely due to this complexity, it warrants empirical examination.

This paper presents the first results of a professional development experience being carried out at the university with the explicit goal of fomenting micro-level partnerships at the boundary of content and language teaching across degree programs. The experience involves formalised pairing-up of 1 or 2 content experts and a language specialist involved in English medium instruction within the same degree program for focussed discussion on the planning and implementation of their respective subjects. This initiative is referred to as "Development Groups for Teaching in English".

The Development Groups (henceforth DGs) were conceived – one of the authors of this paper was part of the initial conceptualisation and implementation – within a rationale of reciprocity and mutual development. The theoretical role of the expert in teaching English as an additional language, as was explained in writing to participants at the beginning of the experience, is:

- to help identify aspects of their peers' English that need development and to offer linguistic support and suggestions for self-improvement;

- to help identify aspects of their peers' performance as a teacher in English in need of development and to propose methodological strategies and insights from their own experience of managing second language classrooms;

- to draw on their peers' expertise in the teaching of academic content for the improvement of their own classroom practice and the development of relevant and up-to-date teaching/learning materials.

The role of the expert in teaching academic contents a priori is:

- to share their expertise in the academic content for the improvement of their peers' classroom practice and their development of relevant and up-to-date teaching/learning materials and methods;

- to help identify aspects of their own English that need development and to be open to receive linguistic support and suggestions for self-improvement;

- to help identify aspects of their own performance as a teacher in English in need of development and to be willing to try out new methodological strategies for managing second language classrooms.

The duration of the DGs is limited to one semester, renewable depending on participants' commitment and their on-going priorities. Groups should meet face-to-face for up to 10 hours (usually 10 meetings) within the same semester, at a time and place agreed on by the members. It is the responsibility of all members to arrange meetings, to attend them punctually, and to keep track of the time spent. Additionally, the expert in teaching academic content may request that the expert in teaching English provide revision of written teaching materials in English for up to 10 hours within the semester.

At the beginning of the experience, participants are encouraged to observe their partner's classes and to conceive of the DGs as an opportunity for collaborative action research. In its simplest form, action research is something teachers do every time they plan a class, deliver it, observe their students' performance and reflect on what needs to be done next time. In a more complex form, it is a conscious plan for self-development and a grass root, participatory way of driving educational theory and advancement (see, for example, Cohen, Manion & Morrison, 2007).

In the following section, the conceptual framework used to understand the DGs as a space for mutual professional development is discussed, before turning to the data.

2. Dialogical knowledge at the boundary between activity systems

This research is essentially concerned with teacher cognition, or what teachers think, know and believe, and the relationship this potentially has with their classroom action (Borg, 2003), how it comes to light and how it changes through participation in the DGs. The genesis of the approach to

cognition and cognitive development taken in this article is owed to Vygotsky, who taught us that social interaction – including the human endowment for speech, gesture, and other symbolic means of communication – is the embryo of cognitive development and the place for its study. His notion of mediation, or "the process through which humans deploy culturally constructed artefacts, concepts and activities to regulate (i.e. gain voluntary control over and transform) the material world or their own and each other's social and mental activity" (Lantolf & Thorne, 2006: 79), was ground-breaking for the learning sciences. This is because, according to Engeström (2001: 134):

> The insertion of cultural artifacts into human actions was revolutionary in that the basic unit of analysis now overcame the split between the Cartesian individual and the untouchable societal structure. The individual could no longer be understood without his or her cultural means; and the society could no longer be understood without the agency of individuals who use and produce artifacts.

Since Vygotsky, the notion of mediation has been explained and adapted by his colleagues and contemporaries, for example in Cultural Historical Activity Theory (CHAT), the origins of which are usually traced to the work of Leonte'v and the development of which is attributed in large part to Engeström. Whereas Vygotsky focused on the dialogic mediation between subject, tool and object, activity theory provides for three additional units of analysis for understanding learning processes: rules, community and division of labour. In this paper, third generation CHAT (Engeström, 2001) is particularly inspirational in conceptualising content teaching in English and teaching English through content as two separate cultural activities, or activity systems (see Figure 1).

Although these two activity systems are complex in themselves, involving for example, different disciplinary traditions, different roles within the institution and different relationships with institutional requirements, taking two activity systems as the unit of action and analysis allows attention to be paid to the intersection or third space (Akkerman & Bakker, 2011) emerging between them. The literature on CHAT refers to this bridging between intersecting practices as boundary crossing. In this regard, the DGs are considered both a practical initiative to promote boundary crossing and as a privileged site for exploring vital forces of professional development.
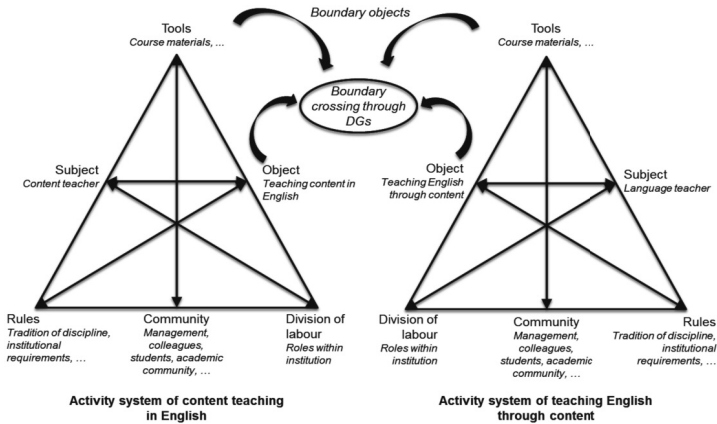
Figure 1. Content and language teaching as two activity systems meeting at the boundaries of English medium instruction.

That is, the DGs are conceived of as facilitating interdisciplinary, dialogical knowledge – in the Bakhtinian sense – in relation to the shared object of English medium or CLIL instruction. As such, they may be considered as a site where teacher cognition in relation to the object may be traced and potentially restructured and transformed for the benefit of classroom practice. As Akkerman and Bakker (2011: 137) point out, the notion of dialogicality "[…] comes to the fore in the various claims on the value of boundaries and boundary crossing for learning: learning as a process that involves multiple perspectives and multiple parties". According to these same authors, different mechanisms or procedures constituting the learning potential of boundary crossing – which they refer to as identification, coordination, reflection and transformation – may be traced in the research literature.

Of these phenomena, transformation is most fitting in terms of the experience presented in this article. According to Akkerman and Bakker (2011), it follows a process starting with confrontation with a difficulty forcing reconsideration of present practices and interrelations, leading to the recognition of a shared problem space facilitating the creation of new hybrid practices and their consolidation, or the fusion of reinforced established knowledge with new practices. For transformation to happen, most research has pointed to the need for shared work at the boundaries to continue over time (Akkerman & Bakker, 2011).

Finally, the analysis presented in the following section will also refer to the notion of boundary objects (Star, 1989; Star & Griesemer, 1989) to speak about the material or conceptual mediating tools that are functional in bridging boundary practices. According to the definition by Star and Griesemer (1989: 393):

> Boundary objects are objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual-site use. They may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is key in developing and maintaining coherence across intersecting social worlds.

In the data presented, such boundary objects mostly encompass material tools facilitating interdisciplinary dialogue such as lecture notes and video recordings of mock lessons, but may also be more abstract tools such as conceptual and methodological knowledge and discipline specific terminology in English. Before looking at the data, the objectives and the methodological approach taken in this research are overviewed.

3. Research objectives and methodology

The purpose of this paper is to present some preliminary findings based on the experience of the first 18 months of the DG initiative. Like the DGs themselves, the objectives of this research paper may be considered within an action research framework. That is, as Davison (2006) remarks, except for a growing corpus of research on university teaching through the medium of an additional language, or CLIL, very little attention has been paid to exploring the complexities of collaboration at the boundaries between teaching professionals from different fields of expertise. Thus, the action planned and put into practice in the form of the DGs responds to both practical concerns and a theoretical gap. By taking an empirical stance in evaluating the initial experience, we seek to inform the future approach to the DGs and offer transferable insights for better CLIL in higher education in this setting and beyond.

Specifically, in the following section a single case study is presented of collaboration between an expert in Dentistry[1] and one of the authors, an expert in English who has an academic and professional background in the health sciences. The data are field notes collected ethnographically by the language-teaching specialist while participating in the experience. Video recordings of the meetings were also collected and have been referred to throughout the analytical process; however transcripts of this data will not be included in this initial presentation of results nor will they be discussed. The research at this stage is exploratory and attempts to gauge some of the tensions emerging in the dialogical space created by the DGs between professionals from different backgrounds as well as to identify some of the boundary objects facilitating dialogue as an opportunity for the transformation of teaching practices. The questions addressed in this paper are: How do professionals from different backgrounds organise their dialogue at the boundaries? What do the professionals have cognitions about in relation to the practice of teaching through the medium of English? (How) are these cognitions restructured in dialogue over time? (How) may this transform teaching practice? The main findings are presented in the following section.

4. Results

At the time of registration in the training, content teachers interested in taking part in the DGs are asked to complete a form providing certain information about the class they are teaching in English and their reasons for wanting to take part in the experience. According to the information received from the content teacher focussed on here, the class she teaches in English has 92 undergraduate health science students, all of whom are local students and have a broad range of proficiencies in English. The class is delivered as a lecture. When asked for the main aspects of her teaching that she wanted to focus on in the DG, the teacher responded:

> Extract 1, registration form: Parlar i comunciar bé als alumnes (Translation: to speak and communicate well with students)

In total, 5 face to face DG meetings were carried out between the content and language specialist between October 2013 and February 2014 (semester 1), and these are what are focused on here. Although the meetings could

have continued in semester two, the teachers faced practical difficulties (e.g. increased workload, schedule conflicts) in sustaining their collaboration.

The aim of the first of the meetings in semester 1, according to the field notes, was to meet, set objectives and organise a plan. The language expert alludes to certain issues – her partner's competence in English and language certification (an institutional requirement), her strategies for learning English, and her partner's idea that lecturing in English means just translating teaching material to that language – that emerged in the dialogue in this session. At this point, speaking and communicating well with students, the aim identified by the content teacher when registering for the DG, seem to be concerns linked to her general competence in English. The following extracts are from the field notes taken by the language specialist.

> Extract 1, field notes session 1: She expresses insecurity with her grammar knowledge and writing skills. She has no official certification of her level.

> Extract 2, field notes session 1: We started out by discussing how she is currently studying English.

> Extract 3, field notes session 1: She has given me digital copies of two related articles and the PowerPoint presentation for one 2-hour session she plans to teach in English. [Extract from notes omitted]. She proposes "translating" part of the material to English and presenting it to me in the next session.

Thus, in this first session, the orientation seems clearly towards a definition of the object shared by the two teaching professionals at the boundary of their practices as a concern with general linguistic correction on behalf of the content teacher – grammar and writing, adequate translation of written course materials, etc. – rather than with any shared methodological issues. The field notes from session 2 suggest that this concern remains, and is perhaps strengthened by the omnipresence of an institutional push for content teachers to certify their level of (general) English through an upcoming official examination (referred to as CLUC in the extracts). The field notes also indicate, however, an expansion of the definition of language to include a preoccupation with domain specific terminology.

> Extract 4, field notes session 2: She had not prepared the slides she was planning on preparing for this session. When I arrived she was translating them. We started out by translating some of them together for about 10-15 minutes.

> Extract 5, field notes session 2: The rest of the session she gave her lecture with the slides in Spanish, I corrected language, pronunciation, and asked

questions to clarify concepts. We referred to the hard copies of the articles I had brought to identify correct vocabulary and use of English.

Extract 6, field notes session 2: At the end of the session she commented that she has enrolled for the CLUC exam on Nov 29 and asked if I could help her to prepare for the writing section.

In expanding the shared object beyond purely linguistic concerns to the specific words used in English to encapsulate conceptual meaning, it appears that the lecture notes and the scientific articles in English become fundamental boundary objects for focusing the discussion.

The field notes from the third session reveal the development of a new tension that seems to somewhat displace previous concerns with general linguistic competence: what adaptations need to be made when delivering content lectures in English to facilitate students' comprehension

Extract 7, field notes session 3: We met in a classroom and [teacher's name ommitted] gave in English a large part of her lecture on [topic ommitted], using the power point slides she had "translated" into English from Spanish. Before the lecture she explained to me that her "method" of preparing lectures in English at congresses is to read a lot of material related to her topic. She does not memorize her lecture, she speaks spontaneously.

Extract 8, field notes session 3: I actively listened. I had a hard copy of the power point slides to take notes on. I had previously read the two articles she had sent me about the subject and had seen the same PowerPoint slides in Spanish. I was generally able to follow the lecture she gave. I think I will speak to her about the importance of providing written support to students who will be attending a session in L2.

Extract 9, field notes session 3: She seemed very comfortable lecturing in English, and is even able to give anecdotal examples to clarify the concepts she presents.

Extract 10, field notes session 3: [teacher's name ommitted] is a fast lecturer and presents a large amount of information. It has occurred to me that perhaps she needs to spend a bit more time paraphrasing and doing comprehension checks when she presents in English.

Extract 11, field notes session 3: [teacher's name ommitted] mispronounces some key vocabulary [terms omitted] and has some difficulty expressing some concepts in English, but most of the time these difficulties do not obscure understanding

Session 3 thus appears to offer transformative potential in the sense that confrontation with a problem extending beyond general and content specific language difficulties may be discerned, that is, how the content teacher prepares for and delivers her lectures in English and whether the methodology employed is conducive to students' learning. The emergence of a new, jointly constructed boundary object, being the video recording of the mock lecture given by the content teacher, may also be observed. This joint attention could arguably force reconsideration of and adaptations to present practices, or transformation.

However, the notes from session 4 urge caution in making such judgments. Here, it may again be observed how concern with the institutional requirement for content teachers to certify their level of English re-orients the focus on the DG discussions to general (examinable) competences in that language. This apprehension about the content teacher's general linguistic competence supersedes the activity planned for that session, being to comment on the boundary object of the video of a mock lecture recorded in the previous session.

> Extract 12, field notes session 4: I came prepared to revise with her the video of the lecture she gave in our last session. [Teacher's name ommitted], however, wanted to focus on preparing for the CLUC today. She has the exam on Nov 29 and is worried about obtaining a B2 level, which she needs in order to teach.

The fifth and final session examined here suggests persisting tensions as to the shared objective of the DG. On the one hand, the notes taken by the language expert suggest a reinforced orientation towards the way that the content teacher delivers her lectures in English. She quite clearly defines recordings of the lectures that she has made together with her partner as the boundary object that should guide the collaboration, and the modification of certain teaching strategies being used by the content teacher as a goal of the DG sessions. This shift in orientation is not as clear in the case of the content teacher, who appears to remain focused on general and specific linguistic aspects of her practice. Having already sat for the exam, certification no longer emerges as a concern. Furthermore, it is revealing that the language experts' own teaching practices are not oriented to by either participant as a focal point for the discussions, despite reciprocity and mutual development being explicit aims of the DGs from an institutional perspective.

Extract 13, field notes session 5: When I first arrived she was working at her computer writing an email in response to a request for student exchange with a university from Russia. She asked me to help her write the email and I did.

Extract 14, field notes session 5: Mainly I wanted to give her the positive message that she is understandable, BUT that her pacing is very fast. I wanted to impress upon her that since she is lecturing in L2, she needs to go slowly, check understanding, and repeat important points. She said she understands these concepts, but later, when she started to give her presentation again, she continued to speak very quickly with little information to orient STS. As a first step I am insisting in her introducing the topic of each slide BEFORE she starts explaining the content. She DID start to do this in this session.

Extract 15, field notes session 5: I also spoke to her about the need to plan the amount of material she will present. [Extract from notes ommitted]. She agrees that she needs to edit her material.

Extract 16, field notes session 5: [Teacher's name ommitted] needs help in organizing her thought. I saw this when she explained the content of one slide to me. She needs to identify clearly the topic she is presenting (I did this with her at one point) AND she needs to present her ideas in a more organized way.

Extract 17: She prefers to take notes on pronunciation and language feedback.

The shifting, yet unresolved, tensions evolving at the boundaries between two professional practices across the five sessions explored in this results section may thus be summarised in the following diagram (Figure 2). The diagram represents the major themes that the teachers participating had cognitions about during the sessions, as represented in the field notes.
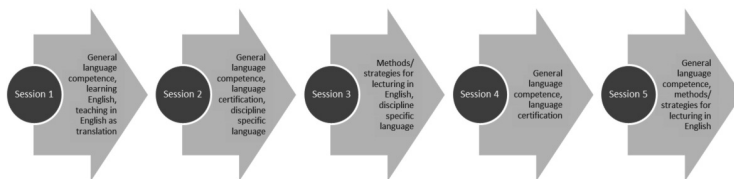

Figure 2. Shifting tensions emerging in the DG sessions.

5. Conclusion

As was discussed above, both the DGs and this research have been conceived within an action research framework, responding to both to practical concerns and a theoretical gap in terms of development through collaboration between professionals from different disciplinary traditions involved in teaching through the medium of an additional language. Recalling Gustafsson et al. (2011), this type of collaboration in CLIL (LSP, EMI, etc.) settings – in particular in higher education – is considered challenging for different reasons, and this could be one explanation for the lack of research in this area identified by authors such as Davison (2006). Taking a CHAT approach has made it possible for the DGs to be conceptualised as a potentially boundary crossing initiative bridging activity systems of content and language teaching. At the same time, it allows tensions linked to participants' different disciplinary backgrounds, their relationships to institutional requirements (e.g. certification), and the definition of their roles within the broader activity of teaching in English, among others, to be taken into account within a theory of cognition and cognitive development.

The first results of this research, summarised in Figure 2, suggest shifting yet unresolved tensions in terms of how the joint work within the DG is defined, or as to the cognitions displayed by the two teaching professionals in regards to their shared object. It has also allowed the identification of certain boundary objects – scientific articles, mock lectures – that might facilitate the construction of shared problem spaces. Yet, following the process towards transformation identified by Akkerman and Bakker (2011), the dialogic work has not yet led to the creation of new hybrid practices and their consolidation, nor to the fusion of reinforced established knowledge with new practices. It would appear that the participants are still in the process of negotiating their third space, which would strengthen the potential for the DGs to impact on both content teaching through English and English teaching through content, the latter being an aspect that is not even contemplated in the data analysed. In other words, the field notes suggest no evidence of the reciprocal nature of the DGs, despite the teachers' mutual development being a central aspect of their initial conceptualisation. The fact that both the person who initially planned the DGs and the language specialist contributing the data are also authors of this paper allows critical reflection as to why this may be so.

Referring back to the CHAT framework, there was arguably ambiguity in the initial rules and guidelines provided only in writing to participants and an insufficiency in the specific tools (e.g. observation guides for observing each others' classes) offered for stimulating boundary crossing though the DGs. Another explanation for the shortcomings of the DG might be found in the institutional division of labour, with the content expert holding a higher academic position within the university hierarchy. This inequality of status led to the reluctance on the part of the language expert to impose previously agreed upon objectives for sessions or to push for a more bidirectional relationship. Future groupings should thus seek greater symmetry in this regard. Related to this, the significance of the two specialists' domains of expertise (i.e. the teaching of English and the teaching of dentistry) also enjoys unequal recognition within the university. This arguably led to a dynamic within the DG in which the language expert did not want to "waste" her partner's time by seeking feedback on her subjects, and the content expert did not take an interest in the subjects taught by her partner. However, in emphasising reciprocity in the DGs, the point is precisely to make the complex task engaged in by language teachers in developing students' scientific and professional discourse competence visible to non-specialists in this area. Finally, certain institutional aspects (e.g. participants' heavy workloads, changes in schedules across semesters, the reduced total number of hours assigned for the DGs) need more careful consideration in setting up the groups initially.

The analysis does highlight the transformative potential of the DGs and therefore allows us to present a strong case for their continuation. Furthermore, this research is in the process of being expanded through the interactional analysis of how the content and the language teachers' ideas about teaching through the medium of English are constructed and potentially transformed through their interdisciplinary dialogue as it is entextualised in the form of audio-visual recordings. Ongoing data collection from this and other DG experiences, including field notes and audio-visual data from both meetings and content and language classrooms, will also be used to compare different DG experiences, as well as the discourse constructed in meetings and actual classroom practices. This research will allow more light to be shed on aspects that may enhance or encumber the potential of DGs for transforming higher education CLIL.

Acknowledgements

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NOTES

[1] Signed informed consent was obtained from the content teacher for this research to be conducted. The teacher also read, commented on and agreed to the results discussed in the draft version of this text.