

## Development of EFL Communicative Competence and Sustainability Awareness through CBI.

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*Beatriz Chaves Yuste. Universidad Complutense de Madrid (España).*

### 1. Introduction.

The 2030 Agenda for Sustainable Development (2015) mainly seeks to end poverty and hunger, realize the human rights, achieve gender equality and ensure the lasting protecting of the planet and its natural resources. Educators should include these goals in their syllabi so that students are aware of all the actions that may take place in order to live in a balanced economic, social and environmental world. The objective number 13 of the 2030 Agenda is focused on climate action and aims to take urgent action to combat climate change and its impacts. Students need to be aware that through education, innovation and adherence to our climate commitments, the human being can do all the necessary actions to protect the planet. Thus, students need to acquire resilience and adaptive capacity to climate related disasters, build knowledge to meet capacity change and be aware of the mechanisms for raising capacity for effective climate change management. In the English as a Foreign Language (hereafter, EFL) class, it is advisable to focus on topics that help students not only develop their communicative competence, but also develop their critical thinking, be socially aware and solve the problems of the world that surrounds them. This way, they can learn to be world citizens who can communicate with others using English as a lingua franca while providing society with the necessary tools and mechanisms for the world's sustainable development.

A suitable way of including the objectives of the 2030 Agenda is the use of Content Based Instruction (CBI). It is considered the teaching of content or information with little direct or explicit effort to teach the foreign language as a separate field (Krahnke, 1987). It is defined as "the integration of particular content with language teaching" (Brinton, Snow & Wesche, 1989, p. 2) or as "an integrated approach to language instruction drawing topics, texts, and tasks from content or subject matter classes, but focusing on the cognitive, academic language skills required to participate effectively in content instruction" (Crandall & Tucker, 1990, p. 83). The integration of language and content is thought to broaden the students' proficiency in the target language since the CBI practice facilitates the acquisition of more formal and cognitively complex academic language that enables students to understand, for instance, math language, conduct experiments, write lab reports, interpret graphs or write social studies essays. Grabe and Stoller (1997) also insist on the complementation of content and language in CBI since the language is the means through which the content is learned and the content is the resource to learn the language. Moreover, Dalton-Puffer (2007, p. 140) points out CBI is "employed to describe situations where second language competencies are developed through the teaching of curricular content that is not typical of language classes per se".

CBI origins date back to the 1960s in Canada when the first language immersion programs were developed. It gained popularity in the 1990s and beginning of the 2000s, through its wide use in Canadian and American educational institutions. However, in the 1980s, it was

already used as a specific foreign language teaching approach in a variety of different settings such as English for Specific Purposes (ESP), programs for students with limited English proficiency (SLEP), immersion programs and EFL programs. Its point of departure is the experiential content that is cognitively engaging for learners. The foreign language is learned by transmitting the content information of an 'academic subject matter' (Crandall & Tucker, 1990; Dueñas, 2004) of the school curriculum (i.e. Science, History) or may be generated from an analysis of students' interests and needs (Genesee, 1994). When the content provides background knowledge on socio-cultural issues and real-world information (i.e. immigration, multiculturalism, etc.), an alternative approach has arisen: Content-Enriched Instruction (CEI) (Ballman, 1997). CBI comprises three assumptions (Richards & Rogers, 2001): (i) language is text and discourse-based since the language learning is beyond the sentence level and the knowledge to be conveyed underlies the nature of language in CBI, (ii) language uses integrated skills which reflects the use of real-world language and (iii) language is purposeful since it is learned for a specific purpose based on students' needs.

Since language exclusively depends on the content to be transmitted, classes are focused on real communication and information exchange of the content (which needs to be linked to students' prior knowledge and depends on the aim of the program and students' needs). The subjects, topics, contents, materials and learning activities should meet students' cognitive, linguistic, academic and communicative needs and be appropriate for their professional needs and personal interests (Stryker & Leaver, 1989; Crandall and Tucker, 1990). To do so, it is essential to use authentic materials. Multiple media and a variety of presentation techniques and resources are used in the classes to help students understand the information conveyed in the target language. In order to place language learning within a meaningful frame, experiential, discovery and hands-on learning are used to encourage students to develop concepts and interact with each other. Students may also work within cooperative groups to fulfill challenge-based tasks while learning the foreign language and new information. They need to use the foreign language to learn and evaluate new information, based on their own knowledge as well as emerging knowledge of the foreign language culture which can be developed through extensive reading, speaking and writing activities. This will be the method of developing and activating schema at the same time the academic language is being learned.

Grabe and Stoller (1997) suggest several rationales for CBI and argue that CBI supports contextualized learning since language is embedded within a relevant discourse context. Interaction and negotiation of meaning take place within cooperative learning groups and peer-tutoring. Dupuy (2000) argues that significant advancement occurs when students work in groups with structured and common goals with potential rewards that promote individual responsibility. Students cooperate, are more motivated, have greater self-esteem and more positive attitudes toward school and learning. In CBI, arrangements that allow students to share responsibility and work together to complete tasks are extensively used. Small group work, team learning, jigsaw reading, and peer editing are among the many techniques CBI calls for to provide students with ample opportunities to interact, share ideas, test hypotheses, and construct knowledge together in a low-risk forum (Dupuy, 2000). The curriculum and activity sequences are flexible and can be adapted to students' needs since it is a student-centered method by which students are exposed to complex information and involved in demanding activities that lead to intrinsic motivation. Thus, following these precepts, the foreign language is more efficiently learned if it is used as the means to acquire information, mainly related to students' academic studies. Brinton (2003) states that the content itself determines the pedagogical decisions on selecting and sequencing and through it, the language is acquired due to the use of integrated skills and a continuous interactive practice

because the chosen topics offer coherence and continuity in all the areas and are centered on the use of the language and not just on isolated pieces of language. The teacher is responsible for identifying the relevant linguistic priorities as a complement to the topic of the activities. On their part, students are actively involved in all phases of the learning process since it is a learner-centered and 'learning by doing' method through which they participate in interactive activities using the foreign language. Brinton, Snow and Wesche (1989) propose five fundamental reasons for integrating language teaching and content:

- Content and language learning meet the learners' needs in a purposeful program.
- Taking the learners' needs and interests into account increases their motivation.
- The students' existing background knowledge of the subject matter is the starting point of CBI.
- Teaching is based on realistic uses and includes social interaction patterns.
- The context is used to comprehend the input and the new elements to be learned (Krashen's Input Hypothesis, 1982).

Hence, the learning process is built by students who construct their own itinerary and manage the knowledge in an accumulative process through which the new content is learned only when it is integrated with the preexisting knowledge and experience. Students need to be responsible for their learning and ability to assume certain risks when making 'linguistic hypothesis', because they may not be correct and need to learn from their trials and errors. CBI integrates the fundamental rationales and components of the communicative language teaching method from which it derives plus some theoretical underpinnings which are associated with a variety of sources that provide further empirical support. Ausubel's (1963) concept of meaningful learning, which proposes that teachers need to elicit information from students and use their prior knowledge to create a new one, and allow students to participate in their own learning process, takes place in CBI contexts. Vygotsky's (1978) assumptions are also fulfilled when students interact and socialize with their peers in order to communicate and solve the proposed problems of the lesson. Moreover, Cummins' (1979) work considers the integration of language and content instruction. For Cummins, it is difficult to acquire academic language skills from general EFL classes and everyday conversation. To develop these skills, Cummins believes students need complex interdisciplinary content, which is easily covered within the CBI framework. Also, basic support of CBI is found in Krashen's monitor model (1982), which argues that the target language acquisition occurs when the learner receives comprehensible input and lexicon is contextualized and not learned by rote memorization of a list of vocabulary. CBI accomplishes this assumption because lexicon is introduced when teaching the contents in a meaningful context with contextualized language curricula (Brinton, Snow & Wesche, 1989). Moreover, Krashen (1982) emphasized ways of decreasing learners' anxiety, such as providing texts and meaningful activities that are comprehensible to learners, another precept of CBI. Thus, high levels of competence can be reached in classrooms where the target language is the communication vehicle to learn some contents and it is not the object of analysis (Genesee, 1991). CBI also follows Swain's precepts, (1985) which claim that in order to develop communicative competence, learners need to have extended opportunities to use the target language productively, both in speaking and writing. As a result of the meaningful input, students can produce a meaningful output and use language efficiently.

Learning strategy instruction can also be effective when incorporated into CBI, as well as extensive reading. Foreign language learners who practice extensive reading increase their language abilities in the four skills (reading, writing, listening and speaking), expand their vocabulary and acquire greater content knowledge and higher motivation. CBI students read

a wide variety of text types related to the content they are working on, which exposes them to different types of discourse and alternative sources of information that can be easily accessed on their own, which promotes their autonomy and empowerment (Dupuy, 2000). In addition, cognitive and educational approaches are also present in CBI. There are five research areas: (i) cognitive learning theory, (ii) depth-of processing research, (iii) discourse comprehension processing research, (iv) motivation, attribution and interest research and (v) expertise research that contribute to the endorsement for CBI (Grabe and Stoller, 1997).

Thus, CBI can be considered a suitable approach to enhance the development of students' linguistic skills while emphasizing the functional use of a language in a meaningful context. It "has the potential to enhance students' motivation, to accelerate students' acquisition of language proficiency, to broaden cross-cultural knowledge, and to make the language learning experience more enjoyable and fulfilling" (Peng, 2017, p. 116). It provides a flexible framework for language instruction with different models and application options available for different contexts and pedagogical needs. As Stryker and Leaver (1997, p. 3) claim, CBI "is a truly and holistic approach to foreign language education [...] (which) can be at once a philosophical orientation, a methodological system, a syllabus design for a single course, or a framework for an entire program of instruction."

CBI is a means that facilitates learning not merely through language but with language (Mohan, 1986). Its use appears to be beneficial as far as it is underpinned by the organic and analytical approach to language development, help school learners master other aspects of school learning, provides a framework within which learners can have sustained engagement on both content mastery and foreign language acquisition and the language is better learned due to students' high motivation when communicating meaningful and interesting messages (Hardman, 2009; Stryker & Leaver, 1989). Moreover, as it takes into account literacy skills, experience cognitive skills and self-motivation, students may feel more engaged and self-confident when using the language in untested situations (Stryker & Leaver, 1989), since it is not the study of the foreign language, but the interpersonal vehicle that transmits the content information in a written and oral way through the four integrated skills. Hence, the target language proficiency is enhanced and it appears that students master the target language faster (Stryker & Leaver, 1989). The amount of input received creates a better comprehension of the L2. The presentations, discussions and debates, which can be carefully prepared, rehearsed, corrected, delivered and included in the CBI lesson plans, may help students with their fluency. Moreover, it enhances cultural literacy with real-world situations which provide significant knowledge. Students can also develop their subskills such as note-taking, summarizing and extracting key information from texts by working within cooperative and collaborative groups.

As for the CBI activities, they should always promote communication through varied, contextualized, interactive, meaningful, interesting and motivating learning by doing tasks in a participative and responsible atmosphere. They should aim to improve students' linguistic skills, lexicon formation, speech organization and grammar synthesis (Grabe & Stoller, 1997). It is recommended to use a wide range of materials, especially the use of authentic resources and realia, which may need to be linguistically adapted and simplified for students. Since CBI is a student-centered method, it promotes learners' autonomy, as students are active interpreters of the input and exploit alternative learning strategies to understand the content presented in oral speeches or written texts. They face the new offered information and undergo a personal judgment that allows them to define the learning path by themselves. The teacher's help is always present, but students make their own decisions. On their part, teachers are responsible for choosing and adapting authentic materials, analyzing students' needs and

creating learner-centered classrooms. They are the guide for students and organize participative and interactive classes, helping and counselling students permanently. By using it, students are aware of the real use of the language since they need to use it to communicate with their peers and teachers, but also, as the means through which they access information, which becomes a crucial element of CBI if it is taken into account that English is the most common language in scientific research (Niño-Puello, 2013).

### **1.1. Literature Review.**

There are few studies related to the scope of this work: the first one was conducted by Creese (2010) and students were taught English through geography contents in a secondary school in London (England) whose students' (tenth graders) mother tongue was not English. The conclusions drawn by the researcher are that in order for the instruction to be proficient enough, content and language teacher should work together to provide students with the best tools to improve their linguistic skills and learn geography contents.

Despite the fact that this methodology was implemented with some students, no results of this research were shown except for some guidelines for teachers' collaboration and group work.

The second study found was the one done by Quintero and Lopera (2016), who implemented content-based lesson plans in a rural school in Manizales (Colombia) with sixty-three ninth, tenth and eleventh graders (ages ranging between 15 and 18 years old) in order to work with both, environmental issues and English grammar and communicative use. Some content-based lesson plans were developed to enhance the use of English through some activities about a school environmental project in which students could use their critical thinking. The instruments used were field notes, teacher's diary, chats, debates and interviews. The researcher went over qualitative data and reflected on the aspects found. The findings obtained indicate that the use of content-based instruction may be effective because with the use of the English language, students were encouraged to solve problems that were present in their rural community. Its use in all the proposed tasks indicated a noticeable advance in its acquisition. Students seemed to be more motivated and the learning process became more meaningful since all the activities were contextualized and students found the language handy and necessary.

Finally, the study done by Aiello (2019), presented a twelve-week content-based course implemented with twenty-four twelfth graders (17-19 years old) in southern Italy to enhance the levels of language awareness thanks to the authentic use of the English language. The participants' English level was on average between A2 and B1 of the CEFR scale. Students were administered an entry questionnaire to check their attitudes towards English, their identification with the language and their understanding of language ownership. Twenty-one out of the twenty-four participants completed the questionnaire. All the students indicated they liked English, but they needed more opportunities to feel competent in the target language. Students were provided with examples of writings for change. Finally, participants participated in a workshop to make their group final projects. The findings of the research pinpointed that the content became more stimulating and meaningful for students since authentic tasks geared towards real life experiences were developed. The course used English as a vehicular language and due to its use, students could express not only the content but also reached a wider audience. As a result of the instruction received, they could express their opinions on current affairs not only with their classmates, but with all English speakers of their virtual community. The conclusions drawn from this limited research are positive. No matter

which contents are taught (geography, environmental or historical issues), CBI seems to be beneficial when teaching EFL.

There is also scarce research on the use of the 2030 Agenda of Sustainable development in the Secondary Education EFL classroom. Balčiūnaitienė and Teresevičienė (2018) worked on the development of sustainability communication in higher education. The participants of their study raised awareness and perception about the importance of sustainable development while improving their communicative foreign language and cultural competences. One year later, Balčiūnaitienė (2019) conducted a research to introduce the role of foreign language teaching and sustainability communication in higher education. The findings of this study reveal the complexity, diversity and multidisciplinary of the sustainability communication concept. However, the students raised awareness and perception about its significance. Makarova (2020) researched on the application of sustainable development principles in higher foreign language education. The researcher argued proper curriculum design needs to integrate educational content and learning environment to promote students' understanding of sustainability and make them be prepared for the globalized world. Jodoin (2020) researched the effectiveness of education for sustainable development approaches in the EFL Japanese higher education. Integrating education for sustainable development and EFL had a positive impact on students' environmental knowledge and awareness. Arslan and Curle (2021) studied the use of the sustainable development goals in the Turkish EFL Secondary Education textbooks and some semi-structured interviews were conducted with eleven English teachers. The findings of this study argue that prioritizing sustainability in textbooks can make students be more sustainable future citizens.

## **2. Methodology.**

The present research starts from the hypothesis that CBI could be a suitable methodology for improving EFL Spanish secondary students' lexicon, with a positive influence in their social science knowledge, as it can be reflected in the participants' academic results. The research questions of this study aim, on the one hand, to identify which method is more effective to acquire new vocabulary: the communicative language teaching method or content-based instruction. In addition, it seeks to clarify if the use of CBI in the EFL classroom influences the acquisition of knowledge in the Social Science class.

### **2.1. Participants.**

The sample population of this study is made up by eighty-one third-year-compulsory education students in a semi-private school with three sections per grade in Madrid downtown (Spain). Participants' age ranges from 14 to 15 ( $M: 14,06$ ;  $SD: 0,24$ ) with a larger percentage of male students (56,79%) versus 43.20% of female students. They have been randomly assigned into two groups: a control group ( $n=41$ ), which comprises 56.09% of male and 43,90% of female students ( $M: 14,04$ ;  $SD; 0,21$ ), and a second or experimental group ( $n=40$ ) formed with 27.5% of male participants and 72.5% of female students ( $M: 14.07$ ;  $SD: 0,26$ ). All the students are Spanish with Spanish as their mother tongue. The selection of the sample was intentional through non-probabilistic sampling by accessibility. The inclusion criteria for the sample were to be enrolled in the third year of compulsory secondary education at the institution, to attend class regularly and to have signed parental/legal guardian consent.

### **2.2. Instruments.**

As instruments for data collection, the grades obtained in the English test which covers the lexicon contents of this proposal, the final grades obtained at the EFL end of the term test and the ones of the Social Science tests on climate and natural phenomena were analyzed.

### 2.3. Procedure.

The English department agreed on the proposal of applying an active methodology for third-year compulsory secondary education students that could help the acquisition of Social Science contents and improve their academic results. After being accepted by the principal of the school, parental consent forms were sent to all the families whose children were part of the experimentation. They were also informed they had withdrawal possibility at any stage. Students of the experimental groups were arranged in heterogenous cooperative groups taking into consideration students' linguistic competence, cognitive and social skills. All the data were collected in compliance with the ethical guidelines of Helsinki Declaration and the confidentiality of the data was guaranteed. All the contents worked in this experimentation always respected the curriculum established by the State and the Madrid community, the Royal Decree 1105/2014 of December 26<sup>th</sup>, 2014 (Spanish Ministry of Education) through which the minimal teachings are established which is further developed by the Madrid Community in the Royal Decrees 48/2015 of May 14<sup>th</sup> (BOCM May 20<sup>th</sup>).

This educational experience took place during the first term of the school year in 2021-2022. The methodology used in the control group follows the principles of communicative language teaching. Assignments are individually assessed and some class discussion takes place with all of the group together. On the contrary, in the experimental group, CBI is implemented. Students work with the contents worked in the Social Science classes, but using English as the vehicular language. To do so, students work in groups of three and need to do some research on the different topics they have chosen to create their piece of news: hurricanes, earthquakes, volcano eruptions, floods, droughts, snowstorms, etc. This way, students do not only study the contents from an academic point of view, but also by analyzing the information found in the media in order to understand the world that surrounds them. This way, they could understand the volcano eruption of La Palma, Filomena snowstorm among other phenomena.

Once the experimentation was finished, both groups did a test on the contents in both subjects, English and Social Science in the students' usual classroom with optimal lighting, ventilation and sound conditions.

### 3. Results.

The Social Science Statistical Package SPSS (Windows version 25) was used to carry out the analyses. First, descriptive statistics were used to find the means and standard deviation of the studied variables. Provided the same size, the Kolmogorov-Smirnoff test was used for normality, obtaining 0,04 for the first variable, the EFL test on natural catastrophes, and 0,00 for the EFL final term test, which requires the use of non-parametric coefficients and inferential test. However, the result obtained in the Social Science test was 0,20, which requires the use of a parametric analysis and a binomial independent sample T-Student test is applied. The grades obtained in the different tests (in English and Social Science) as well as the final grade of the term obtained in English by the participants of the two groups were analyzed.

Considering that the two first variables did not meet normality criteria, a non-parametric test for independent samples was applied. The results of the grades of the English test on natural phenomena show that the control group has a mean of 3,78 points with a standard deviation of ,36, while the experimental group has a mean of 5,47 points with a standard deviation of ,38. Thus, there is a significant difference of  $p=,002$ . Regarding the grades obtained at the EFL final term test, the control group has a mean of 5,21 with a standard deviation of ,28 whereas the experimental group has a means of 6,8 with a standard deviation of ,29. When comparing the grades of the two groups, the result is that of a significant difference of  $p=,000$ . For the Social Science test, the control group has a mean of 5,17 with a standard deviation of ,21 while

the experimental group a means of 5,97 and a standard deviation of ,20, which makes a significant difference of ,009 in the T-Student independent samples test. The descriptive statistics of the categorized variables as well as the comparison between the grades obtained in the two groups in the Social Science test are presented in Tables 1 and 2 respectively. These results confirm the hypothesis: a significant difference is observed in the contrast of the data in favor of the experimental group which obtains higher results in the different tests done.

	CG		EG	
	M	SD	M	SD
Natural phenomena English test	3,78	,36	5,47	,38
EFL Final term test	5,21	,28	6,8	,29
Climate Social Science test	5,17	,21	5,97	,20

Table 1. Mean (M) and standard deviation (SD) of the categorized variables (English test on natural phenomena, EFL final term test and Social Science test on climate) of the control group (CG) and experimental group (EG).

	F	Sig	t	Sig (bilateral)
Climate Social Science test	,084	,772	-2,6	,009

Table 2. T-Student for independent samples analysis of the Social Science test on climate

#### 4. Discussion.

The purpose of this research is to analyze to what extent CBI could be a suitable methodology for teaching EFL in Spanish secondary education in order to broaden their lexicon and be more aware of the world that surrounds students. As it has been proved, it has a positive effect on students' academic performance, not only by showing more dominance of the contents in the different EFL tests done throughout the term, but also with higher results in the Social Science tests. The study aimed to, first, clarify which method is more effective to acquire, in the long term, more lexicon related to natural phenomena: communicative language teaching method or CBI, and secondly, to analyze if the use of CBI could have an impact on Social Science academic achievements.

Regarding the first issue, the analysis of the results obtained in the two variables studied (two English tests) concluded that those students who belonged to the experimental group obtained higher results in the two tests, so therefore, they acquired more lexicon. When studying the relationship between the use of CBI and EFL academic performance, the results are also positive, so the hypotheses outlined above are verified by the data obtained in this research. The results show that the participants instructed with CBI have higher academic performance than students with the communicative language teaching methodology since the final term test grades are significantly higher than the ones of the control group. Regarding the second issue, if the use of CBI in the EFL classroom has an impact on the Social Science results, the hypothesis is also verified: the students of the experimental group outperformed those belonging to the control group.

With the aim of controlling that the groups were similar in academic performance and that there were no significant differences in L2, a diagnostic test was administered before the experimentation took place, at the beginning of the school year, and there were no significant differences in L2. These data show that CBI, as an active methodology, prepares students to improve academic performance in language and content exams (English and Social Science), a fact that is observed by comparing the control group with the experimental group.

The findings obtained in this research are similar to the conclusions drawn by previous research. As Creese's (2010) work states, content and language teachers should work cooperatively to provide students with the best educational experiences and make them work

in their zone of proximal development. Only this way, they can develop their linguistic competence and acquire new contents.

The findings obtained by Quintero and Lopera (2016) are similar to the conclusions drawn in this work. Students seem to be more motivated and eager to learn the contents and improve their English command due to the use of CBI. Also, students also performed a noticeable advance in its acquisition, as it occurs in this research, in which the experimental group obtains higher academic results in the different EFL tests. Moreover, in both works, as well in Aiello's (2019) students seemed to be more motivated since all the activities were contextualized and based on real-life experiences, and they found them practical and suitable for their learning.

## 5. Conclusions.

In light of the results obtained in this exploratory research, and the scarce studies focused on CBI at the secondary education level, it would be suitable for EFL secondary education teachers to choose the use of active methodologies, such as CBI, to improve students' acquisition of lexicon while fostering the learning of the Social Science syllabus.

The main limitations of this exploratory research are the sample size and the *ad hoc* tests, so any generalization of other populations should be made cautiously. In future research it would be advisable to increase the sample size and extend the duration of the application of the CBI methodology by broadening the contents covered. Based on the findings of this study, it may be advisable to use CBI with other curricular subjects, such as Biology, Ethics or Classic Culture. With the results obtained, similar findings may be expected when working with contents of different fields of knowledge.

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### **Acknowledgements.**

I would like to express my gratitude to the Social Science teacher Gema Földessy Aranda, who has gently shared her Social Science test results, an essential tool for this research.