EuroAmerican Journal of Applied Linguistics and Languages
Volume 6, Issue 1, August 2019, 21-36
ISSN 2376-905X
DOI: http://dx.doi.org/10.21283/2376905X.10.149
www.e-journall.org

Building literacies in secondary school history: The specific contribution of academic writing support

RUTH BREEZE & PILAR GERNS JIMÉNEZ-VILLAREJO
Universidad de Navarra

Received 28 June 2018; received in revised form 4 January 2019; accepted 6 January 2019

ABSTRACT

EN This paper considers the specific role and effect of academic writing support in a secondary school Content and Language Integrated Learning (CLIL) context. After discussing the potential place for academic writing support in the ongoing process of fostering disciplinary literacy, we report on an experimental study in which 45 Spanish secondary school students received a short academic writing module as part of their history course. The descriptions/explanations written in their post-tests were generally found to be more complete, with more explicit discourse markers and with better textual organization than the pre-tests. We discuss the implications of this for students' progress towards disciplinary literacy.

Key words: CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL), BILINGUAL EDUCATION, DISCIPLINARY LITERACY, L2 WRITING, COGNITIVE DISCOURSE FUNCTIONS.

ES Este estudio considera el papel específico y el efecto del apoyo a la escritura académica en un contexto AICLE de escuela secundaria. Después de analizar el lugar potencial que el apoyo a la escritura académica podría tener en el proceso continuo de promoción de la literacidad disciplinar, se presentan los resultados de un estudio experimental en el que 45 estudiantes españoles de la escuela secundaria recibieron un breve módulo de escritura académica como parte de su curso de historia. Las descripciones / explicaciones escritas en sus post-tests se consideraron generalmente más completas, con marcadores de discurso más explícitos y con una mejor organización textual que las pre-tests. Finalmente, se discuten las implicaciones de estos resultados para el desarrollo de la literacidad disciplinar por parte de los estudiantes.

Palabras clave: APRENDIZAJE INTEGRADO DE CONTENIDO Y LENGUA EXTRANJERA (AICLE) EDUCACIÓN BILINGÜE, LITERACIDAD DISCIPLINAR, ESCRITURA EN LA L2, FUNCIONES COGNITIVAS DEL DISCURSO.

IT Questo articolo esamina il ruolo specifico del sostegno alla scrittura accademica e il suo effetto in un contesto CLIL della scuola secondaria. Dopo aver discusso il posto che potenzialmente potrebbe occupare il sostegno alla scrittura accademica all'interno del continuo processo di promozione dell'alfabetizzazione disciplinare, riportiamo uno studio sperimentale in cui 45 studenti spagnoli di scuola secondaria hanno seguito un breve modulo di scrittura accademica come parte del loro corso di storia. Le descrizioni / spiegazioni scritte nei loro post-test sono risultate generalmente più complete, con marcatori di discorso più espliciti e con una migliore organizzazione testuale rispetto ai pre-test. Ne discutiamo, quindi, gli effetti sul progresso degli studenti nel processo di alfabetizzazione disciplinare.

Parole chiave: APPRENDIMENTO INTEGRATO DI LINGUA E CONTENUTO (CLIL), ISTRUZIONE BILINGUE, ALFABETIZZAZIONE DISCIPLINARE, SCRITTURA IN L2, FUNZIONI COGNITIVE DEL DISCORSO

✉ **Ruth Breeze,** Universidad de Navarra
rbreeze@unav.es

1. Introduction

One of the most significant developments in European education over the last twenty years has been the vast increase in the teaching of school subjects in English, even in European countries where there is no historical connection with the English-speaking world (Pérez Cañado, 2018a). The teaching of curricular contents through the medium of English in these contexts has been mainly understood through the paradigm of Content and Language Integrated Learning (CLIL) (Marsh, Pérez Cañado, & Ráez Padilla, 2015). CLIL is related to other models of content teaching through English, with some differences (Ball, Kelly, & Clegg, 2015). For example, CLIL overlaps somewhat with English Medium Instruction (EMI) but differs in that CLIL opens up the issue of explicit language learning, positing this as being in some sense integrated with content learning in the course design and delivery. CLIL can also be usefully compared with immersion models (Cenoz, Genesee, & Gorter, 2014). It is generally understood to differ from other models in that it is not full time and is not conceptualized as purely acquisition-driven, however it provides scope for language support within content courses (Ball et al., 2015). In fact, in current European school contexts, content courses in English are not only designed to integrate some language support but are also usually combined with conventional language courses graded by level.

The rapid spread of CLIL has meant that our understanding of the paradigm itself has developed alongside its expanding practice. As might be expected with a new phenomenon, much of the research to date has been concerned with tracking students' results in terms of language gains and countering predictions that content would be lost (Lasagabaster & Ruiz de Zarobe, 2010; Perez Cañado, 2018a, 2018b, 2018c; Rumlich, 2016). The generally positive outcomes reported mean that CLIL research is now entering a consolidation phase in which different pedagogical approaches within CLIL can be evaluated and good practices identified. In particular, there is currently growing awareness of the need to provide better content-related literacy support for students who enter secondary school with language competences around the Common European Framework of Reference for Languages (CEFR) B1 level but who still find the general academic and disciplinary language used in CLIL courses challenging (Meyer, 2015; Whittaker, Llinares, & McCabe, 2011).

2. Developing literacies in CLIL

The goal of CLIL courses is to empower students to use English across "the whole range of the language which shapes educational knowledge" (Llinares, Morton, & Whittaker, 2012, p. 8). It goes without saying that literacy skills play an important role in this. In this section, we briefly examine some different approaches to CLIL literacy beyond basic general language skills and explain how these appear to be interrelated.

2.1. CALP and academic literacies

Literacy covers a fundamental set of competences at all levels of education, since it encompasses the ability to understand and communicate knowledge, arguments and feelings through semiotic systems, particularly written language. Within bilingual education and CLIL, the issue of developing literacies was originally approached using the notion of Cognitive Academic Language Proficiency (CALP) (Cummins, 1979), which brings together the cognitive and language competences needed as students progress through schooling. These competences contrast with the Basic Interpersonal Communicative Skills (BICS) that are usually acquired first in immersion situations in primary school. The CALP approach thus places its main emphasis on the language needed to advance through education in English from the later years of primary school onwards, thinking in particular of the linguistic competencies required to express more complex concepts, as well as general features of academic register. At school levels, academic writing pedagogy has been greatly influenced by the concepts of register and genre (Martin & Rose, 2005). The aims, if not the methodology, of such literacy pedagogies can be compared with those of English for Academic Purposes (EAP) at higher levels, since the main focus is on general academic language, and on the common needs that arise across the whole curriculum. In broad terms, these approaches centre on the specific language skills required by academic contexts, notably mastery of formal written English style and familiarity with academic genres and conventions (Hyland, 2006; Jordan, 2010; Menken, 2013).

2.2. Moving towards disciplinary literacies

The constructs of CALP and academic literacies assume one academic language proficiency that is valid across content areas. However, as students advance from primary school to secondary school, it

becomes increasingly evident that other approaches must factor into the complexity of learning to communicate in different disciplines. Just as English for Academic Purposes (EAP) in higher education is often complemented by English for Specific Purposes (ESP) support, which helps students acquire more focused discipline-specific literacy skills, the CALP approach is now being understood as a starting point from which more specific types of support can foster literacy skills needed in different curricular areas (Meyer, 2015). Renewed interest is now also being focused on issues such as content area literacies and disciplinary literacies, which address the need for a subject-specific approach to acquisition of language competences.

One important issue in this is the distinction made by some experts (Shanahan, 2012) between content area literacies and disciplinary literacies. To begin with the more straightforward concept, content area literacy is understood as the ability to understand and use the language associated with a specialized field, which involves familiarity with vocabulary and genres in a general sense. It does not, however, necessarily imply deep conceptual understanding (Shanahan, 2012). The more complex concept of disciplinary literacy refers to the ability to use "the knowledge and abilities possessed by those who create, communicate and use knowledge within the disciplines" (Shanahan, 2012, p. 8). Disciplinary literacy thus ultimately approximates proficiency in "the unique uses and implications of literacy within the various disciplines" (Shanahan, 2012, p. 8), which relies on deep content knowledge with a strong cognitive underpinning. Fully functional disciplinary literacy is thus distinguished from content area literacy in the importance attributed to the conceptual level (i.e., dunderstanding the term Renaissance is different from grasping the full network of associations that might be generated around this term in a history course). At the high school level, then, the long-term aim should be to move towards disciplinary literacy, which entails knowing how to tackle subject-specific tasks in a way that meets disciplinary expectations.

2.3. The key role of cognitive discourse functions

One particular focus that can help us to conceptualise the content area literacy skills needed in particular content areas and how these might engage with the long-term goals of disciplinary literacy, centres on discourse functions. Discourse functions in pragmatics are built on the notion of the speech act as verbal action that reflects cognitive processes: prototypical communicative actions that people take when dealing with knowledge. This concept has been found both interesting and useful when adapted to CLIL because it constitutes a nexus between the two main issues in CLIL, namely content learning and language reception/production (Coetzee-Lachmann, 2009; Zydatiß, 2005). In a further development of this idea, Dalton-Puffer (2013) formulated the notion of the Cognitive Discourse Function (CDF), which explicitly builds a connection with the underlying cognitive competence (as formulated, say, in Bloom's taxonomy). Moreover, aside from encapsulating cognitive and content learning in linguistic structures, CDFs also offer a bridge between the building blocks of language (lexicogrammar) and complex language-based structures (genres) (Lorenzo & Dalton-Puffer, 2016). Previous work in this area has shed light on the use of CDFs in secondary school history (Lorenzo, 2017), providing detailed qualitative analysis of the seven CDFs identified by Dalton-Puffer (2013) (*classify, define, describe, evaluate, explain, explore* and *report*) as they are materialised in student writing and illustrating their importance in conveying disciplinary learning.

One example suffices to illustrate why CDFs are promising for the study of CLIL. In many school subjects, such as biology or geography, it is important for students to understand classification systems (e.g., of plants, animals, climates, etc.). To do this, they need to remember the important points to be observed (e.g., the number of leaves, type of skeleton, etc.) and to apply that knowledge, using the thinking skills of *compare* and *classify*. Although comparing and classifying are generally considered to be lower order thinking skills (Krathwohl, 2002), they represent an important rung on the ladder of learning. They are closely linked together: *compare* can be viewed as a necessary stage on the way to *classify*, or as a sub-function of it, since it involves identifying similarities and differences which can then be used for classification purposes. Content area literacy is needed (e.g., the names of the different elements in the system and the terms used for classifying them), of course. But it can also be argued that to negotiate the lexical and cognitive demands of the classifying process, and to explain this process using academic discourse, a productive combination of linguistic and conceptual elements is required. Mastery of the cognitive discourse function *classify* involves managing concepts (classification systems), and technical vocabulary (names of specific climatic features or parts of the organism), but also general language structures (i.e., comparatives) and general academic English competences related to choices in register and ways of organising discourse. We can speculate that all of this together amounts to the acquisition of incipient disciplinary literacy competences.

Conversely, if we choose to approach the same question from a negative perspective, we can see that inadequate academic language skills almost certainly impede the production of appropriate CDFs (Breeze & Dafouz, 2017) and hinder the development of disciplinary literacy. One only needs to think of the problems caused when students lack the suitable academic literacy skills to use structures such as nominalisations, which are essential to convey complex information succinctly in historical or scientific contexts (Nashaat Soby, 2019; Whittaker et al., 2011).

2.4. An integrated model of literacy development

On the basis of the foregoing discussion, we can see that the learning outcomes for our students involve at least four levels of language competence, which can be summarised as follows:

- General English language competences.
- Academic writing proficiency (use of formal register, clarity and concision, and logical ordering of information).
- Content area literacy skills (appropriate terminology, familiarity with important genres, and initiation into CDFs).
- Disciplinary literacy skills (satisfactory integration of cognitive structures and their linguistic execution in CDFs, full conceptual grasp of concepts and ability to express these using appropriate terminology and register, fully appropriate use of genre, and development of a discipline-appropriate voice).

In this sense, general language skills constitute the most basic component, and these can be enhanced when academic writing proficiency is reinforced. This academic literacy probably encompasses much of what Coyle (2005) describes under the heading of language for learning (discussion skills, language for presenting in public or writing academic texts). At the same time, content area literacy (reflecting aspects of Coyle's (2005) language of learning) can be built up, which lays the foundations on which disciplinary literacy can ultimately be constructed. This aspect is particularly important in CLIL contexts, because without the content area language skills (terminology, familiarisation with functions and genres in disciplinary contexts), little progress is likely to be made in attaining higher disciplinary competences. Moreover, there is a large area of overlap between content area literacy and academic literacy, which probably includes many aspects of strategic competence in reading and writing (Ruiz de Zarobe & Zenotz, 2014). Finally, through the confluence of development in cognitive skills, content knowledge, and language competence, students will come to acquire full disciplinary literacy (Polias, 2015; Shanahan, 2012). In Coyle's (2005) terms, academic literacy and content area literacy come together in CLIL settings to push the ongoing development of disciplinary language through learning, which can be understood as incipient disciplinary literacy.

However, if we are teaching in secondary school, it may be useful to remember that the full attainment of this goal may lie several years ahead. Figure 1 provides a graphic representation of the way these four aspects of language can be visualised (other non-linguistic aspects, such as content knowledge and cognitive skills, are obviously developing at the same time as literacy and in close association with it, and these ultimately contribute to full disciplinary literacy as well). The arrows are used to indicate progression, showing the order in which the different aspects of literacy are usually acquired, with academic literacy and content area literacy developing concurrently, preparing the basis for mature disciplinary literacy. It should be noted, however, that as in so many educational situations, the areas of overlap may be considerable, and many aspects of disciplinary literacy are already present in incipient form as aspects of academic literacy and content area literacy.

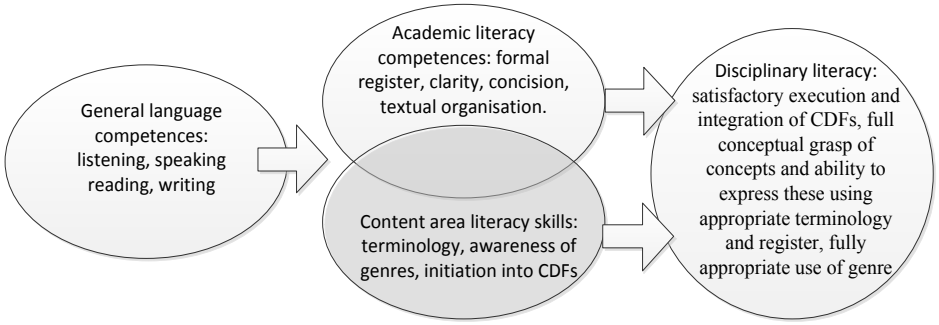

Figure 1. Integrated model of literacy development.

One of the advantages of visualising the development of disciplinary literacy in this way is that it suggests a possible integration of the students' ongoing academic literacy development with their content area literacy skills. This points once more to the usefulness of the kind of general academic language support fostered by the CALP/academic literacy approach; it can serve as an important basis for the development of higher skills that is perfectly compatible with specific content area skills. This is important, because it gives space to the explicit teaching of academic language within the CLIL curriculum. This could be fully integrated into content courses, as the intersecting area suggests, in order to facilitate the productive transfer of literacy skills.

Figure 1 also brings out the key role of CDFs as a bridge between content area literacy and full disciplinary literacy. In our view, one way of measuring students' literacy progress is by investigating the use of CDFs in their writing. Our hypothesis is that greater awareness of certain features of academic writing, especially paragraph organisation and use of discourse markers, will help students to become more proficient writers in their discipline, and also to produce the target CDFs in a more appropriate manner.

3. Empirical study

3.1. Rationale

Given the importance of general academic English competences, and the overlapping nature of academic literacy and content area literacy, pedagogical intervention in this area would seem to be a priority. It is therefore surprising that few studies deal explicitly with the efficacy of academic writing support for CLIL students. Most of the published studies focusing on students' written production in secondary school CLIL subjects take a strictly descriptive acquisition-driven approach (Llinares et al., 2012; Lorenzo, 2017; Lorenzo & Dalton-Puffer, 2016). In the present paper, our intention is to contribute to the development of CLIL pedagogy by testing, in one specific CLIL context, whether a focus on academic writing skills enhances students' content area literacy by helping them to produce the appropriate CDFs.

3.2. Objectives

This paper centres on the impact of a short academic writing module taught within a CLIL history course on the students' production of two related CDFs, namely *describe* and *explain*, in an exam context, comparing students' writing before and after the module. It addresses the following research questions:

- Does explicit academic writing instruction help students to display their disciplinary learning to better effect?
- Does explicit academic writing instruction improve students' use of the CDFs *describe* and *explain*?

3.3. Contextualisation

This paper uses data obtained in an experimental study involving 45 14- and 15-year-old students in a Spanish secondary school. All of them were studying history in English with the same teacher, for three hours per week, for the entire year, in two different groups. The school has a long history of CLIL, with many content courses taught in English throughout the primary and secondary curriculum. During this particular year, in addition to the three hours of history taught in English, the students were also taking a B2-level English course for three hours a week.

During the year, in addition to covering major events and trends in the 13th-16th centuries, the course included various aspects of technological development during the Renaissance and early modern period. As part of their December exam, at the end of the first term of their CLIL history course, the history teacher asked the students to describe and explain two of the inventions devised by Leonardo da Vinci. These answers constitute the pre-test for this study. Analysis of the results from this exam prompted the design of a practitioner research project (unpublished) to improve the students' academic writing in the context of history. This took the form of a writing module taught over two weeks, designed to support essay writing in general, and to raise awareness of the interactional and interactive aspects of academic writing. Both groups (45 students) took the writing module as part of their history course. Part of the exam at the end of the second term (March) asked the students to describe and explain Gutenberg's printing press. This was used as the post-test for this study (see Table 1).

Table 1
Study design

Action	Purpose	Schedule
First term exam	Pre-test	December 2016
Writing module	Intervention	February 2017
Second term exam	Post-test	March 2017

All 45 students completed both tasks under test conditions and were present for most of the sessions of the writing module. Students who did not fulfil these conditions were excluded from the sample.

3.4. Pre- and post-test

The pre- and post-test formed part of the first and second term exams, respectively. In both cases, the students had to perform under test conditions, and were not permitted to use course books, dictionaries or other reference materials. The questions were designed using the principles and vocabulary outlined by Biggs and Tang (2011). The prompts were thus carefully formulated so that their wording would prompt responses that would operationalise *describe* and *explain*, following the principles of constructive alignment. The prompts were also judged by the course teacher to be of a similar level of difficulty, since both required a description/ explanation of a mechanical device with several components. Although the printing press is mechanically more complex, the intrinsic idea and basic function did not prove difficult for students to understand. The pre-test prompt considered for this study was: *Describe Leonardo da Vinci's fantastic invention the giant crossbow. How does it work?* The post-test question was: *Describe Gutenberg's printing press. How did it work?*

3.5. Writing module

A six-hour writing module was designed to raise students' awareness of the forms and functions of academic writing in English. The module centred on the general features of academic writing and on analysing the writing prompt in order to provide an appropriate answer. Further, the module included instruction and practice on how to organise paragraphs with a view to communicating with a reader and displaying knowledge (Llinares et al., 2012, p. 257). A genre-based pedagogical approach was adopted, following the principle of presenting a genre or part-genre (i.e. the paragraph), analysing it, modelling it with the whole class to compose a paragraph jointly on the board, then setting exercises to provide controlled practice at organising information and linking that information together with discourse markers (Breeze, 2012; Martin & Rose, 2005). Relevant genre features covered by the module included topic sentences, linking words (temporal and argumentative organisers) and apposite use of examples (Ball et al., 2015, pp. 160-172). The main content areas of the module are set out in Table 2. The module was designed in this way with the aim of providing useful general practice with academic writing tasks within the history course, which might help students perform better across a range of different question types.

It is important to note that the CDFs *describe* and *explain* were not an explicit focus within the writing module. However, the students taking the writing module did devote time to analysing exam questions containing these, and other, prompts, and to discussing how they would organise their answers to such questions in paragraphs. This design means that any improvement found in the post-tests could be attributed

to the students' improved writing skills and their greater awareness of the need to respond to the prompt clearly, rather than to a very specific focus on the language and cognitive skills needed to *describe* and *explain.*

Table 2.
Contents of academic writing module

Academic writing instruction	Literacy practice
Formal register	Text correction exercise
Paragraph structure (topic sentences, paragraph organisation)	Paragraph writing practice
Discourse organisers (temporal organisers, argumentative organisers)	Practice with discourse organisers Practice at organising information
Use of examples	Practice at providing and integrating examples
Awareness of CDFs	Analysis of exam questions, identification of key words

4. Analysis of pre- and post-test

In order to analyse the pre- and post-tests, it is important to look in more detail at what is needed to perform the CDFs *describe* and *explain* successfully. According to Krathwohl's revised version of Bloom's taxonomy (2002, p. 215), describing is a lower order skill related to recalling (remembering), and is generally related to factual knowledge. Explaining is slightly higher on the scale, as it requires a basis of understanding and calls for the application of some conceptual knowledge. In terms of content, the most important aspect of the description/explanation is whether or not it includes the key aspects of the invention. This genre thus bears a strong resemblance to the explanations required in the science or geography curriculum discussed by Llinares et al. (2011, pp. 120-132). Previous analyses of *describe* have shown that depending on the type of entity involved, there are fairly tight disciplinary requirements as to what has to be described (Davies, 1997; Flowerdew, 2001, p. 96), with the required inclusion of a certain minimum number of aspects. If the entity to be described is a process or invention, this usually requires more complex explanatory elements, which implies a greater ability to convey the relationship between different components. Explanations are often causal, but they may also be sequential or factorial (Llinares et al., 2012, p. 121). An important point in all this, however, is to note that description and explanation are closely interconnected, and the learners' ability to produce satisfactory writing often hinges on their capacity to integrate both *describe* and *explain* in their answers (Breeze & Dafouz, 2017).

In what follows, the quantitative data bring out differences between the pre- and post-test in terms of inclusion of key points and clarity of expression, as indicated by quantitative measures: use of topic sentences, use of linking words. The qualitative analysis focuses on some representative examples in order to illustrate the developments in the students' performance of the target CDFs *describe* and *explain*.

4.1. Quantitative data

In the case of the two inventions to be described/explained here, after consultation of course material and discussion with the teacher, the following four essential elements were identified, shown here with the CDF that best reflects their nature (see Appendix A for examples of how the elements were coded):

- Purpose *explain*
- Key parts *describe*
- Material *describe*
- How it works *explain*

The criteria used to judge inclusion were broad, in that we counted any attempt at describing how the invention worked, or any mention of at least two of the key parts (for key parts) or the material they were made of (for material). The students' answers were read, and the presence or absence of each of the four elements identified by two researchers working independently, in cases of discrepancy, a consensus score was given. Figure 2 shows in simply quantitative terms how many students included these four elements of *describe* and *explain* in their pre-test and post-test descriptions, and how many included only 3, 2, 1 or 0.

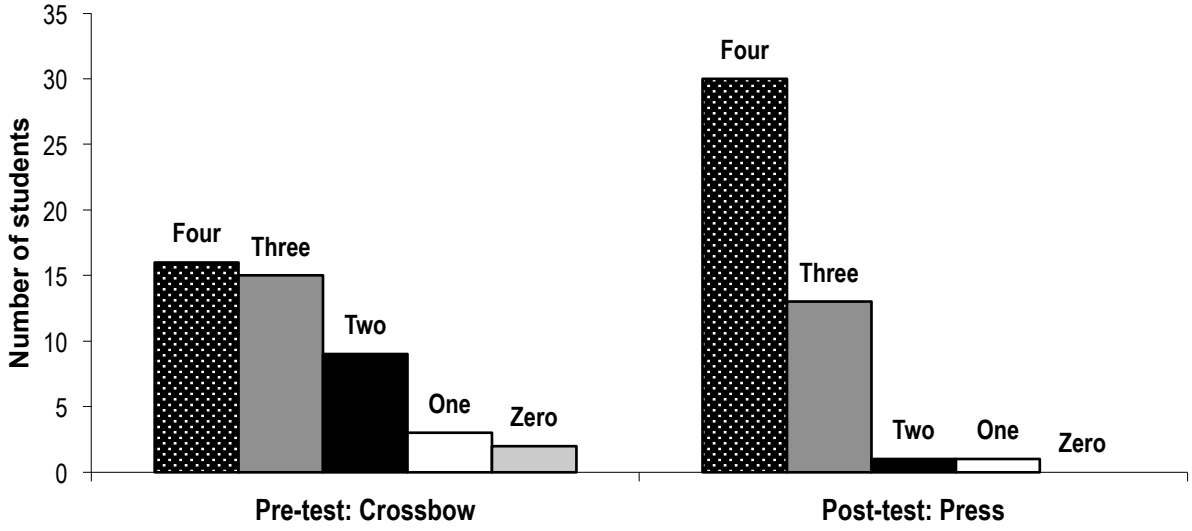

Figure 2. Number of key elements included in descriptions: pre-test and post-test (N=45)

Figure 2 shows a considerable increase in the number of students who included all four elements in the post-test (16 in the pre-test and 29 in the post-test), and thus completed the task successfully, with a corresponding decrease in the number of students who included two, one, or none. The results from a contingency table (Chi square test) comparing students in the pre- and post-test who included all elements with those who did not include all elements were significant at χ^2 (2, N = 45) = 8.7154, p < .01.

As Figure 3 shows, many more students (30 as opposed to 5) introduced their description with a topic sentence in the post-test. The difference between the number of descriptions introduced by a topic sentence in the pre-test and the post-test was significant at χ^2 (2, N = 45) = 29.2208, p < .01 using the Chi square test.

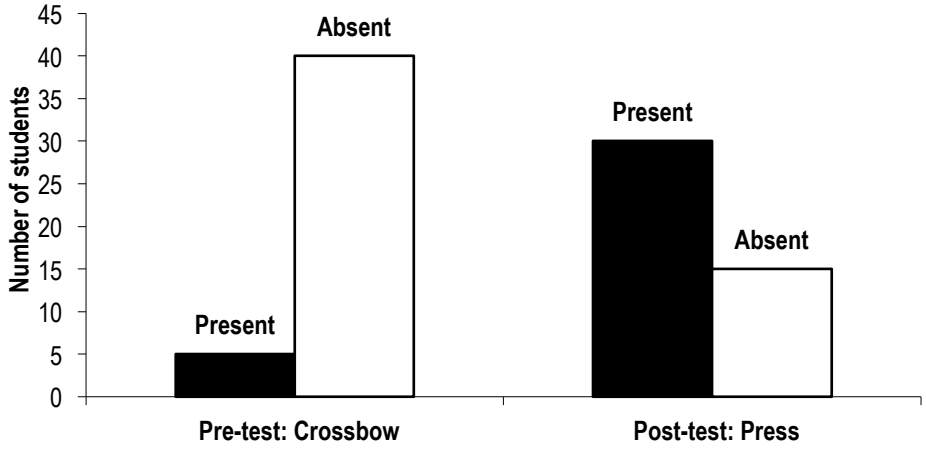

Figure 3. Number of descriptions with presence of topic sentence: pre-test and post-test (N=45)

Both the pre-test and the post-test required students to order the stages of a simple process to explain how an invention worked. This could be accomplished without linking words, but answers that included linking words were generally clearer. Figure 4 illustrates the use of linking words in the pre-test and post-test. Many more were used in the post-test, presumably as a direct result of the academic writing module, where students had learned the importance of ordering information clearly and practiced using

discourse markers. Moreover, the students' increased awareness of the need to understand the prompt and provide a full answer probably accounted for the greater effort made in the post-test. This will be illustrated by the examples in the next section (qualitative data), i.e., examples 3, 4, 5 and 6.

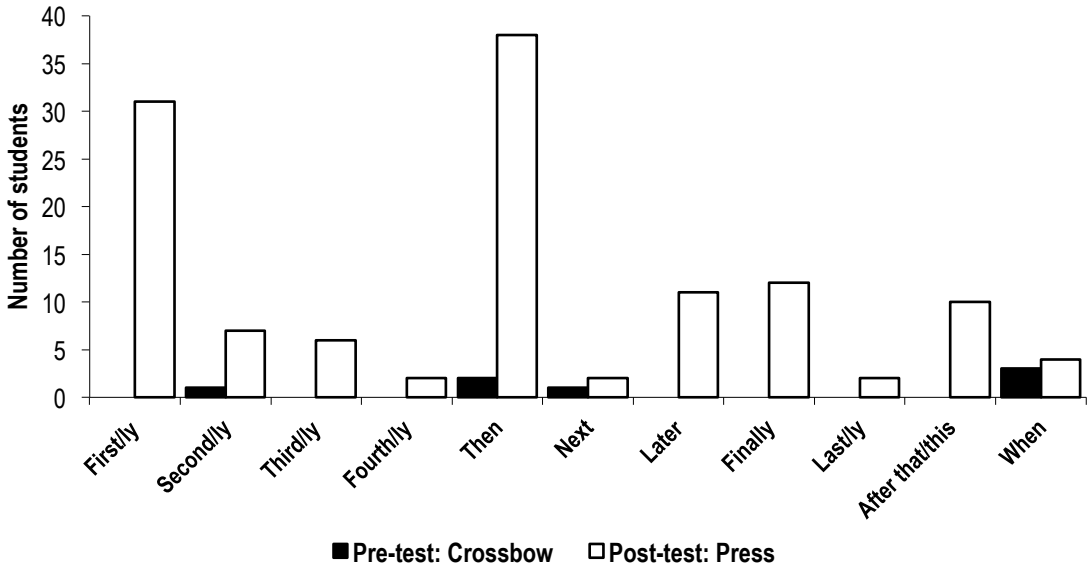

Figure 4. Use of linking words in pre- and post-test: sequencers

A different picture emerges from the use of other types of linking word, as we can see from Figure 5. Students in the pre-test tended to favour *also* as a vague way of connecting one part of a description to another. The use of more exact linkers in the post-test meant that *also* was not needed. *ut* also appeared more in the pre-test, which is probably an artefact of the task itself: this invention itself had a double purpose, and it was the explanation for this that tended to motivate the use of *but* as in the example: "it was a military instrument but Leonardo made it to intimidate not to kill people". On the other hand, *so* and *because* appeared more in the post-test, which suggests that the students were trying harder to establish explicit causal relations.

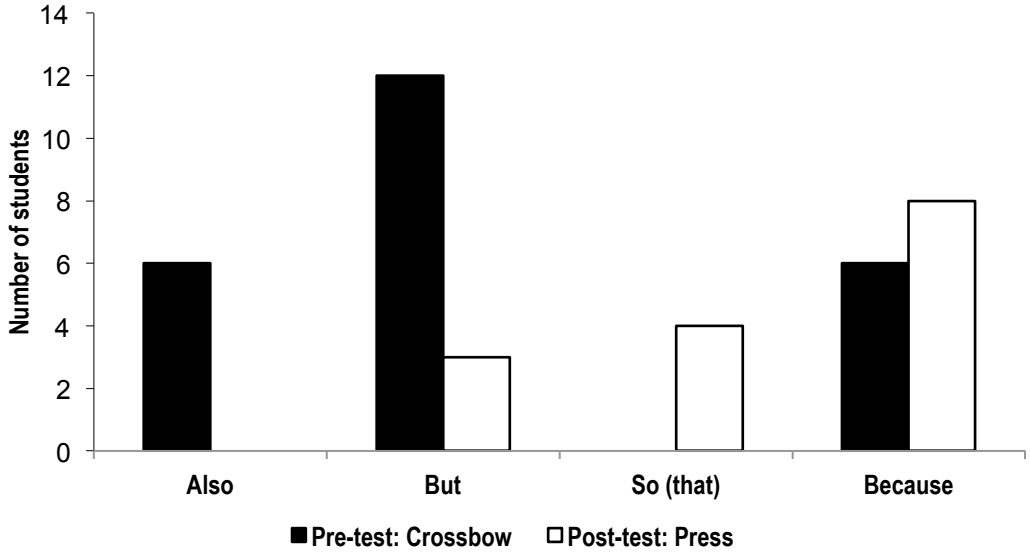

Figure 5. Use of linking words in pre- and post-test: additive, contrastive, causal.

Overall, the quantitative data suggest that the students' answers in the post-test were more complete and contained more of the organisational features characteristic of academic writing. However, the mere presence of linking words is not in itself proof that the answers were actually better. In the next section, we will undertake a qualitative exploration of the answers to see whether the ostensible increase in organising strategies helped students to perform the appropriate CDFs and to display their historical knowledge to greater effect.

4.2. Qualitative data

The first point that should be made is that around 50% of students in the pre-test were capable of using some appropriate CDFs (*describe* and *explain*) without any discourse markers and without an academic paragraph structure. Consider the following example from the pre-test:

1) Giant crossbow. It was designed for pure intimidation for the war. The giant crossbow intimidates because it was enormous (27 yards). Designed to fire large stones or possibly flaming. For the mobility the giant crossbow have 6 wheels, 3 on each side. It was made out of thin wood for flexibility and of a rope (for throw the stones). It work like this: you put the giant crossbow on the direction you want to throw it. Next you put the stone in the rope and you throw it. (A17)

This description is adequate, in that it reports the essential parts (three wheels on each side, the rope, the stones), stating what they are made of where relevant (thin wood for flexibility). Importantly, it includes an explanation of the purpose (intimidation), and it also explains the functioning in a rudimentary way (you put the stone in the rope and you throw it). With regard to language, the student uses accurate technical vocabulary, including some features that can be identified as academic, such as nominalisations (intimidation, flexibility, mobility), and passive voice (was designed, was made out of). On the negative side, we can observe that the student's description is poorly organised, since it would be more logical to begin with a physical description of the whole and the parts, and then move on to explain how it worked, and what its real intended function was. It is also marred by language inaccuracies (sentence fragments, missing third-person *-s*, confusion of *to/for*), and by a relapse into informal register with overuse of *you* when describing the functioning of the machine. An example from the post-test serves to illustrate some of the typical gains made in this group.

2) Firstly I'm going to explain how the Gutenberg's printing press worked in the Renaissance. First, you have to put ink into two balls made up of skin of deer and hair of horse. Once you have done that, you put the balls with ink in the metal, where are all the words. That means that the metal is with ink. Later you put a paper in the side of the words and with pressure, you press. The words of the metal will pass the ink to the paper. (…) Therefore it was faster to copy the books without mistakes. (A5)

Although the language of (2) is not markedly more accurate than the language of (1), the description provided is much easier to follow and more logically organised. The use of temporal connectors (first, once, later) and logical connectors (that means that, therefore) enhances the readability of the text considerably. Excerpt 2) is representative of the way an increased number of sequencers and logical connectors was used in this sample (see graphs 2 and 3 above). Arguably, these improvements could perhaps be dismissed as superficial, but in fact, as these extracts illustrate, the rise in explicit signposting accompanies better overall organisation and greater attention to the communication of meaning.

Viewed on an individual level, the sample of texts gathered here included some notable examples of improvement. Texts 3) and 4) were composed by the same student in the pre- and post-test.

3) The giant crossbow is used for intimidate the enemy, to attack and defend. It throw arrows to enemies and for damage. (B 25)

4) First, how did Gutenberg's printing press worked? To start, you had to cover some goose skin and horse hair balls with ink and then apply the ink to the metal letters that had been put in order before. Next you had to put the paper in the frame and the frame, over the metal

> letters. Then you put all this in the press and pressed down. Finally, you pulled out the paper with the text perfectly printed. (B 25)

This student still has persistent grammatical inaccuracies. However, whereas 3) is a rather sketchy performance which fulfils two of the requirements minimally (purpose and parts) but fails to take up the opportunity for a physical/mechanical description/explanation, 4) represents a serious attempt to give a detailed description and explanation of the press and its functioning. Strong points here are the introductory sentence, the use of exact vocabulary (goose skin and horse hair balls, metal letters, frame), and the use of temporal organisers (to start, and then, before, next, then, finally). Although the use of "you" is not strictly speaking in appropriate academic register, here it provides a stable interpersonal framework for the explanation, adding to its clarity.

One more example of a single student's improvement is illustrative, showing the importance of sequencing connectors in facilitating understanding.

5) The giant crossbow is a weapon to attack to long distance objectives. A soldier pull back the rope, they put the giant arrow, they put their hands and the giant crossbow shoot. (A7)

6) For the first point I will explain how the printing press works. You put the letters in a table. Then you put ink into the letters with ink balls. Then you press a paper and the letter will be printed. This helped a lot to the Renaissance Society because the books will be available easier and the letters or announcements also. (A7)

Although both texts contain a clear sequence of actions within their explanations, the second one (6) is easier to understand because of the sequential markers (then), which are an improvement on the list separated by commas in (5) and evidence improvement in the student's achievement of the CDF *explain*. The topic sentence (For the first point I will explain how the printing press works) also facilitates understanding. As we have seen from the quantitative results, a large proportion of the descriptions in the post-tests had topic sentences, a result which can be ascribed directly to the contents of the academic writing module. Again, critics might dismiss this change as cosmetic, but the inclusion of a topic sentence probably has a positive impact on the reader, since it lessens the cognitive effort required to understand the text and contributes to "displaying" the student's knowledge effectively (Llinares et al., 2012, p. 257). We could speculate that it may well also help the novice writer to focus on what he/she is going to achieve in the text.

5. Discussion

The evidence presented in this study illustrates some ways in which general academic writing support may enhance a CLIL course, and to students' content area and disciplinary literacy development. By raising these CLIL students' awareness of the conventions of academic writing, particularly the need for tighter and more explicit textual organisation with better signposting, the academic writing module helped them to achieve enhanced results. Although some students were already able to provide full, organised answers to the question in the pre-test, a significant number of students showed improved performance in the post-test, with answers that were better organised and easier to read. Moreover, their post-test answers contained fewer irrelevancies, and were generally more focused on the task. Interestingly, students elaborated more in the post-test than the pre-test answers. It is not entirely clear why the academic writing module should have helped students produce more complete answers, although this could perhaps be explained by the students' raised awareness of three key issues: the purpose of the task, the need to communicate with their readers, and the importance of displaying the information learned in an ordered manner. For all these reasons, it is fair to say in answer to our first research question that explicit academic writing instruction helped these students to display their disciplinary knowledge to better effect.

Regarding our second research question specifically centring on the production of CDFs, we observe that the CDFs in question (*describe* and *explain*) were achieved more fully in the post-tests. Although some students were able to express their ideas very clearly in the pre-test, producing the relevant CDFs with minimal use of metadiscursive resources, it is clear that their improved organisation and use of appropriate discourse markers enhanced their execution of the CDFs in the post-test.

We must emphasise that CDFs were not a specific focus of this academic writing module, but it is likely that the teacher's insistence on the need to understand the exam prompt and provide a relevant answer

sufficed to prompt a degree of metacognitive awareness and to nudge many of these students in the right direction. The question remains as to whether more explicit metacognitive instruction about the specific components of each CDF would produce better results (Breeze & Dafouz, 2017), but it seems highly likely that this would be the case. Such instruction and practice would help the students to unpack the exam prompts more effectively, in order to be more aware of the linguistic, metalinguistic and cognitive demands of each CDF.

To conclude, building on all of the above, we would like to suggest that by focusing specifically on academic writing skills, this teacher was able to push CLIL in a way that was beneficial for content and language learning. Short academic literacy modules could be provided within the framework of content courses, as was the case here, or taught within the language syllabus for the year in question, depending on the way the curriculum is organised at the school. As seen in Figure 1, both academic and content area literacies have a role to play in students' ongoing development, and there is considerable overlap between them. The crucial point is to ensure that students make a connection between what they learn about writing in their English classes or writing module and the demands placed on them in content courses, so that constructive transfer of skills can take place. Ideally, to foster positive transfer, students could be asked to focus on content subjects within the writing module, and both English teachers and content teachers could collaborate in order to determine the criteria for what students need to write and how the final product should be assessed. As Shanahan points out (2012), many content teachers resist teaching literacy skills because they lack awareness of the role of content area and disciplinary literacy within their own field, or because they feel that teaching literacy is a task for language teachers only. Where this is the case, cooperation with English teachers could help them to become aware of their embedded knowledge and make some aspects of this visible to their students. In this context, a genre-based perspective offers considerable potential, since this approach offers a way of looking at texts that is accessible both to language specialists and content teachers (Flowerdew, 2001). But crucially, as we have noted above, CDFs should provide another central axis around which academic and content literacy support can be organised.

Finally, it is necessary to stress that the present study has some limitations. In particular, the sample size was small (only 45 students), and the texts used as pre- and post-tests were rather short. The study was carried out in only one school, and in one content course with the same highly motivated teacher. Further studies are needed to better ascertain whether CLIL can be substantially enhanced if tailored academic literacy support is provided.

References

Ball, Philip, Kelly, Keith, & Clegg, John (2015). *Putting CLIL into practice*. Oxford, United Kingdom: Oxford University Press.

Biggs, John, & Tang, Catherine (2011). *Teaching for quality learning at university: What the student does.* Maidenhead, United Kingdom: Open University.

Breeze, Ruth (2012). *Rethinking academic writing pedagogy for the European university*. Amsterdam, The Netherlands: Rodopi.

Breeze, Ruth, & Dafouz, Emma (2017). Negotiating complex cognitive discourse functions in L1 and L2: Exam responses in a parallel L1-EMI university course. *System, 70*, 81-91.

Cenoz, Jasone, Genesee, Fred, & Gorter, Durk (2013). Critical analysis of CLIL: Taking stock and looking forward. *Applied Linguistics, 35*(3), 243-262.

Coetzee-Lachmann, Debbie (2009). *Assessment of subject-specific task performance of bilingual geography learners* (Unpublished doctoral thesis). University of Osnabrück, Germany. Retrieved from: https://repositorium.ub.uni-osnabrueck.de/bitstream/urn:nbn:de:gbv:700-2009030617/2/E-Diss864_thesis.pdf

Coyle, Do (2005). *Developing CLIL: Towards a theory of practice.* APAC Monograph 6. Barcelona, Spain: APAC.

Cummins, James (1979). Cognitive/academic language proficiency, linguistic interdependence, the optimum age question and some other matters. *Working Papers on Bilingualism, 19*, 121–129.

Dalton-Puffer, Christiane (2013). A construct of cognitive discourse functions for conceptualising content-language integration in CLIL and multilingual education. *European Journal of Applied Linguistics, 1*(2), 216-253.

Davies, Florence (1997). Marked theme as a heuristic for analysing text-type, text and genre. In Jordi Piqué & David Vieira, (Eds.), *Applied languages. Theory and practice in ESP* (pp. 45-71). Valencia, Spain: Universitat de València.

Flowerdew, John (2001). Genre in the classroom: A linguistic approach. In Ann Johns (Ed.), *Genre in the classroom: multiple perspectives* (pp. 91-103). London, United Kingdom: Routledge.

Hyland, Ken (2006). *English for academic purposes: An advanced resource book*. London, United Kingdom: Routledge.

Jordan, Robert R. (2010). *English for academic purposes.* Cambridge, United Kingdom: Cambridge University Press.

Krathwohl, David (2002). A revision of Bloom's taxonomy. *Theory into Practice, 41*(4), 212-218.

Lasagabaster, David, & Ruiz de Zarobe, Yolanda (2010). Ways forward in CLIL: Provision issues and future planning. In David Lasagabaster & Yolanda Ruiz de Zarobe (Eds.), *CLIL in Spain: Implementation, results and teacher training* (pp. 278–295). Newcastle upon Tyne, United Kingdom: Cambridge Scholars Publishing.

Llinares, Ana, Morton, Tom, & Whittaker, Rachel (2012). *The roles of language in CLIL*. Cambridge, United Kingdom: Cambridge University Press.

Lorenzo, Francisco. (2017). Historical literacy in bilingual settings: Cognitive academic language in CLIL history narratives. *Linguistics and Education,* 37, 32-41.

Lorenzo, Francisco, & Dalton-Puffer, Christiane (2016). Historical literacy in CLIL: Telling the past in a second language. In Tarja Nikula, Emma Dafouz, Pat Moore, & Ute Smit (Eds.), *Conceptualising integration in CLIL and multilingual education* (pp. 55-72). Bristol, United Kingdom: Multilingual Matters.

Marsh, David, Pérez Cañado, María Luisa & Ráez Padilla, Juan (Eds.). (2015). *CLIL in action: Voices from the classroom.* Newcastle upon Tyne, United Kingdom: Cambridge Scholars.

Martin, James, & Rose, David (2005). Designing literacy pedagogy: Scaffolding asymmetries. In Jonathan Webster, Christian Matthiessen, & Ruqaiya Hasan (Eds.), *Continuing discourse on language* (pp. 251-280). London, United Kingdom: Continuum.

Menken, Kate (2013). Emergent bilingual students in secondary school: Along the academic and literacy continuum. *Language Teaching, 46*(4), 438-476.

Meyer, Oliver (2015). *A pluriliteracies approach to teaching for learning*. Graz, Austria: ECML.

Nashaat Soby, Nashwa (2019). Operationalising "defining" from a cognitive discourse perspective for learners' use. In Sardar Anwaruddin (Ed.), *Knowledge mobilization in TESOL: Teachers' experiences of connecting research and practice* (pp. 95-112). Leiden, The Netherlands: Brill.

Pérez Cañado, María Luisa (2018a). CLIL and pedagogical innovation: Fact or fiction? *International Journal of Applied Linguistics, 28*, 369-390.

Pérez Cañado, María Luisa (2018b). CLIL and educational level: A longitudinal study on the impact of CLIL on language outcomes. *Porta Linguarum, 29*, 51-70.

Pérez Cañado, María Luisa (2018c). The effects of CLIL on L1 and content learning: Updated empirical evidence from monolingual contexts. *Learning and instruction, 57*, 18-33.

Polias, John (2015). *Apprenticing students into science: Doing, talking, writing and drawing scientifically.* Stockholm, Sweden: Hallgren and Fallgren.

Ruiz de Zarobe, Yolanda, & Zenotz, Victoria (2014). Strategic instruction in primary education: A pathway to successful learning in content-based courses. In Ruth Breeze, Carmen Llamas Saíz, Concepción Martínez Pasamar, & Cristina Tabernero (Eds.), *Integration of theory and practice in CLIL* (pp. 37-54). Amsterdam, The Netherlands: Rodopi.

Rumlich, Dominik (2016). *Evaluating bilingual education in Germany. CLIL students' general English proficiency, EFL self-concept and interest.* Frankfurt am Main, Germany: Peter Lang.

Shanahan, Timothy (2012). What is disciplinary literacy and why does it matter? *Topics in Language Disorders, 32*(1), 7-18.

Whittaker, Rachel, Llinares, Ana, & McCabe, Anne (2011). Written discourse development in CLIL at secondary school. *Language Teaching Research, 15*(3), 343-362.

Zydatiß, Wolfgang (2005). Diskursfunktionen in einem analytisch curricularen Zugriff auf Textvarietäten und Aufgaben des bilingualen Sachfachunterrichts [Discourse functions in an analytical curricular approach to text varieties and exercises in bilingual content teaching.] *Fremdsprachen Lehren und Lernen, 34*, 156-173.

Appendix A

Coding system
[P] Purpose (explain): should include reference to faster reproduction of books.
[KP] Key parts (describe): should include letters and press.
[M] Material (describe): should include ink.
[HW] How it works (explain): should explain how the ink gets onto the letters, and how pressure is used to print the letters on the paper.

Example 1: Answer containing 4 elements (coding after each element)
Gutenberg's printing press. First you need to prepare the ink [M]. Then you put the ink in a pair of spheres "ink balls" [KP]. When they are fully covered in ink [M] you apply it [HW] in the models [KP]. This models were made by hand in relief [KP] but they were sculpted in mirror [KP], so when the ink touches the paper it prints it good [HW]. After this you pick the paper, a huge one, in the inner part or a top. Then you close the door and you'll introduce in a press machine [KP] which press the ink in the paper [HW], then you open the door and take out the paper, which is typed [HW]. This actually helped a lot in the philosophy because copies were done lots of times faster than they did in the scriptoriums where they did the copies at hand [P]. By this way you saved time and the most important: the copies of very important texts or even music notes [P]. The history was parcialy saved. [P]
Comment: All 4 elements satisfactorily included.

Example 2: Answer containing 3 elements (coding after each element)
Firstly I'm going to describe the printing press, the printing press is all wood [M], you have to pass all the ink [M] to the letters [KP] that you are going to put in your text, then when you pass all the ink to the letters [HW] you put the paper between two _ [KP] and then you pull a wood thing [KP] to print the letters to the paper [HW].
Comment: Description of material, key parts and functioning are sufficient, but no mention of purpose.

Example 3: Answer containing 2 elements (coding after each element)
Firstly the Gutenberg's printing is the first printer and one of the most important inventions we had never seen. This inventions makes us knowed a lot of historical events of how people were discovered in that time. But how it works? Good question this fabulous machine works with print and it's a machine that makes that with like balls [KP] and like punching to the paper makes this paper with words [HW].
Comment: Only one key part is described explicitly, and the functioning is indicated a rather impressionistic manner. No reference to material or purpose.

Ruth Breeze, Universidad de Navarra
rbreeze@unav.es

EN **Ruth Breeze** is a senior lecturer in English at the Universidad de Navarra, Spain, where she combines teaching with research as a member of the GradUN Research Group in the Instituto Cultura y Sociedad. Her most recent books are *Corporate Discourse* (Bloomsbury Academic, 2015) and the edited volumes *Interpersonality in legal genres* (Peter Lang, 2014), *Essential competencies for English-medium university teaching* (Springer, 2016), and *Power, persuasion and manipulation in specialised genres* (Peter Lang, 2017). She teaches and supervises PhD candidates in the area of language education, and she has published widely on language teaching, CLIL, specialized languages, and discourse analysis.

ES **Ruth Breeze** es profesora titular de inglés en la Universidad de Navarra, España, y combina la enseñanza con la investigación en cuanto miembro del Grupo de Investigación GradUN en el Instituto de Cultura y Sociedad. Sus libros más recientes son *Corporate Discourse* (Bloomsbury Academic, 2015) y los volúmenes editados *Interpersonality in legal genres* (Peter Lang, 2014), *Essential competencies for English-medium university teaching* (Springer, 2016), and Power, persuasion and manipulation in specialised genres" (Peter Lang, 2017). Enseña cursos de doctorado y supervisa doctorandos en el ámbito de educación lingüística y, además, ha publicado numerosos artículos sobre enseñanza de idiomas, AICLE, lenguajes especializados y análisis del discurso.

IT **Ruth Breeze** è **Ruth Breeze** è professore associato di inglese presso l'Universidad de Navarra, in Spagna, e combina l'insegnamento con la ricerca in quanto membro del GradUN Research Group nell'Instituto Cultura y Sociedad. I suoi libri più recenti sono *Corporate Discourse* (Bloomsbury Academic, 2015) e i volumi *Interpersonality in legal genres* (Peter Lang, 2014), "Essential competencies for English-medium university teaching" (Springer, 2016) e *Power, persuasion and manipulation in specialised genre*s (Peter Lang, 2017). Insegna corsi di dottorato e supervisiona i dottorandi nel campo dell'educazione linguistica. Inoltre, ha pubblicato numerosi articoli sull'insegnamento della lingua, CLIL, linguaggi specializzati e analisi del discorso.

Pilar Gerns Jiménez-Villarejo, Universidad de Navarra
rbreeze@unav.es

EN **Pilar Gerns Jiménez-Villarejo** is a doctoral student at the Universidad de Navarra, Spain, under the supervision of Prof. Breeze. As a researcher in the School of Education, she has some teaching assignments in the Department of Research Theory and Methods in Education. She has a degree in Philosophy from the Universidad de Navarra and one in English Studies from the UNED, as well as a Masters in Teaching Social Science and Foreign Languages in Secondary School from the Universidad de Santiago. Her current research is focused on the literacy development of secondary students in a natural science CLIL context. She is currently conducting two field studies to empirically analyze the effects of working with cognitive discourse function on students' literacy development.

ES **Pilar Gerns Jiménez-Villarejo** es una estudiante de doctorado en la Universidad de Navarra, España, bajo la supervisión del la Prof. Breeze. Forma parte del grupo de investigadores de la Escuela de Educación y enseña algunas clases en el Departamento de Teoría y Métodos de la Investigación en la Educación. Es licenciada en Filosofía por la Universidad de Navarra y Filología Inglesa por la UNED, además, tiene un Máster en Enseñanza de Ciencias Sociales y Lenguas Extranjeras en la Escuela Secundaria por la Universidad de Santiago. Su investigación actual se centra en el desarrollo de la alfabetización de estudiantes de secundaria en un contexto AICLE de ciencias naturales. Actualmente está realizando dos estudios de campo para analizar empíricamente los efectos que trabajar con la función del discurso cognitivo causa sobre el desarrollo de la literacidad de los estudiantes.

IT **Pilar Gerns Jiménez-Villarejo** è una dottoranda presso l'Universidad de Navarra, in Spagna, sotto la supervisione della Professoressa Breeze. Ha alcuni incarichi di insegnamento presso il Dipartimento di Teoria e Metodi di Ricerca nell'Istruzione in quanto parte del personale di ricerca della School of Education. Ha conseguito una laurea in filosofia presso l'Universidad de Navarra e una in Anglistica presso l'UNED. Possiede, inoltre, un master in Insegnamento delle Scienze Sociali e delle Lingue Straniere nella Scuola Secondaria conseguito presso l'Universidad de Santiago. La sua attuale ricerca si concentra sullo sviluppo dell'alfabetizzazione degli studenti di scuola secondaria del corso di scienze naturali in un contesto CLIL. Attualmente sta conducendo due studi sul campo per analizzare empiricamente gli effetti che il lavoro con la funzione del discorso cognitivo produce sullo sviluppo dell'alfabetizzazione degli studenti.