

Thinking skills in Primary Education: An Analysis of CLIL Textbooks in Spain

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Received: 7 January 2019 / Accepted: 15 December 2019

ISSN paper edition: 1697-7467, ISSN digital edition: 2695-8244

ABSTRACT: In this work an analysis of CLIL textbooks based on Bloom's taxonomy and the subsequent revision made by Anderson and Krathwohl will be conducted. The objective is to ascertain whether teachers have at their disposal a bibliographical support consistent with the didactic tenets that the CLIL methodology promotes. The bidimensional table proposed by these authors has been utilized as a tool of analysis, taking both the cognitive and knowledge dimensions into account. Within the latter, the study focuses on the metacognitive knowledge level. Six Natural Science textbooks for sixth year of Primary Education, designed by different publishers and currently in use, have been analyzed. These textbooks have been designed according to the CLIL approach. We purport to verify whether these materials develop High Order Thinking Skills (HOTS), which are necessary for the proper development of this approach. It can be concluded that 66% of the analyzed materials do not promote the necessary HOTS for the proper implementation of the CLIL approach. Therefore, a change in the elaboration of textbooks is deemed necessary.

Keywords: CLIL, Bloom's taxonomy, critical thinking, thinking skills, metacognition.

Habilidades de pensamiento en Educación Primaria: un análisis de libros de texto AICLE en España

RESUMEN: En el presente trabajo se realizará un análisis de libros de texto AICLE partiendo de la taxonomía de Bloom y de la posterior revisión de Anderson y Krathwohl. El objetivo es comprobar si los docentes disponen de un soporte bibliográfico coherente con los principios didácticos que la metodología AICLE impulsa. Se aplica como herramienta de análisis la tabla bidimensional desarrollada por estos autores, considerando la dimensión cognitiva y la dimensión de conocimiento. Dentro de la dimensión de conocimiento, el estudio se detiene en el nivel de conocimiento metacognitivo. Se analizan seis libros de texto de Natural Science de sexto curso de Educación Primaria diseñados por diferentes editoriales y actualmente en uso. Se pretende precisamente comprobar si estos desarrollan las habilidades de pensamiento de orden superior (HOTS), siendo estas destrezas necesarias para el correcto desarrollo de este enfoque. Se concluye que el 66% de los materiales analizados no desarrollan mínimamente los HOTS para una correcta implementación del enfoque AICLE, por lo que resulta necesario un cambio en la elaboración de materiales didácticos.

Palabras clave: AICLE, taxonomía de Bloom, pensamiento crítico, habilidades del pensamiento, metacognición.

1. INTRODUCTION

In recent decades, the Spanish educational landscape has been seriously called into question. Poor motivation or academic failure (MEFP, 2018) are some of the aspects that have led both academics and the general public to call on a major methodological change that promotes more meaningful and long-lasting learning. This change does not necessarily mean administrative or legislative reform, but rather a transformation in didactic approaches.

Outside our borders, methodologies based on ‘teaching how to think’ have been developed and successfully applied with very positive results, as documented in McGuinness’ review (1999). Higgins & Baumfield (1998) also present a review of various initiatives that have been carried out in UK schools since the 1980s. All of the studies analysed show their effectiveness not only in the intellectual development of students, but also in their personal development.

Despite the fact that methodologies including thinking skills are a common reality in other countries, they are still largely unknown in Spain. This, in fact, contradicts the current Education Act, which states that:

El alumno es el centro y la razón de ser de la educación. El aprendizaje en la escuela debe ir dirigido a formar personas autónomas, críticas con pensamiento propio. [...] Necesitamos propiciar las condiciones que permitan el oportuno cambio metodológico, de forma que el alumno sea un elemento activo en el proceso de aprendizaje. (Ley Orgánica 8/2013, preámbulo I y IV).

Hence, given the requirements of Spanish legislation and experiences in other countries with positive results, it is not unreasonable to advocate an educational model that promotes programmes to develop thinking skills in Spain. This methodological change, in fact, is one of the milestones that characterises the current Content and Language Integrated Learning (CLIL) method, an approach for learning academic content through the medium of a foreign language. Coyle (1999) emphasises that this approach improves intercultural awareness and allows the development of deeper cognitive processes in relation to the subject matter. In the latter case, this methodology presents two interrelated pathways for the cognitive development of the student: bilingualism, with the cognitive benefits that it in itself represents (Van de Craen, Mondt, Allain & Gao, 2007; Surmont, Struys, Van de Noort & Van de Craen, 2016; Van den Noort, Struys, Bosch, Jaswetz, Perriard, Yeo, Barisch, Vermeire, Lee & Lim, 2019) and the programmed development of thinking skills (Meyer, 2010), also focusing on the independent processes of content construction and the fact of sharing and communicating this knowledge (Meyer, Coye, Imhof & Connolly, 2018).

In light of such a proposal for methodological change then, it would be interesting to study how this change is proceeding. Although the analysis factors are diverse, this paper will focus on an analysis of different CLIL textbooks proposed by different publishers. More specifically, we will focus on six natural science books for primary education. The aim is to ascertain whether the material fulfils the necessary conditions for the development of thinking skills.

On the basis of the aforementioned, the objectives of this paper could be formulated in the following way:

- To carry out an analysis of the thinking skills described by Anderson and Krathwohl and presented in various CLIL natural science textbooks (primary Year 6) in order to assess the degree to which they promote students' cognitive skills.
- To make a comparison of the results obtained with different publishers in order to assess the degree to which the thinking skills used promote the principle of cognition in students.

2. THINKING SKILLS IN EDUCATION

Throughout our lives, we go through different processes that determine in a certain way our capacity for thought. In spite of these changes, the human species is rational by nature and views this rationality as an element of personal identity. It is, in fact, this ability that gives meaning to education and makes this a fundamental aspect that characterises us as a species. However, although it can be said that thinking is an everyday activity, conscious thought, thinking about thinking and the possibilities of educating these skills represent a major challenge. With the development of pedagogy and didactics, and mainly based on the cognitive psychology of Piaget and the constructivism of Vygotsky, different authors in the English-speaking world advocate an education focused on the development of intellectual abilities (*see* Difabio de Anglat, 2005; Newsome, 2000; and Wenglinsky, 2004).

Pioneering authors such as Feuerstein and Lipmann provided teachers with models of methodological application in schools which facilitated not only their practice, but also reflection on the possibilities of teaching cognitive skills systematically in the classroom (Higgins, 2015). De Bono (1970) and Paul (1982) also led the way in this field with their proposals for the development of creative thinking and critical thinking, respectively. In the second half of the 1980s, critical thinking had its heyday and became a common education practice all over Europe. Despite the rise and expansion of thinking skills, it is surprising that in Spain we can hardly find any trace of these approaches. Only later did schools in different provinces begin to introduce Robert Swartz's thinking-based learning in their classrooms (Swartz, Costa, Beyer, Reagan & Kallick, 2008).

More recent bibliography also shows an increasing interest in thinking skills development frameworks, pedagogical proposals and applied methodologies to different fields. A search in different indexes will yield hundreds of articles about teaching thinking skills in higher education or critical thinking in Health Science professional training. Also, as foregrounded above, CLIL courses are shown to be an opportunity to introduce cognitive development. As for Primary and Secondary education, authors such as Swartz and Perkins (2016) or Marzano (2019) continue to research how to improve thinking skills teaching and cognitive development through pedagogical proposals.

2.1. Conceptual approach

There is no consensus among authors when it comes to defining what thinking is, not even in the terminology used. It is thus a complex phenomenon with many facets (Nickerson, 1986) and, therefore, difficult to conceptualise. Similarly, the fact that more than 60

methods have been formulated, applied and assessed (Moseley, Baumfield, Elliott, Gregson, Higgins, Miller & Newton, 2005) clearly shows that a large proportion of experts consider that developing the intellectual skills of children is possible and important.

French & Rhoder (2011) conclude that thinking is a natural, active, contextualised and recurrent process. It is also influenced by the social and cultural context, has a two-way relationship with knowledge and requires language in order to enable it to be formulated and expressed. Amestoy de Sánchez (2002), for her part, states that the process of thinking involves a mental operation that involves a procedure, that is, a strategy for thinking, which, through practice, is transformed into a skill or faculty of the person. This description incorporates several of the points under discussion, namely mental operation, procedure or strategy, practice and skill.

2.2. Towards a curricular design: the Bloom model

In line with the classification of proposals presented by Moseley et al. (2005), the most interesting one for this work is that related to curricular design. Within this framework, the one that has the most privileged position is perhaps Bloom's taxonomy. It is also the taxonomy proposed by Coyle, Hood & Marsh (2010) for the development of materials and tasks in a CLIL environment, thus ensuring the necessary support for the development of higher order thinking skills.

It includes a classification of objectives in terms of complexity and in a hierarchical way (Bloom, 1956). Intellectual skills are grouped into six levels from bottom to top: knowledge, comprehension, application, analysis, synthesis and evaluation. Anderson and Krathwohl (2001) modify the original structure of the taxonomy, understanding synthesis as creation of new knowledge, and consequently as the highest group of learning objectives. In this new classification, nouns become verbs and are organised as follows: remember, understand, apply, which are considered Lower Order Thinking Skills (LOTS), and analyse, evaluate and create as Higher Order Thinking Skills (HOTS).

Each level corresponds to a different degree of cognitive ability. The lower levels on the basis refer to less complex activities, pointing to thinking skills in relation to knowledge acquisition, retention and comprehension, while the higher levels incorporate skills corresponding to the use and analysis of knowledge, which culminate with the creation of new knowledge. Lower thinking skills establish a required basis to develop higher order thinking skills, like those included in critical and creative thinking: infer, connect, argument, hypothesise, etc. It is in fact at these levels of reasoning that the acquisition of new knowledge should result (Barbero, 2012; Alexander, Dinsmore, Fox, Grossnickle, Loughlin, Maggioni & Winters, 2011). Sulisty (2019) supports with empirical data the connection between using Bloom's taxonomy in English as a Foreign Language (EFL) contexts and the development of critical thinking.

As Bloom's taxonomy categorizes learning objectives in a helpful manner for learning and skills development, it has been used in several fields and forms of curriculum design. Kumar, Chowdhry & Kazi (2017) underline the usefulness of this taxonomy for improving pedagogical design and meet the students' needs. Reynolds (2019) provides arguments to use it as an instrument for assessment; Koksai & Ulum (2018) advocate the use of this taxonomy

when designing language assessment tests; McNamara (2018) points to the importance of aligning contents to cognitive taxonomies, being Bloom's one of the most prominent; and Saido, Siraj, Nordin & Al_Amedy (2015), in a study based on Bloom's taxonomy focused on the comparison of different methodologies, underscore the need to include higher order thinking skills in science learning.

As for the CLIL approach, several studies have also brought to the fore the usefulness of Bloom's taxonomy for materials design and instruction (Hahn, 2018; Dale, Es & Tanner, 2010). Furthermore, Otto and Estrada (2019), based on a field study in Spanish schools, underline the need to include cognitive development and higher order thinking in assessment in CLIL environments. What is more, Couto-Cantero & Bobadilla-Pérez (2018) suggest using Bloom's taxonomy in STEM CLIL contexts to ensure cognitive development in the classroom. Schietroma (2019) also shows how introducing Bloom's levels in CLIL lessons improves linguistic competences in multicultural classes. Santo-Tomás (2011), in the context of an analysis of didactic materials from different publishers similar to this study, also concludes that publishers should take into account Bloom's taxonomy for their pedagogical proposals. Finally, Alonso-Belmonte & Fernández-Agüero (2018), in a similar study to our own, denounce that CLIL courses do not unfold their potential when it comes to cognitive requirements because both tasks and assessment are based mainly on lower order thinking skills.

3. CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL)

The term CLIL was coined in 1994 in Europe (Mehisto, Marsh & Frigols, 2008). It is an approach whose purpose is the acquisition of curricular content through a foreign vehicular language, that is, the teaching of non-linguistic subjects through a foreign language. This methodology has been adopted at the national level by the Comprehensive Foreign Language Learning Programme (MECD, 2011) and has been applied to different educational levels: infant, primary, secondary and higher education. Dalton-Puffer (2007) refers to it as two-way learning, since the language develops around the content and the content does it through the language.

It should also be pointed out that the learning and teaching process, and therefore good CLIL practice, must be directed by cognition (Mehisto et al., 2008; Coyle et al., 2010; Meyer, 2010). In this regard, McGregor (2007) proposes that classes should include challenging and open tasks that make students think seriously. Critical and creative thinking is therefore a key element when planning CLIL units (Mehisto et al., 2008). Students have to actively create their own knowledge using stimulating activities involving metacognitive reflection through dialogue (McGuinness, 2000). To do this, Pohl (2006) refers to Bloom's taxonomy as an appropriate tool to level out or achieve a balance between the various tasks according to cognitive requirements.

As is well known, CLIL is based on four cornerstones: content, communication, culture and cognition. The symbiosis between these four elements, together with the development of cognitive skills as a central axis, is what characterises this methodology and distinguishes it from other language teaching or bilingual education approaches. The novelty of the CLIL

approach does not therefore lie in the use of the second language in the teaching process, but rather in the methodological development that takes place around this practice. CLIL not only seeks the development of communicative skills, but also the development of the cognitive abilities of the student. Based on these ideas, the principles that characterise the CLIL approach are as follows:

- Content learning is not based on acquiring knowledge and skills, but on creating one's own knowledge and understanding, as well as developing skills.
- Content must relate to learning and thinking (cognition). Content and cognitive development must be developed in parallel with the language and, if necessary, suitable linguistic support or scaffolding should be provided.
- Cognitive processes must also be analysed according to linguistic requirements.
- Language must be learned in relation to the learning context and knowledge must be built up in connection with the development of cognitive processes.
- Learning takes place through interaction.
- Developing an intercultural awareness is fundamental.
- Any contextual variable must be taken into account so that it can develop favourably.

4. STUDY DESIGN

4.1. Materials and methods

The present study focuses on the analysis of six primary Year 6 natural science textbooks from different publishers. Three of these are Spanish publishers that traditionally publish natural science books in Spanish for primary education in Spain. Two of them publish EFL and CLIL materials in partnership with foreign institutions. The other three publishers are British. These are publishers that traditionally publish English textbooks in Spain, that is, books for the teaching of English as a foreign language. With the implementation of the CLIL approach, they have also published science books in English for use in Spanish schools. One of them currently publishes CLIL and EFL materials in Spain in partnership with a Spanish publisher. The selected textbooks are currently in use.

The analysis focuses on units belonging to blocks 2 and 4 of the primary Year 6 curriculum (Royal Decree 126/2014) as they coincide in the six publishers:

Block 2: the human being and health (focusing on the function of nutrition and reproduction).

Block 4: matter and energy.

The characteristics of the textbooks used in this analysis are presented systematically.

Table 1. Textbooks by publisher.

	ORIGIN	DATE	NUMBER OF ACTIVITIES ANALYSED	MENTION OF CLIL IN THE PRESENTATION OF MATERIALS	PRESENTATION OF CONTENT IN THE BOOK
PUBLISHER I	Spanish publisher.	2015	158	CLIL approach not mentioned.	The necessary information for carrying out the activities is presented clearly and explicitly.
PUBLISHER II	Spanish publisher that works with a North American university for the creation of CLIL materials.	2015	114	CLIL approach mentioned.	The necessary information for carrying out the activities is presented clearly and explicitly.
PUBLISHER III	Spanish publisher that works with a British publisher for the creation of CLIL materials.	2015	99	Both CLIL approach and development of critical thinking mentioned.	The necessary information for carrying out the activities is presented clearly and explicitly.
PUBLISHER IV	British publisher that works with a Spanish publisher for the publication of CLIL materials in Spain.	2015	131	Reference made to both CLIL approach and development of thinking skills.	The necessary information for carrying out the activities is presented clearly and explicitly.
PUBLISHER V	British publisher that does not work with another institution for the publication of CLIL materials in Spain.	2014	112	Reference made to both CLIL approach and development of higher cognitive skills.	The materials are not presented in a clear and explicit way because it is the student who creates them.
PUBLISHER VI	British publisher that does not work with another institution for the publication of CLIL materials in Spain.	2015	143	Direct reference made to CLIL approach.	The necessary information for carrying out the activities is presented clearly and explicitly.

4.2. Analytical tool

The study focuses on the assessment and classification of activities in the student’s book. We analyse whether these develop the thinking skills described by Bloom. For this purpose, we use the revised two-dimensional classification table published by Anderson & Krathwohl (2001), which includes a two-dimensional framework combining six types of cognitive processes with four levels or categories of knowledge. The analysis carried out is based on the wording of the activities. The type of question and activity is considered, taking into account their approach, and each of the activities is classified into the different categories. This classification is based on two dimensions: cognitive and knowledge dimensions. For the cognitive dimension, the adequacy of the cognitive development will be grounded on the balance between the activities that include LOTS and HOTS. Regarding the knowledge dimension, we will consider the results obtained in the metacognition analysis, an aspect that is of paramount importance for the development of thinking skills.

*Table 2. Two-dimensional table. Bloom’s Taxonomy Revised.
(Adapted from Anderson and Krathwohl, 2001; Krathwohl, 2002).*

KNOWLEDGE DIMENSION	COGNITIVE DIMENSION					
	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
A. FACTUAL KNOWLEDGE						
B. CONCEPTUAL KNOWLEDGE						
C. PROCEDURAL KNOWLEDGE						
D. METACOGNITIVE KNOWLEDGE						

This table, then, allows us to classify and assess the different activities according to the levels, types of knowledge and cognitive processes that are developed in them.

4.3. Analytical process

When analysing the activities, we should ask ourselves: What are students supposed to learn when they do this activity? What knowledge will they acquire or build? What cognitive processes will they use? In order to analyse each activity, we first take the wording of the activity. Firstly, we consider the verb, the action that the student needs to carry out. We classify this verb or action into a category within cognitive skills. If this coincides exactly with one of the 19 cognitive processes described in the classification table, it is a clear classification. If it does not match exactly, we look for synonyms or similar actions.

If the action raises any kind of doubt because it does not correspond exactly to a cognitive process, we turn to authors who have previously applied the classification table, such as Moseley et al. (2005), Huitt (2011) and Heer (2012). We also turn to wording proposals classified according to the cognitive skills that they develop, such as the one proposed by Barbero (2012).

The next step will be to consider the object of knowledge, the type of knowledge that is developed in each activity. For this part of the analysis, we take into account any material presented in the unit. If it is not with that material, but rather they have to look for information or develop the materials themselves, the knowledge or content that they need to use for each task is taken into account. If the knowledge that the student uses to develop the cognitive process is based on details, facts or terms, it will be factual knowledge. If it is based on concepts, ideas, structures, classifications or generalisations, it will be conceptual knowledge. If it is based on the development of procedures or techniques, it will be procedural. If, finally, the knowledge developed is knowledge of strategies and cognitive tasks or knowledge of oneself, it will be metacognitive knowledge.

5. RESULTS

In the following figures, the main results obtained in the analysis are presented. In Figure 1, the results obtained in the analysis of the different publishers are shown. Here we can see the percentages of activities developing the six different thinking skills with significantly higher scores for the lower order thinking skill of remember in Publishers I and IV.

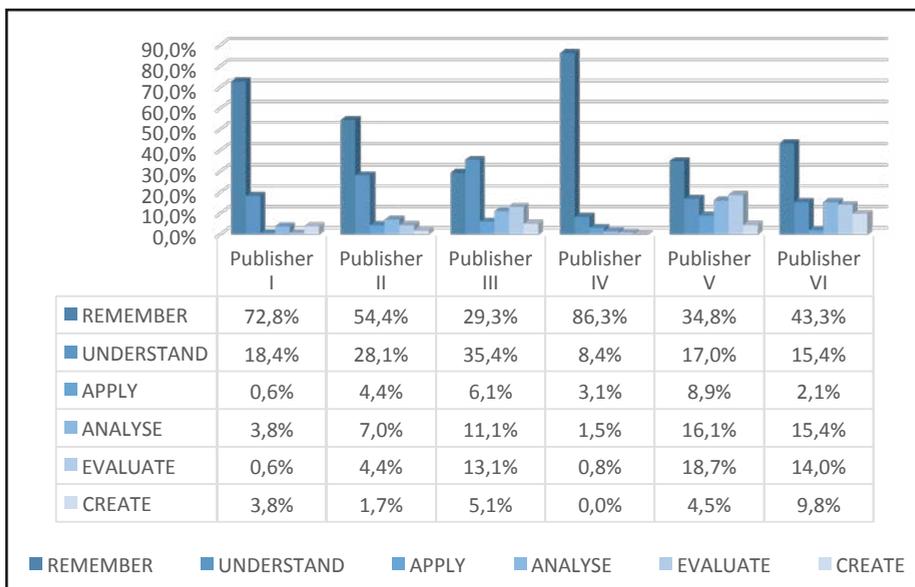


Figure 1. Comparison of the different cognitive categories in all of the publishers.

In Figure 2, the results are shown according to thinking categories LOTS and HOTS. As in the previous figure, Publishers I and IV show the highest percentages in LOTS, followed by Publisher II.

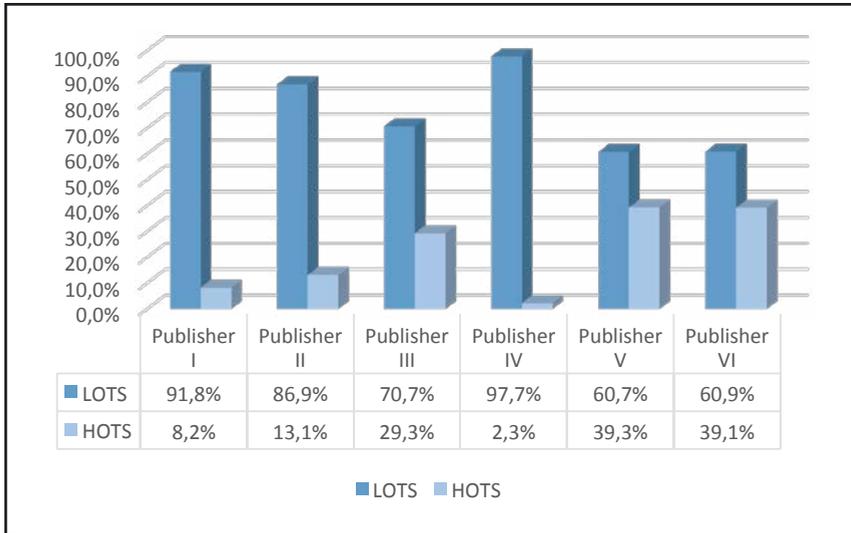


Figure 2. Comparison of LOTS and HOTS in all of the publishers.

In Figure 3, we see that only Publishers V and VI show a significant level of development of metacognition, a fact which is important to consider, since according to McGuinness (2000), Pintrich (2002) & McGregor (2007), the development of metacognition is directly linked to the development of cognition.

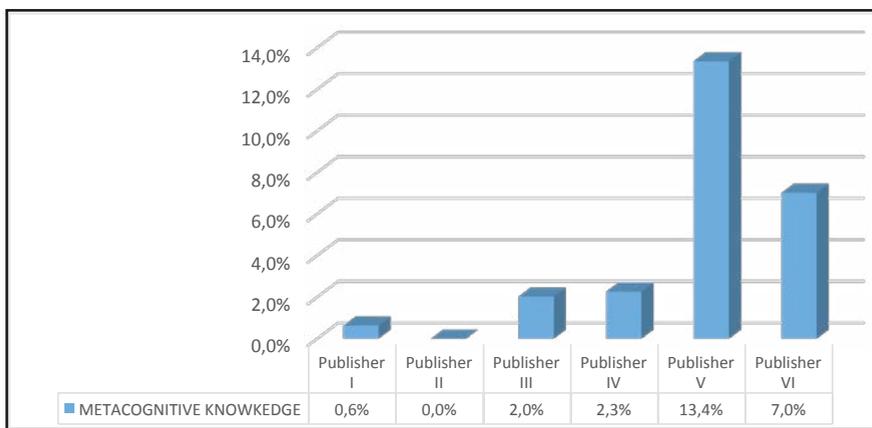


Figure 3. Comparison of metacognitive knowledge in all of the publishers.

Based on the results presented in Figures 1 and 2, we can see that in Publisher I lower order thinking skills are mainly developed (91.8%). A large number of these activities are classified within the *remember* level (72.8%), such that, in line with Mayer (2002), the student does not transfer knowledge in a significant proportion of the activities. We also note that 0.6% of all of the activities analysed develop metacognitive knowledge.

In Publisher II, the lower-order skills percentage is 86.9%. We need to also emphasise that we do not classify any activity that develops metacognitive knowledge.

We can see in the classification results of Publisher III that 70.7% of activities are classified within lower-order skills and 29.3% as higher-order, with these being more balanced than in the previous publishers, although without reaching satisfactory figures if the 40% requirement for HOTS established by Assaly & Smadi (2015) is taken into consideration. 70.7% of LOTS is distributed in a more balanced way, mainly between *remember* (29.3%) and *understand* (35.4%). In addition, those that develop metacognitive knowledge are 2% of total activities.

In Publisher IV, the imbalance between activities classified within lower-order categories and those within higher-order is the highest (97.7% versus 2.3% as a total result of the publisher). A positive fact that we observe is the presentation of an activity in each of the units within the metacognitive knowledge level, that is, 2.3% of total activities.

Within Publisher V, 60.7% of activities develop lower-order skills and 39.3% higher-order, the largest for the six publishers. We should also highlight the number of activities that develop metacognitive knowledge, being 13.4% of total activities, also the largest for the six publishers.

Finally, in Publisher VI, the percentage of activities classified within lower-order cognitive levels is 60.9% versus 39.1% higher-order. We also observe that the percentage of activities classified within the metacognitive knowledge level is 7% of total activities.

In Figure 3, which shows the results of the percentages obtained in metacognitive knowledge development, Publisher V stands out positively with 13.4% of its total activities classified within this kind of knowledge, followed by Publisher VI with 7%.

For the sake of clarity, the main results obtained in our analysis are synthesized in the following table. We have also deemed interesting to include in the table, in addition to a summary of the results, if the publishers specifically mention CLIL in the teacher's book or if the teacher is given specific recommendations for the development of the tasks. However, as can be seen in the table, the mere fact of mentioning CLIL or guiding the teacher's practice in a more explicit manner is not a guarantee that the set of proposed exercises is more in line with the development of thinking skills.

Table 3. Results by publisher.

<p>PUBLISHER I (Spanish)</p> <ul style="list-style-type: none"> – 91.8% of activities develop lower-order skills, 8.2% of activities develop higher-order skills. – An activity classified within metacognitive knowledge is actually about self-knowledge, not students’ self-reflection. – It does not mention the CLIL approach in the initial presentation of the materials. – The necessary information for carrying out the activities is presented clearly and explicitly. 	<p>PUBLISHER II (Spanish in partnership)</p> <ul style="list-style-type: none"> – 86.9% of activities develop lower-order skills, 13.1% of activities develop higher-order skills. – No activity is classified within metacognitive knowledge. – The CLIL approach is mentioned in the initial presentation of the materials. – The necessary information for carrying out the activities is presented clearly and explicitly.
<p>PUBLISHER III (Spanish in partnership)</p> <ul style="list-style-type: none"> – 70.7% of activities develop lower-order skills, 29.3% of activities develop higher-order skills. – 2% of all of the activities are classified within metacognitive knowledge, although it is actually knowledge of healthy behaviours and habits. – In the initial presentation of materials, it mentions both the CLIL approach and the development of critical thinking. – The necessary information for carrying out the activities is presented clearly and explicitly. 	<p>PUBLISHER IV (British in partnership)</p> <ul style="list-style-type: none"> – 97.7% of activities develop lower-order skills, 2.3% of activities develop higher-order skills. – 2.3% of all of the activities are classified within metacognitive knowledge, with this actually being reflection on own knowledge. – In the initial presentation of materials, it makes reference to both the CLIL approach and the development of thinking skills. – The necessary information for carrying out the activities is presented clearly and explicitly.
<p>PUBLISHER V (British)</p> <ul style="list-style-type: none"> – 60.7% of activities develop lower-order skills, 39.3% of activities develop higher-order skills. – 13.4% of all of the activities are classified within metacognitive knowledge, with this actually being students’ self-reflection. – In the initial presentation of materials, it makes reference to both the CLIL approach and the development of higher cognitive skills. – The materials are not presented in a clear and explicit way because it is the student who creates them. 	<p>PUBLISHER VI (British)</p> <ul style="list-style-type: none"> – 60.9% of activities develop lower-order skills, 39.1% of activities develop higher-order skills. – 7% of all of the activities are classified within metacognitive knowledge, with this actually being students’ self-reflection. – It does directly make reference to CLIL in the presentation of its materials. – The necessary information for carrying out the activities is presented clearly and explicitly.

6. DISCUSSION

We consider it useful to introduce the comparison of our results with those of previous studies carried out within the field of teaching foreign languages and whose meta-analysis is similar to the study presented here. These analyse foreign language materials using and applying Bloom's taxonomy to assess the thinking skills that these materials develop. Beginning with the study by Igbaria (2013), which analyses the activities proposed in a corresponding English textbook, it is concluded that 244 of these, or around 64% of all of the proposed activities, develop lower-order skills, while 137, or 36%, develop higher-order skills. These results do not show great differences with those obtained in Publishers III, V and VI.

The study by Assaly & Smadi (2015) concludes that 52% of the activities proposed develop the cognitive ability of comprehension. The results show the development of 3.7% of activities within knowledge skills and 6% in those of application. The results also show that nearly 40% of the activities in the book develop higher order thinking skills (HOTS), figures that, according to the authors, meet the curriculum requirements of their country. It should also be noted that Bloom (1956) emphasises the importance of offering the student the necessary information and opportunities for the development of lower-order skills, which then serve as the basis for the development of higher-order skills. In this regard, Assaly and Smadi (2015) consider the 40% (HOTS) - 60% (LOTS) proportion balanced. Using this yardstick, the results of Publishers V and VI could be considered balanced.

Our results also coincide with those of studies in the Spanish educational context, such as the one conducted by González Romero (2015). In addition to other aspects, the thinking skills required in the activities are assessed. Among the main conclusions of this work is the usual practice of lower-order skills, but not higher-order skills, which is why critical or creative thinking is not sufficiently developed.

Finally, the study conducted by Santo-Tomás (2011) shows that all publishers include activities designed to work mainly on lower-order skills, except one that does include higher-order skills, which coincides precisely with Publisher VI.

The comparison of the results obtained in our analysis leads us to question the origin of such a clear difference in the design of curricular materials for the same subject matter within a compulsory curriculum and, therefore, in a homogeneous educational context. If we look for differences between the publishers to explain these results, we see that the British publisher outdo the Spanish publishers when it comes to dealing with thinking skills in their methodological proposals for Primary Education. However, it is noteworthy that the publisher with the worst results is British, although it works in partnership with a Spanish publisher for the creation of CLIL materials. On the other hand, as we have already pointed out, with regard to the publisher in third place, if we consider the LOTS and HOTS percentages, it also being the one with the lowest percentage of activities classified in the *remember* category, it is precisely a Spanish publisher, although it works in partnership with a British publisher for the creation of materials in English. If we follow this criterion, we must emphasise that Publishers V and VI, both British and not in partnership with other publishers or institutions, are the two

that show the best results regarding the percentage of activities classified in lower-order and higher-order categories, with 60.7%-39.3% and 60.9%-39.1 respectively (Figure 2).

The date of publication does not seem to affect the results either: it is precisely the material with the earliest publication date (2013-14, from Publisher V) that shows the best results, while the rest of the materials were all published in 2015.

With reference to the criterion of the initial theoretical approaches of the publishers, that is, the way in which they present their material and the guidance given to teachers both on the website and in the teacher's book, we find that these are not enough to guarantee adequate methodological implementation of the proposed activities.

All of the publishers make some reference both to CLIL (Publishers II, III, IV, V, and VI) and to the development of critical thinking and thinking skills (Publishers III, IV, V), with Publisher I being the only one that does not refer to any of these theoretical approaches. It is true that Publisher I does not show positive results, but neither do Publishers II and IV, or III, although, in line with Assaly & Smadi (2015), their results are closer to what could be considered balanced (60% LOTS-40% HOTS).

An aspect that is particularly relevant to the development of thinking skills is the encouragement of metacognition in students. Promoting metacognitive skills helps students achieve exponential growth in the development of all thinking skills (Pintrich, 2002). Also important is the development of metacognition for the development of critical thinking and higher-order skills in general (McGuinness, 2000, McGregor, 2007).

In view of the results shown in Figure 3, we find that, with the exception of one, all of the publishers, to a greater or lesser extent, develop an activity within this level of knowledge. Publishers I and III, both Spanish in origin, present a low percentage in type of activities. Only three of them, Publishers IV, V, and VI, all of which are British in origin, with the first one producing this type of material in partnership with a Spanish publisher, propose activities that truly encourage students' self-reflection.

7. CONCLUSIONS

This study has focused on the analysis of a series of CLIL text books with a view to establishing how they incorporate and balance HOTS and LOTS in their methodological proposals. In view of the results obtained, we can affirm that 66% of the materials analysed do not reach the 40% (HOTS) - 60% (LOTS) proportion proposed by Assaly & Smadi (2015). We can also confirm that the publishers that show the best results in terms of the distribution of activities between HOTS and LOTS are V and VI, being of British origin, and none of which works in partnership with a Spanish publisher or institution for the creation of CLIL materials (Publishers V and VI). The three publishers that propose activities classified within the level of metacognitive knowledge with a true students' self-reflection are the three publishers of British origin, one of which works in partnership with a Spanish publisher (Publishers IV, V and VI). If we cross reference the data concerning the development of HOTS and LOTS and the data related to the development of metacognitive knowledge, we could conclude that Publishers V and VI show the most satisfactory results. Thus, the analysis conducted reveals in several ways

that the British publishers are the ones that systematically and more fully work on the cognitive development of students through the inclusion of all kinds of thinking skill activities in the different sections of the units.

This leads us to conclude that, in the case of Spanish publishers, there seems to be a lack of knowledge about the practical application of the fundamentals that characterise the CLIL methodology. By contrast, the British publishers, for their greater experience in the creation of materials designed to develop the student's thinking skills and critical capacity, achieve it with a greater degree of success. This is precisely one of the main contributions of this work. By this, we do not mean that Spanish publishers have a disinterest in effectively applying the tenets that define the CLIL methodology. It is just that this practice is not being carried out correctly and, therefore, the materials do not invite the teacher to implement their teaching in the image and likeness of the methodological approaches anchored in this methodology. Hence, the need to carry out further studies that analyse additional text books and curricular areas, as well as foster cooperation between teachers and publishers so that the CLIL principles can be more faithfully represented in future methodological proposals.

We believe that it is desirable to include tasks that pose a challenge to students, in which they have to seek and build their own knowledge for themselves, in addition to facing the challenge of finding new solutions to new situations in a creative way. We also appeal for these tasks not to be limited to the final sections of units but to be homogeneously incorporated throughout them. This needs to be done without neglecting the balance that must exist between the number of activities designed to develop lower-order skills and those focused on higher-order skills, the former of which are the basis for the development of the latter. In addition, in line with McGregor (2007), we propose tasks that involve reflection through dialogue, in addition to articulating cognitive processes, recognising the suitability of the thinking skills used and connecting them to learning achievements.

8. FUNDING

This work was supported by the Generalitat Valenciana through grant GV/2019/121.

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