CLIL students' definitions of historical terms

Nashwa Nashaat Sobhy

Department of Applied Linguistics, Universidad Politécnica de Valencia, Valencia, Spain

Ana Llinares

English Department, Universidad Autónoma de Madrid, Madrid, Spain

CLIL students' definitions of historical terms

The ability to manage specific forms of disciplinary expression—Languages of Schooling— is regarded as a factor of academic success (Council of Europe recommendations—CMRec, 2014). One of the core discursive functions students perform across academic subjects is defining, which is part of the inventory of descriptors for the language of schooling (e.g. Beacco, 2010).This study addresses defining as a component of the language of schooling by which CLIL students express specialized knowledge across languages, educational levels and fields (see Coffin, 2006b). We elicited, analysed and compared students' written definitions in English (L2) and Spanish (L1) of two different historical fields in primary (6th grade) and secondary (8th grade). For this purpose, we applied an analysis scheme that merges Trimble's (1985) definitional construct and Systemic Functional Linguistics (Halliday & Matthiessen, 2014; Martin, 2013). Our results show that while students produced more definitions in English in the higher educational level, the differences in their realizations are attributed more to the field being defined. The study has also shown no differences in the frequency and type of definitions across languages.

Keywords: language of history; defining; cognitive discourse functions; Content and Language Integrated Learning (CLIL); Systemic Functional Linguistics (SFL)

1. Introduction

Learning disciplinary content means learning the language of the discipline (Halliday, 2007). For students to access the content of a given subject, they need to learn its specific terms and discourse functions, which they then use in their productions to demonstrate knowledge of required content (Vollmer, 2006). There are linguistic expectations attached to academic contexts, not only in the choice of words, phrases and register but also in the organization of linguistic elements for meaning-making and genre construction (Schleppegrell, 2001). Whether schooling is in the students' first language (L1) or in an additional language (L2), 'languages of schooling' are understood to be specific disciplinary forms of expression in the different subjects (e.g., the language of history and science), with their oral and written norms (see Schleppegrell, 2004).

With the spread of different bilingual programs across Europe (EU), in which content instruction is carried through an additional language (mainly English), there is current emphasis in the EU on subject-specific language competences to be integrated with the

teaching of the content. These content-based language competences are regarded as indicators of educational success (Council of Europe recommendations—CMRec, 2014), the reason why descriptions of languages of schooling are currently sought on a continental scale (Lorenzo & Meyer, 2018). In this scenario, it has become paramount to guarantee that the cognitive functions present in different school subjects—science, mathematics, civics and history— (e.g., Beacco, Fleming, Goullier, Thürmann, Vollmer & Sheils, 2016) are made visible, and hence more accessible to both teachers and students. These include transversal cognitive and discourse functions like defining, comparing, and reasoning to name a few (Beacco, 2010; Beacco et al., 2016). Educational sociologists (e.g., Maton, 2014) and applied linguists (e.g., Dalton-Puffer, 2013; 2016; Vollmer, 2006) both believe that these functions have the potential to help provide learners with equal opportunities to access 'powerful knowledge', which Young (2011) explains as the specialist knowledge that enables learners to find explanations and adopt new ways of thinking, and which we consider especially complex in contexts where the learners are required to juggle several languages. The inventories and descriptors of these functions should also help students gain expertise in different knowledge structures (see Bernstein, 1999) so they may participate with confidence in cross-disciplinary academic activities.

It could be argued that students may acquire these functions from exposure and production practice, as they are exposed to different levels of knowledge decontextualization and grammatical structures both orally (e.g., in teacher presentations and interpretations) and in writing (textbook entries) and that these functions will develop naturally as they move up into higher educational levels. However, it is necessary to carry out research to identify students' potential difficulties in the realisation of these functions and their development in order to plan pedagogical action accordingly. This need is particularly relevant in CLIL (content and language integrated learning) contexts, where students learn content subjects like history and science through an additional language (L2) and, thus, not only are they accountable for learning to use these functions and adjusting their register to the field (history, science) and mode (written or spoken), but also for doing so in a non-native language. It is, thus, also necessary to identify whether conveying these functions in the L2 is an additional challenge (compared to carrying them out in the L1). In this paper we analyse CLIL students' production of one of these functions, definitions, in both the L2 and the L1, across educational levels and historical fields.

2. CLIL students' language of history

One of the school disciplines which is commonly taught in the L2 in different CLIL programs in Europe is history. From a discursive perspective, history is a subject where knowledge is created in a number of genres, each with its own language demands. To demonstrate knowledge of history, students are required to divide the past into historical periods (chronology), situating events and actions in time and referring to participants in these events. Students are expected to evolve in historical thinking and discourse from giving narratives to exploring cause and effect and finally to giving their personal stance on the past with supporting ideas (Coffin, 2006a, 2006b).

Because history has the goal of studying the past in a systemized fashion (Christie & Derewianka, 2009, p. 87), subject-specific terms (specialised and technical terms) are required as building blocks and inventories that denote the topics of the different subjects. Thus, defining subject specific terms is one of the key functions that allow teachers to monitor students' understanding of history. The ability to express the meaning of terms may be seen as a lower order cognitive function (remembering or applying) in comparison to other higher order levels in Bloom's Taxonomy, yet knowing the key terminology and concepts is fundamental for background-knowledge activation as well as for reading and listening comprehension (Beacco et al., 2016, p. 75-77). Also, the ability to define may be an important stepping-stone to perform higher order functions like reasoning and evaluating. Therefore, defining is one of the core transversal academic functions in both oral and written discourse (see Beacco 2010; Vollmer, 2010), but it is particularly central (for its frequency) in written academic discourse (Trimble, 1985).

Previous research on written language in CLIL contexts showed that when secondary students wrote essays in social sciences, they used a register similar to the one they employed in oral production, and they hardly used elaborations despite these being a feature of academic exposition (Llinares & Whittaker, 2007). Students are also seen to struggle with writing in history in the L1, as found when their productions were compared to the same in the L2 (Järvinen, 2010; Llinares & Whittaker, 2010). These researchers conclude that more research into the discourse functions of geography and history is required.

In this line, the present study aims to analyze CLIL students' written realization of historical definitions, both in the L2 and the L1 (in line with Llinares & Whittaker, 2007). In order to operationalize how CLIL students define in history, it is necessary to draw on models that can provide a description of the types and composition of definitions. Thus, in the next

section, we provide the framework for our analysis of CLIL students' definitions, drawing on Dalton-Puffer's framework of cognitive discourse functions (2016), Trimble's (1985) classification of definition types and on Systemic Functional Linguistics (SFL) (Halliday & Matthiessen, 2014) with its view of language as a system of linguistic choices that is used for communication purposes.

3. Defining as a cognitive linguistic operation

The inventory of descriptors for linguistic competences necessary for learning history (Beacco, 2010) posits defining as a cognitive operation of different levels, where recognizing definitions is at the lower end and producing definitions involving improvising, creating or proposing definitions are at the highest end (p. 21). Cognitively, asking students to define a term they are expected to remember from their textbooks is not similar to formulating one they have not studied before. For definition formulation, the descriptors show a range of possible linguistic realizations, but do not clarify whether any of them are more adequate than others for academic purposes. These realizations include—but are not limited to—defining by listing characteristics; giving examples; giving synonyms, antonyms and translations; using comparisons; using hypernyms and hyponyms; and relating the target term to a concept or theory (p. 21). If we take into account that defining can be categorized as a speech act (see. Austin, 1962), we can expect it to be realized in different ways. Defining has the specific communicative intent of telling others "about the extension of an object of specialist knowledge" (Dalton-Puffer, 2016), whether to introduce a new term, to repeat what a term means or to clarify it further (Flowerdew, 1991). The choice of the type of linguistic realization would, moreover, depend on the field (topic), the tenor (e.g., classroom exchanges vs. exam situation) and the mode (oral or written).

Appreciating that CLIL students need to deal with a wide scope of cognitive functions and their linguistic realizations in an L2 in their different subjects, Dalton-Puffer (2013; 2016) developed a framework of cognitive discourse functions (CDFs). These are patterns or schemata that emerge from repeated purposeful engagement with cognitive content for the purposes of learning. In her proposal, defining is one of seven CDFs (classifying, describing, explaining, exploring, reporting and evaluating), realized through classifying the target term by some class membership (hypernym-hyponym relationship as previously mentioned) and identifying or characterizing what is being defined through adjectives and relative clauses (full or reduced). While classifying and describing are other CDFs in their own right, they can also be components (or stages) of defining. When a definition unfolds over clear stages it

falls within the parameters of being a genre, which is a social process that is staged and goal-oriented (Martin & Rose, 2008, p. 6). We could, therefore, conclude that the more stages or functional components a definition has, the more it approximates a genre. In other words, it could be argued that while defining (as well as the other CDFs) will always function as a speech act because of its intent, it can also be developed into a genre in academic discourse. In our study, the participants were asked to provide definitions on certain terms, which could then develop (or not) into a genre.

3.1. Definition types and composition

In this section we describe the elements considered essential when formulating definitions and classify them by types depending on their composition. Benelli, Belacchi, Gini & Lucangeli (2006) and Trimble (1985) state that for an utterance to be considered 'a definition', the defined term (*definiendum*, or the subject of a definition) must be semantically equated to the offered description. The description must include specifying features (*differentia specifica*) that enable others to identify the term being defined. In SFL terms, Halliday and Matthiessen (2014) clarify that the 'identifying clause' not only assigns a class membership to the target term but reduces its meaning to only one identifiable entity (p. 276-277), which makes the structure reversible (e.g., *The deadliest spiders in Australia are funnelwebs* versus *Funnelwebs are the deadliest spiders in Australia*). The choice of the specifying features can vary from one person to another, as previously mentioned, but preciseness in defining is valued. When students were asked to define 'drug metabolism' in a recent study (Nashaat Sobhy, Winne, Marzouk, & Langa, 2017)), the students emphasized different characteristics (class words, causes, processes and/or results) in varying amounts of detail which led them to produce many correct definitions that varied in preciseness and length—from single sentences to whole paragraphs—, but a minimum of specifying features was necessary for the definition to effectively point to the target term.

With regards to types, Trimble (1985) structurally distinguishes between three: *formal definitions* which have class words (*definiens*, a word or a phrase used to define something) and specifying features; *semi-formal definitions* with specifying features only but no class words; and *non-formal definitions* in which the term is defined by merely assigning a synonym or an antonym. Examples from Trimble (1985) of the three types are respectively below:

a. A spider is an eight-legged predatory arachnid with an un-segmented body that injects poison into its prey.

b. An anemometer is (*missing definien*) used to measure the speed of the wind.
c. Foreigner is the opposite of 'indigenous'.

Formality here refers to the preciseness and closeness to the canonical structure through the mention of class membership (hypernym) to which the term belongs, followed by specific attributes that distinguish the target term from others. It does not refer to students' use of formal register. Benelli et al. (2006) advocate the use of canonical forms—*formal definitions* in Trimble (1985)— as it is a literacy skill that combines lexical, semantic and syntactic awareness, related to school achievement in general and resulting from formal instruction.

While accounting for students' use of canonical structures is important, it is not enough on its own for capturing the meanings in the different choices in definitional realizations. SFL (Halliday & Matthiessen, 2014) can contribute to that purpose. SFL theory views language as a social semiotic system through which language users create meaning and where language functions (i.e., what language does) are central. The context —composed of the field (topic in question), the tenor (relationship between interlocutors) and the mode (spoken or written)— determine the lexical and grammatical choices that users make (p. 33). In the case of schooling and CLIL, subject literacy and language proficiency levels would be other factors as well.

Functionally, SFL allows for a deeper understanding of the meanings in the composition of the identifying clause given that it offers several levels of delicacy (levels of analysis). Beyond class membership, the specifying features may include:

a. qualities (e.g., the patricians were *the rich* people);
b. possessions (e.g., …*had* property);
c. circumstance of place and time (e.g., *in* ancient Rome);
d. reports (e.g., … *discovered* America…), and
e. entities—an attribute like class membership that does not fulfil an identifying role on its own (p. 286) — (e.g., they were *farmers*).

Both Trimble (1985, p. 83-84) and Halliday and Matthiessen (2014, p. 507) mention expansions, where, after the specifying features are recalled and the target term is identified, the writer proceeds to complement the definition with additional information. One of the clearest expansions used in defining is exemplification (giving examples), also mentioned earlier (Beacco, 2010) when discussing linguistic realizations of defining in the descriptors for language competences in history. Others are mentioned in either Trimble (1985) or in

Halliday and Matthiessen (2014). The most common expansions (explicitly or implicitly related to the identifying clause) are:

a) exemplification, as previously mentioned (e.g., … *for example*, ….);
b) classifications (e.g., … *these have three types*…);
c) circumstances (adding information about time, space, manner, extent, cause, contingency or accompaniment often in the form of prepositional phrases; e.g., *in…, with …, because of…*);
d) clarifications (e.g., *this means that…*);
e) extensions (additional clauses that are not explicitly marked for any logical-semantic relation with the primary identifying clause);
f) explication (explaining new terms that come up when defining).

Examples from our data of these expansions are provided in Table 1 in the Results section.

The type and composition of a definition is highly related to the 'field' of the *definienda*. In SFL, 'field' is a topic or focus of a social activity (Coffin, 2006b, p. 29-30). While history in itself can be considered a field, Roman history or the history of France are narrower fields within which there are even narrower fields like events, periods and groups of people (p. 57). For example, definitions of historical periods are likely to include reference to time and/or place, whereas defining a social group will most likely require descriptions of their status and possessions. Thus, in order to address the type of *definienda* and its role in the type and composition of the definition, we draw on the notion of field in its narrow sense. The examples of history texts in Eggins, Martin and Wingell (1993, p. 79) show, for example, how the events in the definitions of historical periods distinguish one period from the other (e.g., "In 1469 *the term 'Middle Ages' was invented"*; or "During the Renaissance *men abandoned mediaeval ways of looking at life*"). This would not be the case if the field was social groups or historical objects. In our comparisons of students' definitions across groups, we also deal with different fields: historical periods and social groups.

3.2. Students' definitions: a pedagogical concern

Differences in students' performances when defining not only depend on knowledge of word meaning but also on their grammatical and syntactic definitional realizations. Unlike informal definitions, for example, formal realizations (*canonical* forms) will require that students use superordinates and relative clauses following certain conventions (see 3.1. for more on this point). Previous studies have found these differences to be a result of the

opportunities students have to practice definition forms. For example, students' definitions in the foreign language (French as a foreign language) were found to be less formal in comparison to those in their first language (English) because of the opportunities they had practicing with English as an academic language (Snow, 1990). In another study (Snow, Cancini, Gonzalez & Shriberg, 1989), students' productions of formal definitions correlated positively with their age and socio-economic class. These students were also higher academic achievers, so it seems that those who used formal structures were those with better access to school knowledge. What this means is that the communicative value of formal and informal definitions may be equally appreciated, but their academic value is different (Schleppegrell, 2004, p. 38). Flowerdew (1992), who analysed definitions in science lectures, states that defining is more associated with academic discourse than with casual discourse and reminds readers that defining via synonyms and antonyms is not advisable in academic settings. However, non-canonical/informal definitions that include expansions may provide teachers with more information about students' understanding of the actual term than some more simple canonical definitions. Thus, evaluating definitions will depend on contextual factors.

The only published study to our knowledge conducted in Spanish-English Bilingual/CLIL programs that has dealt with students' definitions is a recent study in Andalucía (Lorenzo, 2017). It showed that when 10th grade Bilingual program students were asked to write 200 to 400-word essays about the Industrial Revolution (contemporary history), definitions—among the other six CDFs—appeared in students' writing. Nonetheless, due to the coding procedure, only instances of formal definitions were identified, and the study only focused on students' realizations in the L2. We believe it is important to explore students' productions in the L1, as well as in the L2, motivated by Cummins' (1979) seminal work on linguistic interdependency, and social/parental/educational concerns regarding the ability of students who have studied certain disciplines in an L2 to express academic knowledge in the L1.

4. The present study: objectives and research questions

In the present study, we aim at identifying the types and composition of the written definitions by the same CLIL students across two fields in the subject of history (historical periods and social groups) in two educational levels: when the students were in grade 6 (primary school) and two years later when they are in grade 8 (secondary school). We also compare students' performance in the L2 (English) and the L1 (Spanish). Based on the previously discussed literature, by 'defining' we mean the production of a speech act or

communicative function (through one or more clauses) that specifies and relays the meaning of a given target term, and which may or may not correspond to a genre. We see definitions as an acquired academic skill that students verbalize and consider these verbalizations the outcome of cognitive operations. Through these verbalizations, students convey their knowledge in different manners and degrees of preciseness that we explore through the following questions:

(1) Do students' definitions vary across languages (L2 English vs. L1 Spanish)?
(2) In what ways do students' definitions vary across fields and educational levels?

5. Methodology

5.1. Project overview and research context

This study is part of a larger research project[1] which focuses on CLIL students' transition from primary to secondary education. Following Nikula, Dafouz, Moore and Smit's (2016) multidimensional approach to the understanding of content and language integration, the project addresses this transition in three main areas: a) students' motivation and beliefs about learning their school subjects in a second language; b) their content and language engagement in different types of classroom practices; c) students' academic spoken and written linguistic production in their realization of CDFs. In this paper, we focus on the third objective, where we analyse students' linguistic realisations of one of these CDFs: 'definitions.

5.2. Participants

The participants are students in the Comunidad de Madrid bilingual project in their transition between primary and secondary school. Since grade 1, these students have studied 1/3 of the curriculum in English, including the discipline of social science (which includes both geography and history contents). The present study focuses on the same students' performance in history in grade 6 (primary school) and 2 years later (grade 8) when they were in the secondary school. While in the primary school all students did history in English, in the secondary school only the students that accredited a minimum of A2 level (CEFR) at the end

[1] This project has received support from the Spanish Ministry of Economy and Competitiveness (FFI2014-55590-R)

of primary were placed in the high-exposure strand (*sección bilingüe*) and were taught history in the L2. The rest of the students, placed in the low-exposure strand (*programa bilingüe*), studied history in Spanish.

5.3. Data and Analysis

In the overall project, in order to elicit students' academic language performance in each of the 7 CDFs (define, describe, explain, report, classify, evaluate and explore) prompts on history topics recently studied in class were designed in collaboration with the class teacher in each grade. In order to see if the students were able to respond to the same prompts in the L1 (Spanish) about topics that they had studied in the L2 (English), some students in grade 6 responded to the same prompt in Spanish (i.e. two groups with a total of 48 students were randomly assigned the prompt in Spanish and a third group with 27 students was randomly assigned the prompt in English). In the secondary school data, only the students' production in English was analyzed (32 students in the high-exposure strand, 26 of whom were continuing students from the primary school under analysis)[2]. The students did not receive any instruction on how to perform the CDFs. The specific parts of the prompts eliciting definitions were as follows:

(1) 6th – grade Primary (English and Spanish): The prompt instructed the students to imagine themselves as time-travelers who could travel back to the *Discovery of America* (1492-1600), *the French Revolution* (1789) or *the Industrial Revolution* (1800-1900) and they decide to write a blog. For the definition CDF, the students were asked to DEFINE the age chosen to travel to in the blog. The students were, thus, asked to define a *historical period*.

(2) 8th – grade Secondary (English): the prompt instructed the students to imagine they arrived in Ancient Rome in the time of the Republic. For the definition CDF, they had to DEFINE *patricians* and *plebeians* to the readers of their blogs. This time, they were, then, expected to define *social groups*.

Our coding was based on Trimble's (1985) distinction between formal, semi-formal and non-formal definitions; however, we did not distinguish between the latter two types (i.e., the non-

[2]The history data in English is comparable across educational levels as 26 out of the 27 primary school students who responded to the prompt in English were streamed into the high-exposure group in the secondary school under study, where history was also taught in English. The remaining students from the secondary school data (6) came from other bilingual primary schools in the area.

formal definitions we encountered were coded as semi-formal as well). From the SFL perspective, we used the finer levels of delicacy in Halliday and Matthiessen (2014). A scheme reflecting both the structural approach (Trimble, 1985) and the systemic functional approach (Halliday & Matthiessen, 2014) was created in the UAM-Corpus Tool (see O'Donnell, 2008) in the form of layers (see Table 1). The data was coded by the coauthors. Coding decisions were taken after thorough discussion and full consensus.

Table 1. Definitions: types, components and examples

Following Trimble (1985)		Examples	Description
Definition Types	Formal (canonical)	A patrician ***is a person*** who had …	*Canonical form with definiens and differentia*
	Semi-formal (non-canonical)	Patricians ------- Ø------ had …	*Definition without an explicit definiens (with or without a differentia)*
Following Halliday and Matthiessen (2014)			
Differentia	Class	The Patricians were **the aristocracy of Rome**	*The differentia is in the position of the definiens and functions as class*
	Quality	The patricians … and ***were rich people***	*Assigning a quality to the definiendum*
	Possession	Plebeians ***had some civil rights***	*Assigning possession to the definiendum*
	Circumstance	A plebeian…and lived ***in small houses***	*Assigning a circumstance to the definiendum (time, space, manner, extent, cause, contingency, accompaniment)*
	Report	In this age, Christopher Columbus ***discovered America***	*Differentia takes the form of 'reporting' actions or events accomplished in the past*
	Entity	The plebeians ***were artisans and small farmers***	*Attributing the definiendum with a membership specification*
Expansions	Classification	…hay ideas famosas de esta epoca, cuales son: ***la libertad, la igualdad y la fraternidad*** [*There are famous ideas from that period, which are: liberty, equality and fraternity*]	*Elaboration: Taxonomizing and categorizing*
	Explication	No examples found	*Elaboration: Using synonyms to explain terms that need explanation within the*

			definition, found in natural sciences and technology, according to Trimble (1985)
	Exemplification	Plebeians were … ***like peasants***	*Elaboration: Giving examples*
	Circumstance	Patricians were… ***because they were the riches and powerful families in Rome***	*Enhancement: Expanding through circumstance (time, space, manner, extent, cause, contingency, accompaniment)*
	Clarification	People who were rich…were Patricians, and ***were the ones who owned large plots of land and wore the highest quality clothes***…	*Elaboration: to be more precise or to back up the primary clause with an explanatory comment*
	Extension	Plebeians were very poor. ***They didn't have any free time***.	*Expansion clauses that are not explicitly marked for any logical-semantic relation.*

Though the UAM corpus tool is built to provide a non-parametric Chi square test of independence, a Yates Chi Square and Yates p-value were required instead in order to account for instances of low frequencies in our data. The statistical treatment was applied at a confidence level of 95% ($p=\leq 0.05$) and df=1 using Preacher's (2001) interactive Chi square calculator.

6. Results

The comparisons of interest were (1) between 6th grade primary definitions of historical periods in English and Spanish; and (2) between 6th grade primary and 8th grade secondary, who respectively defined historical periods and social groups in English.

The two posed questions are answered below in 6.1. and 6.2. The canonical/non-canonical approach to analyzing definitions was useful in identifying the structures used most by the students, and the SFL approach enabled us to conduct a finer grained analysis of students' choices of specifying features and expansions.

6.1. A comparison of definitions across languages

As illustrated in Table 2 below, primary school students' performance on definitions in English and in Spanish were compared. The results showed that significantly more students (who were randomly assigned prompts in Spanish and English) opted to answer when they wrote in Spanish (79.16%) than when they wrote in English (33.33%) {$X^2 = 12.16$

(p≤0.00)}. This outcome indicates that many of these students—who had only studied history through English for the entire duration of their schooling—were not deterred from using their first language to define historical periods.

Table 2. Instances, types and components of definitions across languages at Primary school level (Historical Periods)

		English Def. in Primary		Spanish Def. in Primary		Yates X^2	Yates $p \leq 0.05$
		N of Ss = 27	%	*N* of Ss = 48	%		
N of Definitions		9	33.33	37	79.16	12.16	**0.00** +++
	Formal	1	11.11	11	29.73	0.51	0.47
	Semi-formal	8	88.89	26	70.27	0.51	0.47
N of Differentia (specifying features)		F =13		F= 81			
	Class	3	23.08	19	23.17	0.10	0.74
	Quality	1	7.69	24	29.27	1.45	0.22
	Possession	1	7.69	0	0.00	1.23	0.26
	Circumstance	2	15.38	17	20.73	0.00	0.92
	Report	5	38.46	19	23.17	0.65	0.41
	Entity	1	7.69	2	2.44	0.03	0.84
N of Expansions		F = 5		F = 21			
	Classification	0	0.00	1	4.55	0.63	0.42
	Explication	0	0.00	0	0.00	0.06	0.80
	Exemplification	0	0.00	1	4.55	0.63	0.42
	Circumstance	4	80.00	3	13.64	5.83	**0.01** ++
	Clarification	0	0.00	4	18.18	0.13	0.71
	Extension	1	20.00	12	54.55	0.99	0.31

Moving to definition types, the results in Table 2 show that the primary school students produced semi-formal structures mainly, irrespective of the language (88.89% in English and 70.27% in Spanish out of the total number of definitions). In other words, they rarely used 'class' membership in their definitions. Interestingly, the definitions of the historical periods in the students' history textbooks did not include class terms either and, thus, the slot for '*class*' tended to be empty, as it was often present in the defined term itself (e.g. "The Modern *Age* started with the Discovery of America in 1492 and ended with the French Revolution in 1789."). This means that the consideration of adequate definitions does not only depend on them being canonical (formal or semi-formal).

The finer grained analysis of both the *specifying features* and the *expansions* again showed no differences between students' performances in both languages. Concerning expansions, 55.5% of the definitions were expanded in English (5 out of 9), and 59.4% were expanded in Spanish (21 out of 37). The only exception was the students' significantly higher use of *circumstance—expansions* in English (80%) than in Spanish (13.64%) {$X^2 = 5.83$ ($p \leq 0.01$)}. The use of expansions as circumstances of time, space, manner, extent, cause, contingency, accompaniment, and so forth represent students' more detailed realization of the definition. A closer look at *circumstance* occurrences in English definitions showed that the four occurrences were enacted by three students only, who used circumstance of time, cause and accompaniment when defining the *Discovery of America* and the *French Revolution*. On the other hand, and probably because a larger number of students produced definitions in Spanish than in English (37 vs. 9), their expansion choices in Spanish were more varied (they used all expansion types except 'explication'). The identifiers (specifying features) and expansions in students' definitions in English and Spanish were not different from their textbook definitions of these periods. The latter were observed to mainly require time-setting and the mention of events that characterize the period being referred to (e.g., "*The Modern Age started with the Discovery of America in 1492 and ended with the French Revolution in 1789. Important events were the increase in the power of kings*"). *Differentia* were mostly composed of circumstances (e.g., "*This happened in 1789*") or reports (e.g., "…*many French people rebelled against their king*), and textbooks expansions were composed of extensions (e.g., "*It introduced a new form of government to the world: liberalism*") and circumstances. To conclude, the language in which definitions were performed (English or Spanish) did not seem to have a special effect on the types or structures that students used.

6.2. A comparison of definitions in English, across fields and educational levels

The second main purpose of this paper was to compare the same students' realization of definitions in English, comparing their performance across fields and educational levels (grade 6 and grade 8). As illustrated in table 3, significantly more definitions were produced in English by the secondary school students continuing within the CLIL program (77.08%) than in primary (33.33%) {$X^2 = 7.28$ ($p \leq 0.00$)}.

With regards to definition types, the results showed that at secondary level the students produced significantly more formal definitional structures (63.04%) {$X^2 = 6.22$ ($p \leq 0.01$)} while they produced significantly more semi-formal structures when they were in

primary (88.89%) {$X^2 = 6.89$ ($p \leq 0.00$)}. We see that this difference may be mostly attributed to the nature of the defined field. Defining a historical period, as previously explained, entails referring to the target period as a point in time that is often mentioned or implied in the defined term. In contrast, the textbook definitions of the target social groups included were found to include both formal and semi-formal structures, including reference to *people* or *groups* in the form of class words.

Table 3. Instances, types and components of definitions in English across fields and educational levels

		English Def in Primary		English Def in Secondary		Yates X^2	Yates *p* value ≤ 0.05
		N of SS = 27	%	*N* of Ss = 32	%		
N of Definitions		9	33.33	23+23[3]	77.08	7.28	**0.00** +++
	Formal	1	11.11	29	63.04	6.22	**0.01** ++
	Semi-formal	8	88.89	17	34.78	6.89	**0.00** +++
Differentia		F =13		F =134			
	Class	3	23.08	30	22.39	0.08	0.77
	Quality	1	7.69	16	11.94	0.00	1.00
	Possession	1	7.69	46	34.33	2.73	0.09
	Circumstance	2	15.38	10	7.46	0.21	0.64
	Report	5	38.46	22	16.42	2.51	0.11
	Entity	1	7.69	9	6.72	0.19	0.65
Expansions		F =5		F =23			
	Classification	0	0.00	0	0.00	0.06	0.80
	Explication	0	0.00	0	0.00	0.06	0.80
	Exemplification	0	0.00	2	8.70	0.07	0.78
	Circumstance	4	80.00	2	8.70	8.52	**0.00** +++
	Clarification	0	0.00	4	17.39	0.09	0.76
	Extension	1	20.00	15	65.22	1.83	0.17

The effect of the field or educational level was not statistically detected in either the *differentia* used by the students or in the type of *expansions*, except where primary students had a clustered use of circumstance–expansions (80%), which was significantly higher than those used by secondary students (8.70%) {$X^2 = 8.52$ ($p \leq 0.00$)}. Qualitatively, at secondary

[3] Out of the thirty-two students in class, twenty-three students answered. The prompt asked them to define 2 social groups (Plebeians and Patricians), so they produced double definitions; i.e., 46 definitions (23+23).

level students also seemed to show more variety in their realizations in both parts. Both the textbook definitions as well as those produced by the students included differentia with possessions (e.g., "*They had some rights"*) and expansions with exemplifications (e.g., "*Senators, magistrates, important landowners and rich businessmen were part of this group*"), clarifications (e.g., "These nobles formed a minority of the population…*they held political rights and were very rich*) and extensions (e.g., "formed by the richest and most powerful families… *they claimed to be the descendants of the founder of Rome*").

7. Discussion

This study has focused on CLIL students' realizations of definitions in history across languages (English and Spanish) and fields (historical periods and social groups) in two educational levels (grade 6 in primary and grade 8 in secondary). The comparative analysis of the primary school students' definitions in the language of instruction (L2-English) and their mother tongue (L1-Spanish) has shown that the students defined more in Spanish than in English. This suggests that, in spite of having received instruction on history in English during their whole school life (since grade 1), these students are able to define academic terms in their mother tongue (Spanish). This result, then, goes against some public beliefs that bilingual education may affect students' expression of academic content in the L1[4]. In contrast, grade 6 students defined very little in English (only 33.33% of the students). Interestingly, the percentage of these students' definitions in English increased two years later, when these students were in secondary school (grade 8). This increase may be a reflection of the students gaining more confidence in their academic use of the L2 as they grow older, but it may also be related to a task effect, as defining social groups may be cognitively more manageable than defining time periods. In other words, while defining classes of people is concrete, the concept of 'time' in historical periods is abstract and, thus, it may be more difficult to define than social actors. This, however, is an issue that would need to be investigated further in future studies controlling the field to the micro level.

Regarding definition types and definition components in grade 6 students' production, no differences were observed across languages. The students mostly used semi-formal definitions in both languages, and they expanded equally in both (slightly over 50% of the definitions were expanded in both languages). This result suggests that defining in this context may not depend on the language in which the definition is executed. It also raises the

[4] https://www.cuartopoder.es/ideas/2017/02/04/bilinguismo-ni-se-aprende-ingles-ni-science-2/

question whether defining as a cognitive discourse function is part of the learner's underlying common language proficiency (Cummins 1979), hence the possible effect of learning how to produce cognitive discourse functions in a second language (L2) on students' expression of those functions in the L1—despite the L2 being the language of instruction. In sum, in line with Cummins (1979), and considering the limitations of the present study, the results show no apparent differences in students' definitions across languages.

More differences were found when the different historical fields in the two educational levels (historical periods and social groups) were compared. The students produced more semi-formal definitions in primary and more formal definitions in secondary. This difference may not be related to a potential development in the higher educational level, but rather to the realization requirements of the historical field, as textbook definitions of historical events were semi-formal while those of social groups were formal. For example, *the Modern Age* was defined in the textbook used by the students as "The Modern Age started with the Discovery of America in 1492 and ended with the French Revolution in 1789", whereas *Patricians* were defined as "a minority formed by the richest and most powerful families". Despite the effect of the field, there is indication of development in the higher educational level as at secondary school the students used a wider variety of differentia, including expansions, than when they were in primary, though they had not received any specific instructional intervention on definitional structures. Further research will need to be carried out to confirm whether this difference is due to the effect of the field or to students' development of resources to make their definitions more informative.

8. Conclusion

This study has been undertaken to throw light on a key feature of CLIL students' achievements, the extent to which they develop mastery of the language of the discipline they are learning in the L2. Successful CLIL pedagogy necessarily includes among its aims students' mastery of the language of the disciplines. The function of defining is a common requirement in the curriculum in all disciplines, and it is often used by teachers to monitor (and assess) students' understanding of academic terms or concepts. But in order to be able to help teachers to scaffold their students into the realization of appropriate definitions, it is necessary to operationalize definitions and identify types and components and how these vary across fields. For this purpose, in the present study, we have combined Dalton-Puffer's (2013; 2016) conceptualization of definition as a cognitive discourse function and Trimble's (1985) distinction between canonical/formal and semi-formal/non-formal definitions. In

addition, in order to be able to identify the language demands and challenges of defining in the L2, SFL and its characterisation of lexicogrammar as a network of systems has proved a powerful tool to operationalize the language components that constitute a definitional construct.

The study has raised the issue of what can be considered a 'good' definition and how teachers can be helped to assess the quality of their students' definitions in their academic language production. Drawing on the analyses carried out in this study, it could be argued that (a) good definitions need not be canonical; in fact, this study has shown that definitional structures vary according to the field of the defined term; and (b) the more specific differentia and expansions there are, the easier it is to identify the target term and to assess the extent of the learners' knowledge. We believe these insights are relevant for CLIL teacher education and training purposes when addressing the role of definitions in different disciplines. It would also be interesting to analyze the characteristics of oral definitions and whether teacher-students or student-student co-constructed definitions play a role in conveying more detailed (although perhaps less canonical) definitions of key terms in the classroom. In sum, it is necessary to identify the different functional components and linguistic demands of definitions, also as genres that will be staged differently according to the register variables of field, tenor and mode.

Finally, the results from the study suggest that the language (L2 or L1) plays a minor role in how students define. In contrast, the field and the educational level of the students seem to have influenced the frequency, types and composition of their definitions in the L2. Although further research would be needed to investigate these findings more deeply, in the light of the results from this study, there are two main implications for teacher training and policy making in CLIL: a) the need to train teachers on how to help students to formulate definitions regardless of the language of instruction but taking into account differences across fields. Due to the observed role of field in the type and composition of definitions, it may be sensible to organize specific training courses according to subject areas and fields within them; b) the importance of the continuation of CLIL programs from primary into secondary education, as it is not until this level that students have produced more and more varied definitions in English. Whether this is the case, in spite of the field to be defined, will need to be confirmed in future studies.

References

Beacco, J. C. (2010). *Items for a description of linguistic competence in the language of schooling necessary for teaching/learning history (end of obligatory education)*. Strasbourg: Language Policy Division, Council of Europe.

Beacco, J. C., Fleming, M., Goullier, F., Thürmann, E., Vollmer, H., & Sheils, J. (2016). *A handbook for curriculum development and teacher training. The language dimension in all subjects*. Strasbourg: Language Policy Division, Council of Europe.

Benelli, B., Belacchi, C., Gini, G., & Lucangeli, D. (2016). 'To define means to say what you know about things': the development of definitional skills as metalinguistic acquisition, *Journal of Child Language*, *33*, 71–97

Bernstein, B. (1999). Vertical and horizontal discourse: An essay. *British Journal of Sociology of Education*, *20* (2), 157–173

Christie, F., & Derewianka, B. (2010). *School discourse: Learning to write across the years of schooling*. A&C Black.

Coffin, C. (2006a). Reconstructing personal time as collective time: Learning the dis-course of history. In R. Whittaker, M. O'Donnell, & A. McCabe (Eds.), *Language and literacy: Functional approaches* (pp. 207–232). London: Continuum.

Coffin, C. (2006b). *Historical discourse*. *The language of time, cause and evaluation*. London: Bloomsbury Publishing, Continuum.

Council of Europe CM/Rec (2014). Recommendation of the Committee of Ministers to member States on the importance of competences in the language(s) of schooling for equity and quality in education and for educational success. *Retrieved from* https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=09000016805c6105, December 25th, 2018.

Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research, 49*, 222-251

Dalton-Puffer, C. (2013). A construct of cognitive discourse functions in CLIL and multilingual education. *European Journal of Applied Linguistics*, *1*(2), 216–253

Dalton–Puffer, C. (2016). Cognitive discourse functions: Specifying an integrative interdisciplinary construct. In T. Nikula, E. Dafouz, P. Moore & U. Smit (Eds.), *Conceptualising integration in CLIL and multilingual education*, 29–54

Eggins, S., Martin, J. R. & Wignell, P. (1993). The discourse of history: Distancing the recoverable past. In M. Ghadessy (Ed.), *Register analysis: Theory and practice* (pp. 75-109). New York: Pinter Publishers.

Flowerdew, J. (1991). Pragmatic modifications on the 'representative' speech act of defining. *Journal of Pragmatics*, *15*(3), 253–264

Flowerdew, J. (1992). Definitions in science lectures. *Applied linguistics*, *13*(2), 202–221

Halliday, M.A.K. (2007). Language and education. In J. J. Webster (Ed.), *The collected works of M.A.K. Halliday* (Vol. 9, pp. 368–82). London: Continuum.

Halliday, M. A. K., & Matthiessen, M. I. M. (2014). *An Introduction to Functional Grammar* London: Hodder.

Järvinen, H-M. (2010). Language as a meaning making resource in learning and teaching content. Analysing historical writing in content and language integrated learning. In Dalton-Puffer, C., Nikula, T. & Smit, U. (eds.). *Language use and language learning in CLIL classrooms* (pp. 145-168). Amsterdam: John Benjamins.

Llinares, A. & Whittaker, R. (2007). Talking and Writing in a Foreign Language in CLIL contexts: A Linguistic Analysis of secondary school learners of geography and history. *Revista española de lingüística aplicada*, *1*, 83-94

Llinares, A., & Whittaker, R. (2010). Writing and speaking in the history class. *Language use and language learning in CLIL classrooms*, 125-144

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

Lorenzo, F., & Meyer, O. (2018). Languages of Schooling: language competence and educational success, *6*(1), 1–3

Maton, K. (2014). Building powerful knowledge: The significance of semantic waves. In B. Barrett & E. Rata (Eds.), *Knowledge and the future of the curriculum*: *International studies in social realism* (pp. 181–197). London: Palgrave Macmillan.

Martin, J. R. (2013). Embedded literacy: Knowledge as meaning. *Linguistics and Education*, *24*, 23–37

Martin, J. R., & Rose, D. (2008). *Genre relations: Mapping culture*. London: Equinox.

Nashaat Sobhy, N., Winne, P., Marzouk, Z., & Langa, E. (2017, October). Using trace data to take a peek into the black box: The case of 'definitions'. Paper presented at the 5th Integrated Content and Language in Higher Education, University of Copenhagen, Denmark.

Nikula, T., Dafouz, E., Moore, P., & Smit, U. (Eds.). (2016). *Conceptualising integration in CLIL and multilingual education*. Bristol, UK: Multilingual Matters.

O'Donnell, M. 2008. "Demonstration of the UAM CorpusTool for Text and Image Annotation". *Proceedings of the ACL-08: HLT Demo Session Companion Volume*, 13-16. Columbus, Ohio: Association for Computational Linguistics.

Preacher, K. J. (2001). Calculation for the chi-square test: An interactive calculation tool for chi-square tests of goodness of fit and independence [Computer software]. Available from http://quantpsy.org.

Trimble, L. (1985). *English for science and technology: A discourse approach*. Cambridge: Cambridge University Press.

Schleppegrell, M. J. (2001). Linguistic features of the language of schooling. *Linguistics and education*, *12*(4), 431–459

Schleppegrell, M. J. (2004). *The language of schooling: A functional linguistics perspective*. New Jersey: Lawrence Erlbaum Associates, Inc.

Snow, C. E. (1990). The development of definitional skill. *Journal of Child Language*, *17*(3), 697–710

Snow, C. E., Cancini, H., Gonzalez, P., & Shriberg, E. (1989). Giving formal definitions: An oral language correlate of school literacy. *Classrooms and literacy*, 233–249

Vollmer, J. H. (2006). Languages across the curriculum. Languages of Schooling: towards a Framework for Europe. *Language Policy Division*, Strasbourg. Retrieved from https://rm.coe.int/16805c7464.

Vollmer, J. H. (2010). Items for a description of linguistic competence in the language of schooling necessary for learning/teaching sciences (at the end of compulsory education): An approach with reference points. *Language and School Subjects: Linguistic Dimensions of Knowledge Building in School Curricula* (2). Language Policy Division. Directorate of Education and Languages, DGIV. Strasbourg: Council of Europe.

Young, M. (2011). What are schools for? *Educação, Sociedade & Culturas*, *32*, 145–155