‘Do you know Actimel?’

The Adaptive Nature of Dialogic Teacher-led Discussions in the CLIL Science classroom: a Case Study

Cristina Escobar Urmeneta

Natalia Evnitskaya

\( ^{a}\text{Departament de Didàctica de la Llengua i la Literatura, Universitat Autònoma de Barcelona, Bellaterra, Spain} \)

\( ^{b}\text{Departamento de Filología Inglesa, Universidad Autónoma de Madrid, Madrid, Spain} \)
‘Do you know Actimel?’ The adaptive nature of Dialogic Teacher-led Discussions in the CLIL Science classroom: a Case Study

This interpretive case study is framed within updated sociocultural conceptualisations of learning. More specifically, it draws on research on teacher-led classroom discussions, and aims to push this research area a step forward by exploring the conversational intricacies through which ‘dialogicity’ is accomplished in adaptive ways in one CLIL science classroom. Multimodal Conversation Analysis (CA) is performed in order to describe how Classroom Interactional Competence (CIC) is enacted by participants while developing a teacher-led discussion. The natural data come from a bilingual Catalan-Spanish secondary school classroom in Barcelona in which 16 twelve-year-old students learn biology in English as a third language. The analysis reveals that (a) the teacher’s systematic deployment of multimodal resources ensures comprehension and favours the emergence of learner-initiated turns; (b) as a result, a highly interwoven set of sequences of ‘mediation’ and ‘remediation’ occurs, jointly providing the students with opportunities for the appropriation of language and content, and (c) this abundance of resources contrasts with the scarcity of teacher moves aimed at eliciting more elaborated learner interventions. The study contributes to further understanding of the relationship between language, interaction and learning. It also shows how Multimodal CA may offer valuable tools for tracing the process of integrated learning.

Keywords: CLIL, CIC, Teacher-led Discussions, Multimodal Conversation Analysis, Dialogicity, Teacher Education.

Introduction

Content and Language Integrated Learning (CLIL) is a successful umbrella term used to design ‘a wide range of educational practices and settings whose common denominator is that a non-L1 is used in classes other than those labelled as “language classes”’ (Dalton-Puffer, 2007: 2). Recent socio-interactional studies on L2 classroom
interaction (e.g. Markee, 2000; Pekarek Doehler, 2010; Seedhouse and Walsh, 2010; Young, 2008) have shed light on the relationship between language, interaction and learning; nevertheless, the examination of such relationship in CLIL contexts is yet to come. Being aware of the gap, this interpretive study seeks to contribute to the on-going inquiry by identifying and describing the conversational resources deployed by one CLIL teacher and her students in order to create conditions to promote students’ learning of content and language.

With this aim we will draw on the construct Classroom Interactional Competence (CIC, Walsh, 2006), tributary of the broader Interactional Competence (IC) coined by Kramsch (1986). The study also incorporates views from other research traditions whose common traits are a sociocultural conceptualisation of teaching and learning and a keen concern for the role of language in education.

Within the sociocultural perspective, the teaching-learning process in institutional settings is seen as an essentially social and interactive endeavour where language plays a crucial role (Mercer, 1995). Teachers and students are considered active participants in classroom interaction and collaborate in the construction and comprehension of common knowledge (Mortimer and Scott, 2003) and in the students’ appropriation of academic discourse necessary for meaning-making (Dalton-Puffer, 2007). This collaborative process is mainly mediated by teachers’ scaffolding (Wood et al., 1976), i.e. the deployment of ad-hoc conversationally constructed support that helps students develop linguistic and academic skills and achieve higher levels of understanding.
Situated classroom interactional competence in CLIL settings

Conversation Analysis (CA) has been widely used to increase understanding of language and cognition and the way this understanding relates to a reconceptualised notion of L2 learning and the development of learners’ IC (e.g. Markee, 2000; Pekarek Doehler, 2010). IC is a two-fold ability to (a) recognize context-specific patterns that rule turn-taking and the sequential organization of actions, and (b) efficiently attend to contributions of other participants, signal their (non-)understanding and coordinate one’s own interventions with those of the others. In this way, participants jointly construct meanings and establish shared understanding of the unfolding talk, which requires their constant re-examination of available resources. Such competence-in-action is adaptive, flexible and highly context-sensitive (Pekarek Doehler, 2010).

As IC is co-constructed by participants in situated ways, an individual’s IC only exists in relation to that displayed by others and varies according to what other participants do (Kramsch, 1986; Young, 2008). Hence, CA-oriented research suggests tracing the process of developing (and deploying) IC in the L2 through a fine-grained exploration of interactional elements such as repair, hesitation, repetition, turn-taking and sequential organization.

The construct CIC, which refers to the ways IC is enacted to respond to the specific goals of foreign language classrooms, has been defined as the ‘teachers’ and learners’ ability to use interaction as a tool for mediating and assisting learning’ of an L2 (Walsh, 2011: 158). It encompasses those features of classroom conversations that produce high quality interaction leading to L2 learning. Although teachers are not the only participants responsible for CIC, it is still very much determined by their interational choices during the lessons.
Escobar Urmeneta and Evnitskaya (forthcoming) extended Walsh’s definition to cater for CLIL settings, where not only the L2 is at stake but also the content-matter, and grouped teachers’ interactional resources observed in previous studies into three categories:

(a) The use of learner-convergent language, which is appropriate to the pedagogical goals and adjusted to the co-construction of meaning.

(b) The facilitation of interactional space so that students are afforded the ‘space for learning’ to contribute to classroom interaction and obtain feedback on their contributions.

(c) The ‘shaping’ of learner contributions by seeking clarification, modelling, paraphrasing, elaborating on, repeating or repairing the learners’ productions. Through shaping the discourse, the teacher scaffolds students in articulating what they mean by using the most appropriate language to do so.

In the present study the apparatus provided by CA will be used to further understanding of the role of language in learning in CLIL contexts, an endeavour already initiated by other conversationalists. Tributary to this tradition, Gajo (2007) distinguishes between two types of obstacles that can emerge in classroom discourse. One is caused by the ‘non-transparency’ or opacity of the target language (e.g. a new lexical item) and usually tackled explicitly through sequences of remediation, so common in foreign language classrooms. The other emerges due to the conceptual complexity or density of the content (e.g. an abstract concept) which leads to sequences of mediation, common in L1 content lessons. Hence, the more opaque the discourse is, the more explicit remediation is needed; the denser the discourse is, the more mediation is required.
Dialogicity and adaptability of teacher-led discussions

The term ‘discussions’ (Cazden, 1986) refers to teacher-led conversations in which students are allowed to backchannel teachers’ explanations, self-select to contribute and provide pieces of argument for their way of thinking. Dalton-Puffer (2007), after examining twenty-nine hours of CLIL teaching in Austria, concluded that whole-class discussions constitute two thirds of classroom talking time and are characterised by being interactive, dialogic and distributed among several participants. Drawing on such findings, we adopt the label ‘dialogic teacher-led discussions’ as a generic term which embraces a range of conversational practices enacted by a whole class under the guidance of the teacher in order to get the ‘business’ of teaching and learning done.

Traditional science classrooms often stress a single – usually official – perspective on science, whereas learner-centred classrooms tend to combine the ‘authoritative’ with the ‘dialogic voice’, and incorporate learners’ viewpoints and contributions into the conversation (Mortimer and Scott, 2003).

One of the most daunting tasks for science teachers is to transform complex, abstract explanations produced by Science into comprehensible pedagogical ones, customised for their audience. Available research in the field of science education shows that the efficient use of a sophisticated repertoire of conversational and multimodal resources allows science teachers to introduce, ground and relate new concepts and terms, establish explicit relationships between everyday and academic knowledge or between shared and new knowledge, etc. (e.g. Ogborn et al., 1996).

This paper aims to push this area of research a step forward by exploring the conversational intricacies through which such ‘dialogicity’ is accomplished in adaptive ways within the distinctive context of CLIL science teacher-led discussions.
Methodological framework

The paper is drawn from a case study (Evnitskaya, 2012) within the DALE-APECS research project. It adopts a data-driven interpretive and holistic approach (Seedhouse and Walsh, 2010; Pekarek Doehler, 2010) for the examination of the way students are provided with interactional space for the participation in dialogic teacher-led discussions in CLIL environments.

The overall aim of the paper is to further our understanding of the way how different components of CIC are enacted by participants in the interactional process of achieving shared understanding in one CLIL science classroom.

As a case study, the paper attempts to gain an in-depth, multi-faceted understanding of instances of a complex phenomenon in its real-life context and from the perspective of the participants (Yin, 1994). It also relies on multiple sources of evidence in order to achieve deeper interpretation. Being an empirical inquiry of a unique episode, the study is expected to result in findings which might be potentially applicable to other cases and identify focus of research susceptible to being investigated further.

Data description

The data analysed here come from a CLIL biology lesson on cells. The lesson belongs to a larger CLIL corpus of video-recorded classroom data within the CLIL-SI database. The participants are a teacher and sixteen students (aged 12) who are in their first year of secondary education in a state-funded school in a middle-class neighbourhood in Barcelona, Spain. The participants find themselves in a bilingual educational system in which Catalan and Spanish are used as L1 and English is taught as a foreign language and is gaining grounds as a third academic language. At the moment of data collection,
the students roughly displayed level A2.1 of competence in English.

The study examines a teacher-led discussion generated while the teacher and the class were checking a true-false activity on different types of cells, set as homework. The dataset has been divided into six shorter excerpts which will be presented sequentially.

**Method**

Following the principles of Multimodal CA, detailed transcripts of talk and other semiotic resources (see conventions in Appendix 1) were produced using the software *Transana* (Woods and Fassnacht, 2007), and then double-checked by a second transcriber.

Once the transcripts were obtained, a micro-analysis of multimodal data (see e.g. Evnitskaya, 2012) was used to identify and portray (a) the interactional resources used by the participants to signal and tackle cooperatively conceptual and linguistic obstacles, (b) the degree of jointly achieved success, and (c) the teacher’s role in providing students with opportunities to participate in the dialogic teacher-led discussion.

During the lesson the participants are seated forming a circle (Figure 1). The video-recorded excerpts offer pieces of evidence of the participation of the teacher (TEA) and eight out of the sixteen students (Andrew, AND; Carla, CAR; Jaume, JAU; Joan, JOA; Marta, MAR; Miquel, MIQ; Ricard, RIC and Vanesa, VAN).
Analysis

Excerpts 1–6 correspond to a teacher-led discussion generated while checking the activity. The procedure consisted of nominating students in turns to read aloud statements from their dossiers and say whether these were true or false. As it is customary, this was followed by the teacher’s feedback on each contribution. During the sequence a comprehension problem revolving around the term ‘harmful’ was tackled collaboratively by the participants.

Anticipating the problem

Excerpt 1 starts when Andrew raises his hand to bid for a turn as he wants to read the last statement from the dossier.

Excerpt 1. Do you know the word ‘harmful’?
The teacher looks at Andrew and nominates him using a verbal and gestural ‘pointing’ (l.2). The student reads out the statement ‘All bacteria are harmful’ and announces his verdict while gazing at the teacher, which can be interpreted as a confirmation request (l.3). Having been looking at Andrew for a while, the teacher reorients her gaze to the dossier to check the statement (l.3). After another pause (l.4), she confirms Andrew’s verdict by repeating it emphatically (l.5). Then she addresses the class with a ‘yes/no’ interrogative: ‘do you know the word harmful?’ (l.6), thereby de-contextualising the item from the statement it was used. By explicitly problematising it, she opens a remediation sequence in which the students are required to demonstrate ‘having known’ prior to being asked (Koole, 2010).

Several students offer their contributions: Jaume, hesitating, provides a translation (l.7; Spanish ‘malas’ means ‘bad’) while Vanesa’s utterance is unintelligible to the transcriber (l.8). Although Jaume’s demonstration of knowledge is acceptable both from the viewpoint of meaning (the two words are near synonyms) and grammar
(the adjective ‘malas’ agrees in number and gender with the Spanish noun ‘bacterias’), the teacher does not acknowledge it. Looking consecutively at Vanesa, Jaume and Andrew, she gives a more accurate translation ‘perjudicial’ (l.9), a learned word present in the students’ passive vocabulary but probably infrequent in their active lexical repertoire. This is followed by a comprehension check and an antonym (‘beneficial’, l.10), a new term in the L2 to be used later. With this, the teacher-initiated remediation sequence is closed without any demonstration of (non-)understanding from the students which would indicate the item’s comprehension or not.

Two key decisions made by the teacher in Excerpt 1 are noteworthy. First, the reason why she problematises the term ‘harmful’ and thus opens a remediation sequence when, apparently, there is no evidence that the class has difficulties in understanding. Second, the reason why she does not accept Jaume’s approximate translation, but rather provides an exact one. If the first decision had taken place in isolation it could have been inferred that she was trying to prevent lack of understanding due to the potential opacity of the L2 concept, which is a plausible interpretation. However, the teacher’s word choice, together with the presentation of the antonym ‘beneficial’ – cognate in Spanish – allows for the suggestion that she is not only concerned about the students achieving an accurate understanding of the studied concepts through their undensification. She is also setting demands on the use of language which is precise and accountable to the academic domain where colloquial language is not acceptable. The action taken also reveals her capacity to build bridges between the L1 and the L2 (and vice versa), which might contribute to a positive transfer between languages.

This excerpt is useful to gain understanding on how the teacher mobilises different CIC-generating resources in order to facilitate learners’ agency. Firstly, the teacher’s concern for ensuring satisfactory comprehension is observable in her
anticipation of the difficulty of the item ‘harmful’. Secondly, her readiness to share the interactional floor with the students is observable in the treatment of the difficulty by requiring their contributions in order to troubleshoot the potential problem. Finally, the teacher’s rejection of a near translation for ‘harmful’ and her offer of a more precise L1 term suggest a concern for very accurate content-through-language-comprehension, and for very accurate content-through-language-production, at least in the students’ L1.

**Signalling the problem**

A few seconds later the teacher moves to the next stage of the activity, a recap. In parallel, a private conversation between two students, Ricard and Jaume, occurs.

Excerpt 2. What is harmful?

34. RIC: *que vol dir harm*fu:l*?*
   Translation: what does harmful mean?
35. jau    looks at his notes in dossier
   JAU: XXXXXXXXXXXXX
   ric    looks at his notes in dossier
36. jau    looks at TEA*
   JAU: *harmfu*l-
   37. ric    turns to TEA*
   RIC: *what (is) "harmful"*=?

In l.34 Ricard addresses Jaume in the L1: ‘*que vol dir harmfu:l*?’. He initiates a remediation sequence in which he de-contextualises the item already explained through translation in Excerpt 1. Jaume acknowledges Ricard’s request by checking his notes and utters something unintelligible (l.35). Yet, his words seem comprehensible to Ricard who checks his own notes (l.35).

At this moment both students seem to have exhausted their own resources and decide to solicit the teacher’s help. Thus, Jaume orients his gaze to the teacher and explicitly states the problem (l.36). He is followed by Ricard who also orients his gaze and body towards the teacher (l.37), hence showing that both continue carrying out a
joint enterprise. Ricard also displays his lack of understanding of the obscure term by producing a complete utterance ‘what (is) “harmful”?’.

Jaume and Ricard’s open clarification request on the meaning of ‘harmful’ triggers an elaborated teacher’s explanation, which is consecutively developed in Excerpts 3-5.

**Constructing the semantic network**

Excerpt 3. Harmful means that produce harm

38. **TEA:** *<harmful means that produce (0.3) harm (.)
  tea *looks at JR, over class
 39. something bad for us>
 40. for example (.): illnesses *(1.0)
 41. TEA: infections *(0.6)

In l.38-l.39 the teacher addresses the class with two definitions of the concept: etymological (‘harmful means that produce harm’) and colloquial (‘something bad for us’). Note that she employs a personal pronoun ‘us’ which may indicate her attempt to construct an explanation as a shared experience (compare ‘you’ in Excerpt 1, l.6).

Once the definition is provided, she introduces two illustrating examples: ‘illnesses’ and ‘infections’ (l.40-l.41). The former is a more general and superordinate term and is represented by a more linguistically distant L2 item (English ‘illness’ vs. Spanish ‘enfermedad’ / Catalan ‘malaltia’). Meanwhile, the latter is a more specific term that designates a type of illness and is cognate in the students’ L1 (English ‘infection’ vs. Spanish ‘infección’ / Catalan ‘infecció’). It should also be noted that ‘illness’ is a commonly used everyday word in English, while ‘infection’ is a medical term commonly targeted in basic science education. By introducing these examples, the teacher constructs a semantic network among the concepts ‘illness’, ‘infection’,
‘beneficial’ and ‘harmful’ in which each supports and sheds light on the meaning of the others.

The relevance of the examples for the explanation is observable in the teacher’s emphasising and framing each term between long pauses. The effect of her now much more contextualised explanation is seen in that Jaume (l.40), Marta (l.41) and Carla (Excerpt 4, l.42) start jotting down in their dossiers which allows assuming that this part of the explanation has been successfully understood by the students. It is also noteworthy that nothing similar occurred in Excerpt 1.

**Strengthening the semantic network**

Excerpt 4. Not all bacteria cause illnesses

42. **TEA:** *we haven’t to think *that all *bacteria
carwrites down
43. **TEA:** are ↓harmful (0.2)
44. **tea:** *not all bacteria *cause ↓illnesses ()
      *shakes head
45. **jau** turns to JQA*
    **JAU:** *xxxxxxx a(h)re harm(h)ful
46. **TEA:** there are some that are (0.5)
47. **tea:** *beneficial| for| us|,
      *nods at each word

In l.42-l.43, the teacher produces a negation ‘we haven’t to think that all bacteria are ↓harmful’. On the one hand, it contains a ‘we’-statement (Mercer, 1995) which strengthens her orientation to a shared enterprise with the students. On the other, it is her reframing of Andrew’s positive statement in Excerpt 1 (l.3) which she literally embeds into a negative construction with the emphasis on the word ‘all’. She thereby re-contextualises the initially affirmative statement in order to develop the explanation.

From l.44 on, the teacher reformulates her previous utterance twice. First, she places a negative particle ‘not’ before the same subject ‘all bacteria’ and then changes
the verbal phrase from ‘are harmful’ to ‘cause illnesses’. Whereas ‘are harmful’ contains the opaque item that has been publicly problematised both by the teacher and the students, ‘cause illnesses’ retrieves one of the four concepts from the semantic network constructed by the teacher earlier. She uses various remediation strategies within the unfolding mediation sequence, with both processes intertwined in her explanation and equally aimed at solving the problem of understanding of an unfamiliar (and thus dense) concept ‘harmful’ in the opaque L2. This new – negative – verbalisation (and conceptualisation) of Andrew’s statement is additionally strengthened non-verbally with a headshake (l.44).

Then the teacher moves from negation to affirmation (l.46-l.47). She reformulates a negative noun phrase ‘not all bacteria’ into a positive one ‘there are some that’ and replaces the predicate ‘cause’, containing a negative connotation, to an affirmative verbal phrase ‘are beneficial’. So, she both returns to the initial syntactic construction (‘[noun] + to be + adjective’) and retrieves the antonym to ‘harmful’ which she has officially introduced in Excerpt 1. She again employs multimodality to support her verbal message: she emphasises prosodically the key term ‘beneficial’ and rhythmically marks the words conveying positive information with several confirming nods (l.46-l.47).

To sum up, Excerpt 4 shows how the teacher re-takes the initial statement ‘all bacteria are harmful’ containing the problematic item as a trigger for her explanation. From there, she skilfully develops the explanation by making a series of morpho-syntactic and lexical changes to the original statement, on the one hand, and by employing three of the four concepts (‘harmful’, ‘illness’ and ‘beneficial’), which she introduced earlier, thereby gradually strengthening semantic relations among them, on the other.
Providing the example from everyday life

Excerpt 5 starts with the teacher announcing that she is going to illustrate the line of argument developed so far.

Excerpt 5. Do you know Actimel?

48. **TEA:** for *example=
49. **AND:** =xxxx
50. **TEA:** *we can use them
tex *looks at AND
51. **TEA:** *<to make some *food>,
tex *looks at JAU
ric *raises hand
52. **TEA:** do you know Actimel:::l, e: el- this yoghurt,
53. **ric** *that e:
ric *raises hand----
54. **TEA:** lactobacillus::: *tal or::: casei ,immunitas:
55. **tea** *all of these ;are:
tex *looks at RIC, nods
ric --------------------->
56. **RIC:** **BACTERIA**
57. **jau** turns to joa*
**JAU:** *'ca(h)sei immu(h)nitas*
58. **TEA:** *and they are good for us (;)
59. **TEA:** for our digestive *system for example.
tex *points at stomach

Here, the teacher moves again from more general to more concrete within the mediation sequence (l.48). Though she verbally ignores Andrew’s unintelligible one-word interruption (l.49), which can be interpreted as not giving him the floor, she still requires his active attention and listenership – and that of other students – as she gazes at him (and Jaume) while developing her utterance (l.50-l.51). To illustrate her argument she first provides a generic example of the benefits of some bacteria – their use for food production. The importance of this fact is highlighted by slower speech rate accompanied by the emphasis on the word ‘food’. Note again her use of a ‘we’-statement.
The teacher moves on and uses another (re)mediation strategy as she introduces a concrete object from the outside-the-classroom context: ‘Actimel’, a yoghurt-like drink. Being taken from a commercial, it may be familiar to the class. Yet, to bring her explanation even closer to the students, she addresses them and offers a definition of Actimel (‘do you know Actime::l, e: el- this yoghurt, that e:’, 1.52-1.53), though incomplete. The item to be defined is mediated, after a hesitation and a false start, by the token ‘yoghurt’ which denotes a more general category.

The teacher continues by introducing the highly academic terms ‘lactobacillus’ and ‘casei immunitas’ (1.54). Despite their scientific (and thus apparently dense) nature and supposedly opaque linguistic form, these Latin terms have been borrowed from the Actimel commercial and are used by the teacher to introduce elements from everyday life which may help students anchor the new concepts. To continue her explanation (1.55) she produces a ‘designedly incomplete utterance’ (Koshik, 2002): ‘all of these ↑are:’. Thereby she opens a ‘filling the gap’ sequence by which she explicitly passes the interactional floor to the students.

This pedagogical strategy is captured by Ricard who has actually been soliciting the turn to intervene for the last 12.7 seconds (see his prolonged hand-raising in 1.51, 1.53 and 1.55). Having been addressed by the teacher’s gaze and nod (1.55), Ricard completes her recapping utterance with highly emphatic ‘BACTERIA’ (1.56). It may be suggested that with such enthusiastic contribution the student demonstrates that he has acquired access to this subject-specific knowledge thanks to the teacher’s explanation.

The teacher recognises his intervention by incorporating it into the on-going explanation. With the conjunction ‘and’ she links together her previous incomplete utterance (1.55) with that of Ricard (1.56, in bold) and with her next utterance (1.58-1.59), which results in the following co-constructed statement: ‘all of these ↑are: BACTERIA
and they are good for us. In this way she rounds up both her extended (re)mediation sequence on the example of Actimel and the prior statement that ‘not all bacteria are harmful’ but rather ‘there are some that are beneficial for us’.

Here again the teacher reformulates the initial statement: she changes ‘beneficial’ to ‘good’ which is also marked prosodically (l.58). She bridges once more the two domains: that of CLIL school-science discourse and that of everyday English. She also adds another example of benefits of bacteria for humans, which is closely related to her example of Actimel as the bacteria present in it are considered very helpful for digestion. She again opts for a ‘shared’ perspective by employing pronouns ‘us’ and ‘our’ and reinforces her message with an illustrative pointing gesture (l.59).

**Displaying newly gained understanding**

Excerpt 6. Harmful means ‘perjudicial’

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Ricard solicits the turn again which is given to him by the teacher’s gaze and nod (l.60). For the second time he addresses the teacher with a de-contextualising clarification request on the opaque term ‘harmful’. Unfortunately, his utterance is only
partly intelligible: the problematic item and a short stretch of L1 talk may be interpreted as a request for the provision of the term’s translation. Ricard however combines his verbal intervention with non-verbal actions: he looks at his dossier, points at it and gazes at the teacher (l.60). Thus, he explicitly relates his discourse to the concept in the teaching materials and orients it to the teacher, the recognised expert in the classroom.

The teacher provides an expected response to Ricard’s overt request, i.e. the translation of the concept to L1 (‘perjudicial’, l.62). Contrary to Excerpt 1, in which the class has displayed no signs of (non-)understanding of the same translation, here Ricard and Jaume – the two students who have explicitly stated the opacity (and perhaps the density) of the item ‘harmful’ in Excerpt 2, thereby causing the teacher’s extended explanation in Excerpts 3-5 – echo the teacher by repeating the term’s L1 counterpart (l.63). Joan overlaps with them producing the first part of the word with slower speech rate (l.64). That the concept’s meaning in the L2 has been finally comprehended seems to be evidenced in Ricard and Jaume’s uttering the second part of the L1 term while bending to jot down, presumably, the provided translation in their dossiers (l.63-l.64).

Finally, Excerpts 5-6 confirm that the scientific name of the bacterium introduced by the teacher (l.54) does not actually sound unfamiliar to the students. Thus, Jaume privately addresses his peer, Joan, and with a laughing intonation whispers ‘casei immunitas’ (l.57). Meanwhile, Miquel produces the same marketing label preceded by an L1 interjection ‘>a ver<’ (l.61). Being unacknowledged by other participants, such students’ private or semi-private turns may still be considered uninvited demonstrations of understanding (Koole, 2010).

Figure 2 summarises the steps taken by the participants in the process of signalling and tackling cooperatively the linguistic and conceptual obstacles caused by the item ‘harmful’.
<table>
<thead>
<tr>
<th>Excerpt</th>
<th>Standard teacher-initiated IRF sequence</th>
</tr>
</thead>
</table>
| 1. Do you know the word harmful? | Teacher anticipates a problem and signals it.  
Near synonym provided by student is rejected by teacher.  
Teacher troubleshoots the problem by providing L1 exact translation of the term. |
| 2. What is harmful? | Student’s request |
| 3. Harmful means that produce harm | Teacher’s response |
| 4. Not all bacteria cause illnesses | Explanation. New content added |
| 5. Do you know Actimel? | Explanation. New content added |
| 6. Harmful means perjudicial | Student-initiated sequence |

Figure 2. Conversational moves accomplished by participants

**Discussion**

From a conversationalist point of view (e.g. Markee, 2000), this snapshot of teacher-led classroom discussion encapsulates the preceding history of this class as the way the interaction unfolds in the excerpts is consequential to the ways of ‘doing teaching’ and ‘doing learning’ already established by the participants in this particular community of practice. It is also a unique episode inevitably tied up to the specific context where it took place.
The preceding analysis has shown how participants enact and develop their (Classroom) Interactional Competence when they co-construct meanings and jointly establish understanding using both interactional and linguistic resources.

Notwithstanding, the emphasis that the study of IC places on the way the interaction is guided and managed (Kramsch, 1986; Walsh, 2006; Young, 2008) has enabled us to bring to light how crucial the students’ interactional moves are to the development and outcomes of the lesson despite the limited linguistic repertoire they exhibit. This, together with their tokens of understanding, suggests that the joint venture of co-constructing meanings related to one of the properties of bacteria was, on the whole, successful.

The analysis has also revealed that the teacher’s online decisions and the way she employed a wide array of multimodal resources accordingly were at large responsible for the common accomplishment.

In relation to the use of learner-convergent language, the teacher frequently built linguistic bridges between target science discourse and L2 everyday discourse. She reformulated abstract terms into familiar ones, provided etymological and informal definitions, offered scientific and colloquial examples and introduced everyday-life objects that constitute shared knowledge.

By using varied morpho-syntactic structures and lexical devices the teacher constructed a chain of negations and assertions which strengthened the line of argument being developed. The same effect had her combination of prosodic elements with well-measured pauses and non-verbal actions, some of which seemed to have contributed to sustain the learners’ attention. This allowed her to mark key concepts and establish relations among them, all this aiming to favour the students’ understanding. In short, such adjustments helped her elaborate an effective, student-oriented explanation.
Special attention deserves the teacher’s choice of translation as a key facilitating resource in her lesson. Explanation by translation has been found a common practice used by teachers and students for the clarification of the meaning of unknown terms or concepts (Dalton-Puffer, 2007; Nikula, 2005). The analysis of Excerpt 1 has revealed that the mere provision of the L1 counterpart of the de-contextualised term, at that moment, did not seem to have an immediate impact on comprehension, as subsequent excerpts show. This lack of success supports Dalton-Puffer’s (2007: 137) concern on the efficacy of explaining by translation: ‘Offering an L1 label almost certainly creates a recognition effect but how is one to tell whether the students have a rich cognitive-semantic representation of the relevant word in their L1?’

On the contrary, the translation offered after an extended and cooperatively constructed dialogic explanation (Excerpt 6) in which the item was re-contextualised, and related to other concepts resulted in the students’ tokens of understanding of the item in the L2. The usefulness of this more elaborated strategy has been portrayed by Gajo (2007) who has shown how in the process of un-densifying content knowledge bilingual teachers employ reformulations and paraphrases, followed by translations. Yet, such reflections do not suggest that the teacher’s first attempt to call the students’ attention to the problematic term and thus to remediate it together with the class was useless. It is legitimate to ask oneself whether the students would have noticed their gap in respect to the item if the teacher had not focused on it in the first place.

However efficient the teacher’s use of learner-convergent language may be, it is how she deploys a repertoire of conversational resources to facilitate interactional space and create the conditions for students’ self-selection that seems to determine the interactive patterns observed in this classroom. A noticeable strategy is the layout of the physical environment. The properties of the circle to favour interaction have been
repeatedly highlighted in earlier research. For example, Rosenfield et al. (1985), in their experimental study on seating arrangements, conclude that ‘active participation of students (...) is affected positively by circles rather than row seating’. The fact that the teacher has physically positioned herself as one more member of that circle may have strengthened this property.

Another important trait in the teacher’s repertoire which varies notably throughout the excerpts is the deictic perspective established through the use of personal pronouns, moving from the exclusive use of a more distant ‘you’ to address the class (Except 1) to the frequent use of ‘we’, ‘us’ and ‘our’ (Excerpts 3-5). Mercer (1995: 33) reports on the teachers’ use of ‘we’-statements in guiding classroom interaction when referring to a past collective learning experience in order to represent it as relevant for the on-going activity. Whereas Mercer’s findings refer to L1 subject-matter lessons, Nikula (2005) compared CLIL to EFL contexts and reported a higher tendency to adopt a more immediate and personal deictic perspective in CLIL settings. The shift in deictic perspective observed here might tentatively be interpreted as the teacher’s attempt to underscore a common membership. This interpretation is strengthened by the teacher’s decision of her sitting place as one member of the circle mentioned above. It is not to be discarded that these choices, in combination with others, might have generated a higher sense of common enterprise.

Yet, one more decision which probably influenced the students’ participation in the conversation is the allowances the teacher makes for private turns. In the data examined it has been observed that a private conversation between Ricard and Jaume (Excerpt 2) served them as a preparation phase to openly pose a question to the teacher on a lexical item already glossed.
It has been argued that students’ side-talk often represents the only opportunities for individual students to get clarification or support from their peers or to practice what they want to say without overt face-threatening (Mercer, 1995). Private turns may also serve as a safe environment where to pool, contrast and shape clarification requests or demands for help, which may subsequently be shared with the class, as it is the case in this study. Also the apparently insignificant decision to appoint a student to read out the statement to be discussed reveals that the teacher is expecting an active role from the learners. This behaviour contrasts, for example, with that of a less expert CLIL teacher observed by Escobar Urmeneta and Evnitskaya (forthcoming).

Conversely, the teacher’s repertoire aimed at eliciting from the students more extended or elaborated L2 contributions is rather limited, while feedback on language is restricted to her offer of a more satisfactory L1 translation of the term (l.15). The minimal length and complexity of learner utterances in CLIL settings has also been reported by Dalton-Puffer (2007) and Mariotti (2006), who offer partially coincident interpretations. In the case under study, the shortage could be attributed to an insufficient mastery of teaching techniques leading to maximise learner talk, probably resulting from a pervasive teaching tradition based on the predominance of teacher talk, together with a lack of specific training.

On the other hand, if we had adopted the ‘deficit model’ as a tenet, the non-nativelikeness of some of the teacher’s utterances (e.g. ‘that produce harm’, l.38) might have become central to the analysis. Yet, following Cook (1999) and Kramsch (1986), our option was not to consider the non-native teacher as a faulty copy of a monolingual native speaker, but as a multicompetent L2 user in her own right – who happens to be addressing a group of L2 science-and-language learners – and examine her performance in relation to her capacity to get her science lesson done in a particular context of a
CLIL classroom in Catalonia. Going even further, one of the reasons that may explain the recognition that CLIL is reaching in compulsory education is how nicely it parallels contexts in which English is used as an international language by speakers of other languages, precisely the sort of situation current secondary learners are most likely to find themselves in as users of English in the near future (see e.g., Smit, 2010).

In our view, the scarcity of resources employed by the teacher to encourage learners to expand their contributions might eventually be more detrimental for their language development than her use of a limited number of non-native-like utterances⁴.

Conclusions
This case study has provided a thick description of a multiparty negotiation process set up by the participants seeking to achieve mutual understanding, and has used Multimodal CA to portray the continuous adaptation of linguistic and other semiotic resources deployed by the teacher in response to locally emergent communicative needs.

The analysis has shown the systematic procedures enacted by the teacher to ensure satisfactory comprehension of the target content-through-language items. Without relinquishing her ‘authoritative’ voice, the way how she organised and managed classroom interaction and her instructional choices of conversational adjustments and non-verbal resources afforded students opportunities to take charge of interactions⁵, and subsequently develop their IC through the very act of participating (Markee, 2000).

Yet, the teacher’s actions do not result in the students’ extended contributions, not to mention more accurate or more appropriate ones. With Walsh (2006) we argue
that while recognising the value of affording learners interactional space, simply giving
them the floor is unlikely to result in language acquisition. Thus, to explore how CLIL
teachers may develop more efficient ways to help students expand and better their L2
contributions within the domain of subject-specific classroom interaction is a line of
inquiry worth exploring.

The analysis has also revealed the participants’ constant switch of attention to
potential trouble caused by the linguistic opacity / the conceptual density of the content-
matter. In order to delimitate the scope of these interrelated phenomena different
authors have developed a number of dichotomies such as form vs. meaning (Long,
1991); language vs. content, as in the acronym CLIL; or mediation vs. remediation
(Gajo, 2007), this last one having been extensively used in this study. Whereas in many
CLIL contexts the source of a problem – be it language or content – is fairly
straightforward, in the case presented here the extended content-rich explanation
emerged precisely as a consequence of the difficulty two students faced in unveiling the
linguistic opacity of the concept ‘harmful’. In other words, a clarification request
generated a number of highly interwoven sequences of mediation and remediation
triggered by conceptually-loaded language items which jointly afforded students
opportunities for the integrated appropriation of language and content.

Whether or not the teacher’s performance in this lesson is distinctive to CLIL
settings or idiosyncratic to this particular context cannot be determined by a single case
study. However, if – according to Cazden (1986) – teachers’ conversational decisions
are systematic, the patterns identified in this lesson might lead to the hypothesis that the
specific demands set in CLIL contexts make teachers more prone to the deployment of
resources which increase the conversational rights of the students. The higher degree of
students’ involvement in CLIL classrooms observed by Nikula (2005, 2007) when
compared to regular EFL classrooms also points in that direction. In order to confirm (or reject) this hypothesis, further studies comparing interactional patterns in L1 and in content-driven CLIL classrooms would be desirable.

The study has contributed to characterise some components of CIC deployed by the participants thanks – to a great extent – to the teacher’s orchestration of multimodal resources, and in this fashion, to better our understanding of the relationship between language, interaction and learning. More specifically, the analysis has shown how the difficulties posed by the language may favour a more profound treatment of the content.

It has also highlighted the necessity for teacher education programmes to incorporate components which enhance teachers’ awareness of the role that interaction plays in scaffolding the students’ learning of both content and language.

Ultimately, the outcomes of the study show how useful a Multimodal CA approach can be in terms of future applications as it may offer both researchers and practitioners valuable tools for tracing integrated learning in CLIL settings.

Notes
1. The term ‘explanation’ is not used in this paper to refer to a specific Discourse Function. Rather, we employ it in a broad sense as in colloquial statements like “s/he explains things really well” (Dalton-Puffer, 2007:141).
2. R+D+i project funded by the Spanish Ministry of Science and Innovation. Ref. EDU2010-15783.
3. Information on research by CLIL-SI and teaching materials is available at http://grupsderecerca.uab.cat/clilsi.
4. This conviction leads to suggest that a shift in the criteria according to which CLIL teachers are recruited and/or trained is needed. In Spain, the only official requirements to become a CLIL teacher are a degree in the subject matter and a B2 in the target language.
5. Although group size is also a plausible explanation, our extensive knowledge of Spanish classrooms leads us to consider it a less likely one.

References


**Appendix 1. Transcription conventions**

*For talk (Jefferson, 2004):*

- **JAU:** Speaker’s pseudonym.
- **(.)** An unmeasured (micro-)pause of less than two-tenths of a second.
- **(1.5)** Measured pauses in tenths of seconds.
- **=** ‘Latching’ between utterances produced by the same speaker/different speakers.
- **overlap** Start, and if relevant, end of concurrent speech.
- **[overlap]** Speaker’s emphasis.
- **CAPITALS** Talk is louder than that surrounding it.
- **°word°** Talk is quieter than that surrounding it.
- **wo(h)rd** ‘Laughter’ within the word.
- **↑↓** A marked rise/fall in pitch, not necessarily a question/end of the utterance.
- **,** Falling intonation.
- **,** Low-rising intonation, suggesting continuation.
?     Rising intonation, not necessarily a question.
|     Speaker’s rhythmical emphasis.
cu-  A sharp cut-off.
:     Stretching of the preceding sound, more colons more stretching.
>fast< Talk is produced noticeably quicker or slower than the surrounding talk.
<slow>

xxx  An unclear fragment in the recording, one ‘x’ equals one syllable.
(word) Best guess at an unclear fragment.
word Utterances produced in any other language that is not English.

For multimodality (Evnitskaya, 2012):

jau   Participant accomplishing the action is identified.
*turns to ARN The instant when action starts within turn at talk.
*---- Gesture or action described continues across subsequent lines.
---->* Gesture or action described ends when the symbol * is reached.