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Using Interactive CLIL Science Lessons to Teach Content and Promote English Spoken
Fluency in Young Learners

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Abstract

This research study intended to uncover the influence of using a CLIL approach in young learners' English spoken fluency by implementing interactive Science lessons. This study took place in two different settings: a private bilingual and a public non-bilingual school. Researchers intended to find out if a CLIL approach has an impact on young learners' language and content learning processes. The existing literature on CLIL only reveals studies promoting vocabulary and writing skills in young adolescents and young adults. Nevertheless, there are no studies focusing on the impact of CLIL on young learners' spoken fluency, which makes the present study novel in the EFL field. Based on the grounded theory method, researchers analyzed the gathered data through four instruments: logs, surveys, teachers' journals and video recordings. Then, researchers detected positive and effective aspects of using CLIL to enhance young learners' spoken fluency by employing open, axial and selective coding processes. The study concluded that despite the contextual conditions, a CLIL approach benefits young learners' spoken fluency and develops other aspects, such as awareness of language knowledge and use, strategies to convey meaning, and genuine interest and progress on the content. As the topic of this research project has not been widely developed within the CLIL community, this study represents a contribution to promote similar studies in the field.

Key words: CLIL; TEYL; Speaking; Fluency; Interaction.

Resumen

Este estudio investigativo intenta revelar la influencia del uso de un enfoque AICLE (Aprendizaje Integrado de Contenidos y Lenguas Extranjeras) en la fluidez oral del inglés en niños a través de lecciones interactivas de ciencias. Este estudio se llevó a cabo en dos instituciones: una bilingüe privada y una pública no bilingüe. Las investigadoras intentaron descubrir si el enfoque AICLE tenía un impacto en los procesos de aprendizaje en lenguaje y contenido en los niños. La literatura existente muestra algunos estudios en AICLE que se refieren a vocabulario y habilidades en escritura, en adolescentes y adultos jóvenes. Sin embargo, no se encontraron estudios que investiguen el impacto de AICLE en niños pequeños y/o en su fluidez verbal, por lo cual se decidió implementar un proyecto interactivo de ciencias y analizar el impacto de esta estrategia en la fluidez verbal de los niños. A través del método de teoría fundamentada, las investigadoras analizaron los datos a través de cuatro instrumentos: registros, encuestas, diarios del profesor y videos. En ese momento, a través de codificación abierta, axial y selectiva, se revelaron resultados positivos y efectivos en relación con el uso de AICLE para mejorar la fluidez verbal en niños. El estudio concluyó que, sin importar las condiciones contextuales, un enfoque AICLE puede beneficiar la fluidez verbal de los niños, así como desarrollar otros aspectos como conciencia del conocimiento y uso del lenguaje, estrategias para negociar significado y un genuino interés, además de un avance en el contenido. Teniendo en cuenta que el tema de este estudio no ha sido ampliamente desarrollado en la comunidad dedicada al estudio de AICLE, este contexto se beneficiaría del desarrollo de estudios similares en este campo.

Palabras claves: AICLE, Fluidez verbal, Interacción.

Table of Contents

Abstract	iii
Resumen.....	iv
Table of Figures and Tables.....	ix
Chapter 1: Introduction	1
1.1 Introduction to the study	1
1.2 Rationale of the study	3
1.2.1 Needs analysis and problem statement	3
1.2.2 Justification of the problem’s significance	4
1.2.3 Strategy selected to address problem	5
1.3 Research question and objectives	6
1.4 Conclusion	6
Chapter 2: Theoretical Framework & State of the Art	8
2.1 Introduction.....	8
2.2 Theoretical framework.....	8
2.2.1 Teaching English to Young Learners.....	8
2.2.2 Fluency.....	10
2.2.3 CLIL (Content and Language Integrated Learning)	11
2.3 State of the art	15
2.4 Conclusion	18
Chapter 3: Research Design.....	19
3.1 Introduction.....	19
3.2 Type of study	19
3.3 Context.....	20

3.3.1	Participants	21
3.3.2	Researcher's role	21
3.3.3	Ethical considerations	22
3.4	Data collection instruments.....	22
3.4.1	Descriptions and justifications	23
3.4.1.1	Journals	23
3.4.1.2	Video recording	23
3.4.1.3	Logs.....	24
3.4.1.4	Surveys.....	24
3.4.2	Validation and piloting.....	25
3.5	Conclusion	25
Chapter 4: Pedagogical Intervention and Implementation.....		27
4.1	Introduction.....	27
4.2	Visions of language, learning, and curriculum	29
4.2.1	Vision of language	29
4.2.2	Vision of learning.....	29
4.2.3	Vision of curriculum	30
4.2.1	Vision of classroom.....	30
4.3	Instructional design.....	31
4.3.1	Lesson planning	33
4.3.2	Implementation	34
4.4	Conclusion	35
Chapter 5: Results and Data Analysis.....		37

5.1	Introduction.....	37
5.2	Data management procedures and analysis methodology	38
5.2.1	Logs.....	39
5.2.2	Surveys.....	45
5.2.3	Rubrics	50
5.2.4	Validation.....	53
5.3	Categories	54
5.3.1	Overall category mapping.....	54
5.3.2	Categories.....	57
5.3.2.1	Subcategories	57
5.3.2.2	Core category	61
5.4	Conclusion	62
Chapter 6: Conclusions and Pedagogical Implications.....		64
6.1	Introduction.....	64
6.2	Comparison of results with previous studies' results	64
6.3	Significance of the results.....	67
6.4	Limitations of the present study.....	68
6.5	Further Research	69
6.6	Conclusion	70
References.....		72
Appendix A.....		83
Appendix B.....		84
Appendix C.....		85

Appendix D..... 86

Appendix E 87

Appendix F..... 88

Appendix G..... 89

Appendix H..... 90

Appendix I 91

Appendix J 92

Appendix K..... 95

Table of Figures and Tables

Figure 1:..... 51

Figure 2:..... 51

Figure 3:..... 52

Figure 4:..... 53

Figure 5:..... 55

Figure 6:..... 56

Table 1..... 32

Table 2..... 41

Table 3:..... 43

Table 4..... 46

Chapter 1: Introduction

1.1 Introduction to the study

Colombia's government has outlined mid and long term plans to turn Colombia into a bilingual country, to fit among the international educational and working standards. For this reason, the country requires further development of the educational system to guide the community in the appropriate direction (MEN, 2015), which includes the language proficiency in English a foreign or, eventually second language. According to Richards (2008), mastering speaking skills in English is a priority for many foreign language learners. Therefore, Colombian learners often evaluate their success in target language based on how much they feel they have improved their spoken language proficiency.

The National Bilingual Project 2014 - 2018 (MEN, 2015) presents the need for implementing new trends in private and public contexts to strengthen the foreign language level on learners. In Colombia, there are both private bilingual institutions and, standard average schools that include the public ones. Both types of schools have implemented programs to increase the number of English instruction hours: for instance, English instruction of core subjects from pre-school to high school in the private sector. Hence, According to Rodriguez (2011), Colombian bilingual schools have applied a CLIL (Content and Language Integrated Learning) approach by offering learners English instruction in one or more subjects as a strategy to enhance the use of English in formal education.

In Bilingual schools, most of the primary educators who work in a self-contained classroom, "a classroom in which a child is under the guidance of one teacher for most of his school-sponsored activities" (Tillman, 1960, p. 82) are in charge of teaching core subjects such as Science, Social Studies, and Math through English from preschool to fifth grade. This process

entails teachers to find ways to merge their pedagogical experience with the appropriate content and techniques. Likewise, a CLIL approach seems to be challenging for learners to be proficient in the foreign language in order to learn content or vice versa, to help learners meet the English national standards goals

The CLIL approach requires cultural and institutional changes and modifies institutional structures. For instance, “teachers are often not in the habit of integrating both content and language, and as a consequence neither are learners” (Mehisto, Marsh, & Frigols, 2008, p. 98). In most of Colombian bilingual schools, language teachers are hired to teach other subjects that are not their specialty, so learners do not study under the appropriate approach to learn language and content simultaneously and, as a result, they do not reach the academic achievements (McDougald, 2009). Also, the expectations of national bilingual projects for private and public institutions revealed a need for implementing innovative tools that allow teachers to perform and learners to stage a real language acquisition process.

The present study sought to implement interactive Science lessons through a CLIL approach to increase young learners’ spoken fluency by using content from the Science syllabus, and to analyze how much content they had learned from the subject. This project’s lessons were delivered using the 4Cs (content, cognition, communication and culture) which are the CLIL principles to provide learners with an authentic and natural context where they could interact by using English and content simultaneously. In this way, they would be more exposed to the foreign language and would find English as a need to communicate and interact in the classroom allowing learners to improve their spoken fluency.

1.2 Rationale of the study

1.2.1 Needs analysis and problem statement

Considering the nature of the population and the educational settings we worked with, an action research methodology was conducted in two different educational contexts that are described in detail in Chapter 3: We worked with a group of twenty-five young learners from a private bilingual school (Gimnasio Británico) in Chia, Cundinamarca (Colombia). These seven-year-old children received English instruction but they lacked fluency what hindered their communication. The researchers detected this problem after recording and analyzing the young learners' speaking skill with an evaluation rubric (6.6Appendix J:). To complement the rubric and audio-recordings, a rating scale was applied to measure the learners' perceptions of their speaking performance (6.6Appendix E:). After evaluating each learner and analyzing the rating scales, the results displayed that the learners lack of spoken fluency.

In the second case, a group of twenty-five first graders from a public school (San Carlos) in Bogotá (Colombia), with any previous English instruction participated. They were also in their literacy process so most of them did not write or read Spanish. We analyzed the context and learners' needs regarding the English language. We retrieved information from the syllabus and interviewed the learners' and teachers' from preschool and first grades. As a result, learners seemed to be interested in learning English. They were familiar with the target language through T.V. programs and books. Some teachers provided basic vocabulary in preschool, but they considered they did not have enough training to teach them properly.

In both cases, children were not able to express complete sentences, which affected their oral performance according to the schools and the English national standards. Learners received different ranges of English instruction and struggled to communicate in a foreign language,

which evidenced the lack of linguistic elements to generate intelligible statements. This problem disturbed learners' learning process in terms of English language learning but also content. On this respect, researchers considered that using Science content to apply the fundamental CLIL approach principles (Coyle, Hood, & Marsh, 2010), might help learners find English as a need to communicate and interact with each other while learning content.

1.2.2 Justification of the problem's significance

Spoken fluency is a crucial skill that learners need to develop when learning a foreign language. Hughes (2013) says that speaking can be the most relevant skill because it lets learners express their opinions and communicate with others. The needs analysis step evidenced that the learners' range of vocabulary, language knowledge and attempts to communicate were not developed enough in both groups. They were asked to express their ideas and opinions in the target language, but most of the learners did not accomplish that objective. For that reason, learners needed a strategy that would help them overcome this problem, in this case, interactive Science lessons within the CLIL principles. Their lack of spoken fluency was affected by different temporal variables such as comprehension lapse, pronunciation problems and precision in word choice (Götz, 2013). They were not able to choose the appropriate words, they did not understand statements, and they mispronounced words which affected not only their listening comprehension but also their oral production. This study chose Science content as a result of the learners' interests because this subject was appealing to them and allowed researchers to create visual and interactive tasks. These type of activity helped young learners communicate their ideas based on real experience (Moon, 2005). Thus, using engaging content along with the CLIL principles, allowed learners to be immersed in an authentic context where they used English to learn and understand content. The theory stands that progress in fluency is feasible by using a

methodology based on a CLIL approach. Despite this approach has been mostly aimed to improve reading and writing skills, we considered it as an approach to enhance these young learners' spoken fluency because the interactive Science lessons would provide learners with a more authentic context, that would motivate them to interact more in the foreign language. Additionally, the school was mostly the only space they had to practice the foreign language so the CLIL approach offered learners the opportunity to be exposed to the L2 while learning language and content simultaneously.

1.2.3 Strategy selected to address problem

Different factors must be considered when teaching English to young learners. Moon affirms that “children learn most effectively when they are involved” (Moon, 2005, p. 118), which means that learners need to be engaged and interested in the topic. Another factor is related to the speaking skill. Nation & Newton (2008) state that foreign language learners master their speaking skill through meaning-focused output which consists in providing learners with typical activities like conversations and presentations to use the language effectively.

Given the fact that children display better language learning results when they feel motivated by the subject topics (Moon, 2005), an appealing Science topic (The plant's life cycle) was chosen by the learners in order to implement the interactive CLIL Science lessons. “CLIL offers opportunities to allow youngsters to use another language naturally, in such a way that they soon forget about the language and only focus on the learning topic” (Marsh & Langé, 2000, p. 6). Thus, CLIL provides a favorable environment to foster interaction on learners because they might feel motivated to speak while they acquire more and new vocabulary about the content, which would facilitate the improvement of their spoken fluency. This project allowed learners to be immersed in CLIL based lessons where they learned the content, while

having hands-on practice. It also allowed them to build up micro contexts to exclusively use the foreign language (English) in their own culture. They were involved in different communicative stages to use the language and learn about Science in a more natural environment.

1.3 Research question and objectives

The research question that emerged from the problem in order to find a possible solution to these young learners' lack of fluency was: **What happens to the spoken fluency of first graders from two different contexts when using interactive CLIL Science lessons to teach content in English?** This question led us to analyze the possible impact that CLIL might have on these young learners' spoken fluency. In order to carry out a deep analysis, it was necessary to focus on different aspects. We decided to determine whether the use of interactive CLIL Science lessons to teach content in English would benefit both groups of young learners regardless of their contexts, either a private bilingual school or public school according to the Colombian standards. We also sought to determine the possible changes (if any) that a CLIL approach can have on learners' spoken fluency, and to identify any conditions that affect the development of English spoken fluency on these young learners within a CLIL-based context preserving learners' cultural basis.

1.4 Conclusion

When teachers use interactive Science lessons to teach content (The plant's life cycle topic) and language, maintaining the basic cultural features, the learners were involved in a dual process that could improve their language speaking skills as well as their content knowledge.

To conclude, this project suggests that CLIL, speaking skills and Teaching English to Young Learners (TEYL) build up a strategy that might impact on young learners' spoken fluency when implementing interactive Science lessons to teach content in English. Thus,

communicative activities were carried out and analyzed to determine if learners had either negative or positive changes on their oral performance. These results provided teachers with useful ideas to implement in their teaching practices, and assisted learners overcoming their language learning difficulties.

Chapter 2: Theoretical Framework & State of the Art

2.1 Introduction

The data gathered in the needs analysis revealed learners' lack of fluency to communicate in the foreign language. The previous findings led us to deepen in theory about development and training on Speaking skill, Fluency, and Interaction. The information directed us to the use of a CLIL approach and TEYL techniques. The purpose was to enhance the student's interaction and, hence, observe the influence of the proposed strategy on student's outcomes regarding conversational spoken fluency and content knowledge. This chapter presents the consulted theory, the most recent and current research on CLIL and TEYL, and how these theories support this research study.

2.2 Theoretical framework

2.2.1 Teaching English to Young Learners

The target population of this study is classified as young learners. Nunan (2010) defines young learners as children who are in their first grades of schooling, their writing and reading skills are not fully developed even in their L1, and they are not aware of their learning process. Their ages range from 3 to 14, which is narrowed down by Pinter (2006) in older and younger learners, being the last group the one that matches our learners' profile. In their texts, (Pinter, 2006; Brown, 2007) point out specific features that are crucial in young learners' language acquisition processes. For instance, their uniqueness and particular learning process, the constant and quick change they face, and the positive response to active learning approach. Piaget's (1976) stages of Development explain how children experience the transition from preoperational to operational stage, from critical to the cognitive development of adult-like logic. In this period, the teacher has to stimulate the most of the young learners' potential in the Zone of Proximal Development (Vygotsky, 1993).

Terrell (1986) says that the Foreign Language should be taught with the same strategies learners acquire the first one. Based on that principle, learners should be exposed to the foreign language in order for them to acquire listening and speaking skills without ignoring their culture, which is the environment that a CLIL approach also offers in the classroom.

The main aim of TEYL theory is to provide teachers with enough techniques to enhance children's curiosity by following principles of monitoring based on success, reflecting and experimenting, and fostering collaboration and rapport. Scott and Ytreberg (1990) provide English Language tutors with some children features, for instance: "Children understand situations quicker than they understand the language used" (p. 2). This is relevant because if teachers teach them how to use the language in children's own context rather than explaining grammar, learners will find it more meaningful. This issue can be overcome by using contextualized fun activities as Scott & Ytreberg (1990) affirm: "Children have an amazing ability to absorb language through play and other activities that they find enjoyable" (p. 6). About the research field, (Pinter & Zandian, 2015; Christensen & James, 2008; Massler, 2012; Sánchez & Beatty, 2013; Charria & Alavarez, 2014; Porras, 2010) propose relevant statements related to research with young learners and their role, and the mediation of adults on the interpretation of children's thoughts. These authors studied about perceptions, feelings and effects that young learners intend to express, and provided useful approaches to validate the information obtained by gathering data from children's learning processes. Massler (2012) applied a cross-sectional long term study where teachers, parents, and children expressed their insights about the process of learning language and content simultaneously. It revealed positive effects of a CLIL approach on young learners, and provided us with tools to implement appropriate interactive science lessons with young learners.

2.2.2 Fluency

Speaking is a broad skill that has a “dynamic, ever-changing, interpersonally oriented and contextually defined nature” (Hughes, 2013, p. 15), that second or foreign language learners need to develop to be competent. According to the Chomskian rationalist theory (Chomsky, 2014), language faculty (competence) and use (performance) allow individuals to express their ideas and to interact with others through the target language. Scott & Ytreberg (1990) affirm that children need to be exposed to the language in natural environments where young learners use the language unconsciously while learning content (Marsh & Langé, 2000). In fact, one of the expectations of implementing the CLIL approach is related to the increase of oral fluency (Dalton-Puffer, 2007). In Juan’s comparative study (2010), the results displayed that “CLIL learners speak more fluently than learners who exclusively benefit from EFL education” (p. 46). Oxford (2011) affirms that when interaction is used to learn and communicate, learners can develop their speaking skills better. In this sense, the CLIL Science lessons could promote natural interaction from learners to learn content and communicate their ideas.

It is feasible to Engage, Study and Activate (ESA) speaking skills in children as stated by Harmer (2008) when meaningful contexts are established in the classroom. In doing so, learners are to transform their thinking, and would be able to create sub-environments where they can use the new discourse learned. Hence, children foster both creativity and language development, following one of the CLIL approach principles: when a young learner practices the language in a meaningful context, he/she acquires the language naturally, forgets about learning the language and uses it as a means to learn content (Marsh & Langé, 2000). The implementation of video recording helped us collect data to check if the population of this study used the language

unconsciously and increased their spoken fluency. See (Video recording) and Figure 1 and Figure 2 to check the learners' spoken fluency progress,

Fluency has been widely defined, and the definitions vary according to the listener, testing and speaker conditions. For the present study we considered several definitions that describe fluency as a descriptor of performance or indicator of progress (Chambers, 1997). Chambers also discussed the qualitative and quantitative nature of fluency measurement, also how the methods of teaching, researching and testing may influence the results of a study. The author presents diverse perspectives in regards to the automaticity, discussed in Sato (2014), as well as the use of knowledge to achieve communicative purposes, the speech rate as a tool to measure quantitative aspects of fluency and temporal variables that might both measure and influence spoken fluency (Sato, 2014; Chambers, 1997). Speed is necessary for a person to be fluent when speaking. Nonetheless, pausing is important to reorganize words or ideas that the speaker wants to produce. However, "if the speaker-produces-one-word-at-a-time-like-this, no matter how accurate the results are, the Speaker will not generally be judged a fluent speaker" (Thornbury, 2005, p. 7). Besides, Ur (2008) determined certain factors that interfere in spoken fluency. They include, fear towards correction as criticism, lack of reasons or opinions for them to express, limited opportunities for learners to participate, and learners' use of mother tongue for lack of confidence in their L2 skills. In this sense, this research aims to observe the changes that dynamic experiences can produce in the length and complexity of utterances (Towell, Hawkins, & Bazergui, 1996) without only focusing on speed or pauses.

2.2.3 CLIL (Content and Language Integrated Learning)

Relevant theories about teaching speaking provide tutors with ideas of how to implement activities to promote classroom interaction. Brown & Nation (1997) suggest two key items:

form-focused instruction to speak accurately in another language, and meaning-focused instruction to construct the language if they find it meaningful. Opportunities to improve fluency mean to help learners become more confident when communicating or interacting with each other in a foreign language as González & Arias (2009) and Camacho & McDougald (2014) state. These theories involve different types of classroom activities that might enhance the speaking on foreign language learners.

“Content and language integrated learning (CLIL) is a generic term and refers to any educational situation in which an additional language and therefore not the most widely used language of the environment is used for the teaching and learning of subjects other than the language itself” (Wolff, 2002, p.1)

From social constructivism theories, interaction is correspondent to the social environment and the cultural context. Peers, teachers, and parents also mediate and transform context. These two groups get involved in the children’s learning process and define successful learning patterns. The CLIL approach counts on stakeholders in the field that outline patterns of interaction that benefit the learning of the language and the content adapted to the populations’ teachers’ and institutions’ needs. In the case of this study, and considering the novelty that this approach represents for the learners, we decided to use the IRF (Initiation, Response, Follow-up) discussed in Llinares, Morton, & Whittaker (2012), previously proposed by Sinclair & Coulthard (1975). As the contexts are different but the needs are similar, we considered that this basic interaction model would set learners better in the CLIL dual-focused environment and can help learners develop BICS (Basic Interpersonal Communication Skills) explained in Coyle et al. (2010) as a tool for interaction with peers and the teacher, regarding their cultural background.

The CLIL approach research has been implemented to analyze writing skills (Dalton-Puffer, Nikula, & Smit, 2010) or compare writing and speaking according to Whittaker & Llinares (2009), but it has been barely studied in the speaking field. Juan's comparative study (2010) revealed positive results towards the improvement of CLIL learners' spoken fluency compared to the EFL learners as well as in Fabra's & Jacob's research (2015) which demonstrated that learners immersed in CLIL environments displayed faster spoken fluency progress than EFL learners. Few studies have implemented CLIL approach to increase the learners' oral production that makes the present research more significant in the English educational field, as the interactive Science lessons were guided under the theory of the CLIL principles in order to find out the possible changes on the young learners' spoken fluency and content progress.

CLIL provides contextual and environmental conditions that provide learners with motivating factors that assist the development of fluency in a natural way, regarding their age and developmental stage. Placing our population in The Zone of Proximal Development, in regards to language and content learning, collaboration and interaction are a fundamental tool that would help learners migrate from a silent period to a more fluent spoken production.

On one hand, it is hard for these learners to start producing language if they are not provided with enough input first; on the other hand, teachers want young learners to express their thoughts as they do in their mother tongue because children are cheerful, natural, and active. To promote fluency on young learners, teachers need to offer an authentic environment so they can accomplish such speaking competence, which can become a huge advantage in a dual focus approach like CLIL.

CLIL changed the traditional teaching methodologies of learning the L2 as an isolated subject and relied on teaching and learning other subject contents through a foreign language instruction: “CLIL is a dual-focused educational approach, in which an additional language is used for the learning and teaching of both, content and language” (Coyle et al., 2010, p. 1). According to Dalton-Puffer (2007), “the term Content-and-Language-Integrated-Learning (CLIL) refers to an educational setting where a language other than the learners’ use mother tongue as medium instruction” (p.1). In this way, CLIL becomes the most appropriate strategy to address spoken fluency issues in young learners. Our population description is six and seven year-old learners who are facing a developmental stage and increase their curiosity through contact with reality. These characteristics allow teachers to focus on shape their behavior towards the discovery of realia by using L2 as a vehicular language. Thus, Science seems to be a suitable content that promotes interaction and generates genuine communication on learners, without including a vast corpus and using specific vocabulary to convey meaning in the context.

According to Klimova (2012), CLIL lessons can help learners improve their foreign language due to the exposure of naturally-occurring language and the increase of learners’ motivation to learn language and content. Recent research in CLIL by Cenoz (2015), Marsh & Langé (1999) and Hanušová & Ziková, (2008) highlight conditions as heterogeneity of populations. In educational contexts, particularly, the use of non-language subjects to mediate language instruction, the appliance of cross-curricular content and how the learning is experienced allows instructors to exploit the combination of the two subjects as well as widen the lexical range. Thus, teachers need to explore collaborative projects where institutions can integrate the content areas and English syllabi. We have identified that Science is an enjoyable and attractive subject for learners since it allows teachers to implement appealing experiments

that would increase the learners' willingness to participate in class and interact with their peers as Pinter (2006) and Moon (2005) state.

Regarding the research that McDougald (2009) carried out about the state of CLIL in Colombia, some schools set the English Language as a first target and subject content as the second one. Other institutions tend to reverse the order. However, the most important aspects rely on the methodologies and activities that teachers use to teach language while learning content or vice versa. The implementation of this dual-focused approach is aimed to tackle language and content with the same degree of relevance (Coyle et al., 2010). For that reason, CLIL is the most appropriate approach to conduct the present study, given that Science is used as the core subject to promote English interaction and learn content simultaneously. Thus, we are to research on the impact of implementing a CLIL approach on our learners' oral speaking performance and how this approach could affect positively or negatively their new knowledge acquisition process.

2.3 State of the art

Existing studies on the use of a CLIL approach to benefit a second or foreign language acquisition process have selected Science, History, and Geography as subject areas to increase English learners achievements. Good examples are mentioned by Cenoz (2015); Dalton-Puffer (2007 - 2008); Dalton-Puffer, C. & Smit, U. (2013); Klimova (2012); Guerrini (2009); Hanušová & Ziková (2008); Juan (2010); Lasagabaster (2008); Lasagabaster & Sierra (2009); Loranc-Paszyk (2009); Marsh (2008); Massler (2012) who have presented the positive impact that CLIL approach has on diverse contexts and conditions. Moreover, these authors have focused on the impact of CLIL on learners and teachers and how some further research could enhance the use and development of training and materials to make CLIL fit into diverse environments and

facilitate the dual learning processes. This new trend has had an impact in Latin America, where native, foreign researchers and teachers have studied and implemented CLIL in diverse bilingual and multilingual educational systems, as seen in Papaja (2012).

Several studies attain to particular Colombian contexts but few researchers have explored or implemented the CLIL approach to teach content in order to promote spoken fluency and interaction on young learners from public schools. We found that most studies at a Master and Ph.D. level suggest that bilingual contexts and researchers are interested in the immersion level and how the institutions understand the concept of CLIL (Mariño, 2014; Monsalve & Correal, 2009; Rodriguez, 2012; Rodriguez, 2011). The results evidenced that a CLIL approach increased English learners' achievements in the four language skills, as well as in Math and Science content. In this sense, Science was a suitable subject to improve English language skills because learners were more confident when speaking and could express their opinions by using the content within their authentic cultural context.

In the Bryan & Habte-Gabr study (2010) carried out at Universidad de La Sabana about strategies for teaching geography topics in English to Spanish native speakers, it evidenced that learning content through English instructions helped Geopolitic learners to increase technical English, knowledge, and writing skills. The research study conducted by Monsalve & Correal (2009) in the Saturday English courses with eight and seven-year old children at Universidad Nacional de Colombia, revealed that children were able to communicate when topics were related to their prior knowledge. Also, when learners had experienced different activities in which they could discuss and share ideas through the peer-interaction, an effective strategy as to promote speaking in the classroom, as stated in our research results.

On the field of learners' performance, Castellar (2013) affirmed that spontaneity and willingness to interact emerged when measured. The author also highlighted shyness as a decisive factor that interferes with fluency and interaction. Shyness, strengthened by gender tendencies, limits learners' interaction and participation. Urquijo (2012) used flashcards as a tool to carry out a study they enhance learners' oral production and interaction. He found out that this additional material could get learners to increase oral production, grammar accuracy, fluent use, interactive communication, and improve oral performance in Spanish.

Previous studies carried out by Castellar (2013) and Urquijo (2012) have found measurable progress in oral production through the use of content-based approaches involving children in innovative interactive practices. Regarding speaking, innovative strategies as visual literacy proposed by Pimienta, McDougald, & others (2013), and Role Plays in Rubiano & Cruz (2013) evidence advances in motivation and participation considering that unusual pedagogical experiences and diverse teaching techniques triggered feelings and emotions that motivated the need for learners to express ideas in the foreign language. Those strategies are also useful to foster vocabulary and learning skills in young learners (Báez & Chacón, 2013). Other authors obtained positive results in the fields of general language improvement and fear overcoming, as well as an increase in learners' initiative to express in the L2 (Buitrago & Ayala, 2008; Duarte, Tinjacá, & Carrero, 2012). In these cases, the researchers combined songs, among other meaningful activities to provide learners with an enjoyable atmosphere and strategies that had a positive impact on their fluency. However, we have not found a considerably amount of research regarding the use of Science to improve oral skills and subskills. There is no evidence of studies where private bilingual schools and monolingual public schools are compared, which makes our study relevant and innovative. Although some of the studies presented an improvement on

cognitive and metacognitive strategies and skills as well as new content acquisition, researchers have not studied how a CLIL approach, using interactive Science lessons, promotes interaction and oral production in young learners regardless contextual conditions.

2.4 Conclusion

The literature demonstrates that a CLIL approach can be useful to address issues on spoken fluency to a certain extent, considering cultural and context conditions. Nevertheless, this approach has neither been applied in Colombia in the particular context of first graders, nor used to compare its influence in two different contexts within the urban area. The revision of the literature helped this study to consider new elements for the pedagogical implementation and provided clues about instruments to use and aspects to analyse, that will be explained in the following chapters. The definitions and previous studies included in this chapter can help the reader share the researchers' vision of the phenomena to be analyzed in the closing chapters.

Chapter 3: Research Design

3.1 Introduction

This chapter explains the Qualitative Action Research type of study, the context, participants, the researcher's role, the ethical considerations, and the instruments designed to gather data in order to determine how much these young learners increased their English interaction regarding their spoken fluency. These instruments were surveys, video recordings, teachers' journals and learners' logs for the private bilingual school learners, which allowed them to reflect upon their insights about the process. In the case of illiterate learners from the public school, the researcher recorded the log's answers with the purpose of gathering similar information from the learners with the lowest level of interference. Researchers piloted and applied these instruments through three stages: before, during, and after the implementation, in order to contrast the data.

3.2 Type of study

The most appropriate approach to solve the research question is the Qualitative Action Research study, as it allows teachers to perform the role of researchers in their classroom by analyzing the situation from an internal perspective. Its cyclical nature lets researchers observe, plan, analyze and reflect upon the findings. Qualitative Action Research implies constant reflection and action from the teacher in order to provide learners with better learning experiences and solve possible issues within the daily practice as Burns (2010) affirms.

The Qualitative Action Research analyzes individuals as active participants whose actions and perceptions are valuable for the data analysis (qualitative research). Thus, triangulation was conducted through the analysis of qualitative data collected in students' logs, teachers' journals and surveys (students' and teachers' perceptions) which is supported by quantitative data

collected in video recordings and surveys (spoken fluency), providing a wider understanding of the research problem. Quantitative research was also applied to ensure the validity of the data.

This research project was carried out in two different educational settings, a private bilingual school and a public school given the researchers' places of work. This study did not intend to compare the contexts, but analyzed the possible changes that interactive CLIL Science lessons might have on these young learners' spoken fluency regardless of their educational settings.

Additionally, some instruments needed adaptation during the pedagogical intervention due to the nature of the population in the public school.

3.3 Context

The present research study was held in two different institutions in Colombia. One part of this study took place in a private bilingual school (Gimnasio Británico) in Chía, Cundinamarca. There was a constant need of fluency due to the nature of the school, learners were expected to perform in L2 at a very early age, and the environment provided them with sufficient tools to do it. However, there was a lack of use of the previous knowledge that obstructed not only communication but also the acquisition of language skills and information from other subjects. On the other hand, the second part was carried out in a public institution (San Carlos) in Bogotá, D.C., with opposite characteristics from the first one as these first graders did not have any instruction in English and they lacked access to this language either at school or at home. This could pose as an advantage since we did not face the wash back effect from L2 formal instruction. In this sense, carrying out interactive Science lessons within CLIL approach principles would allow us analyze the possible changes that this study might have on these learners' spoken fluency regardless of their contexts. This approach helps learners use the language unconsciously to learn about content from another subject. Young learners tend to

forget they are learning a foreign language so they finally use it naturally and they end up focusing on learning the content only (Marsh & Langé, 2000).

3.3.1 Participants

The participants were first graders of primary school from a bilingual and a public institution in Colombia. The first group was in A2 English level according to the Common European Framework of Reference CEFR; the second one had not received any formal or informal instruction in the English language. Their ages ranged from 6 to 7. Most of the learners lived in Bogota and Chia (a small town near Bogotá). The population of the private school were immersed in a social environment that allowed them to have easy access to technological tools and travel abroad. Learners from the bilingual school received English instruction in the core subjects, and the ones from the public school did not receive English instruction. However, neither the private learners nor the public ones have experienced the CLIL environment before which is one of the innovative aspects of the present study.

3.3.2 Researcher's role

Researchers were active participants constantly observing, evaluating and providing insights about the class by considering the advantages and the constraints, gathering the information in detail, and participating as guides in the implementation of strategies in order to avoid the bias of collected data (Burns, 2010). As Berg (2004) affirms “the researcher contributes expertise when needed as a participant in the process” (p. 202), the researchers, in the present study, were to analyze and reflect upon the instruments, based on the knowledge they had about a particular group and context requirements. The researchers validated the instruments by piloting them with peers and learners to assess understanding and effectiveness. After

collecting the data, researchers analyzed and triangulated the qualitative and quantitative data to ensure the legitimacy of such findings, and provide further research on the same topic.

3.3.3 Ethical considerations

Consent letters were sent to parents because of the age of the sample participants (children) and school Principals for security purposes (see 6.6Appendix A:, 6.6Appendix B:, 6.6Appendix C:6.6Appendix D:), in order to grant the privacy and confidentiality of the information and apply valid resources (Burns, 2010). All of them agreed to let their children participate in this project as well as the school principals. The sort of instruments and activities were specified to avoid reluctance from the participants and their relatives, as well as from the school rules, values, and policies.

To guarantee children's free participation and to get closer to their own perceptions and meaning, Pinter & Zandian (2015) propose that the instruments should be reviewed by tutors and peers, and piloted with the learners, so the researchers of the present study followed the authors' suggested process. We are told that the instructional design considered the vulnerability of participants and social actors to avoid misinterpreting learners' voices and reflect on how to make sense of the data without altering learners' insights (Pinter & Zandian, 2015).

3.4 Data collection instruments

The selected instruments (class journals, logs, video recording and surveys) for the post - implementation stage allowed researchers to collect detailed information with a small amount of interference in the class. The researchers adjusted these instruments to the curriculum contents in both Science and English subjects, and were designed to collect qualitative as well as quantitative data in order to triangulate and validate the information.

3.4.1 Descriptions and justifications

3.4.1.1 Journals

Journals are a complete information source when teachers, learners, or both, write their insights and personal reactions. Teachers and students reflect upon themselves and others' development of a certain activity or strategy as cited in Mertler (2008). Journals are reliable and allow the researcher or participants to reflect upon the events after data collection. The teacher's journal includes the individual perceptions about the lessons, learners' changes, and the subject of this study. Their insights are fundamental for the analysis of videos and surveys because they establish contextual basis to analyze the collected data.

Other studies about interaction on young learners such as Monsalve & Correal (2009) implemented field notes for four months in order to observe and write down the significant information and changes. However, we decided to carry out a similar procedure by using journals in order to jot down our perceptions and impressions regarding the learners' spoken fluency progress and content. These instruments were designed to collect qualitative as well as quantitative data in order to triangulate and validate the information.

3.4.1.2 Video recording

It is a useful resource that offers a registry of the spoken fluency of the student with natural occurring data. Likewise, it provides the study with non-verbal communication and conventions, 'invisible' phenomena mentioned by Jewitt (2012), which would add validity to the journal's notes.

Video recordings help to compare different stages of the study and to give details about the context. It can be adapted to different scenarios according to the strategies related to the pedagogical intervention. Its real-time sequential record, durability, malleability, and share-

ability make it more appropriate. In addition, it lets us record how the learners' fluency has or has not improved, we can revive and see the scenes over and over to identify the learners' progress in detail. We decided to record a mid-term progress session and the last session where learners presented their plant life cycle experiment and poster in order to observe and interpret the possible changes of the learners' spoken fluency. As in Monsalve & Correal (2009), video recordings were applied to collect data on children's oral production. This instrument allowed us to gather learners' oral performance in real action, to observe again, what occurred in reference to linguistics or affective aspects when learners were speaking, and to supplement or contrast the data collected by the other instruments.

3.4.1.3 *Logs*

Logs are documents where participants jot down their perceptions of the tasks performed during the sessions. As claimed by McKernan & Ireland (2013), "logs record essentials of human behavior" (p.110). Logs are a practical and simple tool to understand and follow by young learners. In this study, each learner kept a log at the end of each class and they were asked to write their perceptions concerning learning, fluency, interaction, and participation improvement. (6.6Appendix G:). Additionally, logs gave us the opportunity to organize the data into a chart from the beginning until the end.

3.4.1.4 *Surveys*

The purpose of surveys is to provide researchers with statistics of the target population characteristics and ask questions to collect (Floyd & Fowler, 2014). They facilitate the accuracy of the data by formulating precise questions. A survey is a flexible instrument that can be applied one or several times to the whole or just part of the participants. They are used as a complement of journals and video recordings because they are focused on asking for some information that

none of the other chosen instruments can provide. In addition, surveys were important for this study because we could gather the learners' opinions and perceptions about their own learning process. Learners were to answer specific statements to prove their awareness of their spoken fluency changes, and to evaluate the effectiveness of the activities used during this project.

Other studies decided to apply interviews to gather information about the learners' reflection on the topic of the projects. We considered this instrument was time-consuming due to the transcription process and the amount of participants. Thus, surveys were the suitable instrument to gather and analyze information about the learners' perceptions on their spoken fluency progress in a more efficient way. Participants were asked to answer a mid-term survey and a final survey in order to contrast the possible spoken fluency changes and content knowledge these young learners had throughout the pedagogical intervention.

3.4.2 Validation and piloting

Tutors from Universidad de La Sabana and colleagues from the institutions revised the instruments to prove their effectiveness. This validating process helped the researchers polish the instruments by changing irrelevant and difficult questions to understand by young learners. The piloting process of the survey was conducted with first graders from the bilingual school and the public school. We noticed that some questions were still difficult and vague to understand by children so it was necessary to modify questions to make the instruments clearer. The video recording rubric and the journal format were selected based on specific features for the nature of the study and were approved by the institution for validation purposes.

3.5 Conclusion

The linguistic needs of students were related to the improvement of their spoken fluency taking into account their English level. For that reason, we implemented different steps to

develop this project. First, the decision of the type of study for the purpose of this project. Second, the establishment of the researchers' roles. Third, the consent from parents and institutions, as part of the Ethical considerations, and fourth, the instruments design and their implementation. The following chapter describes in detail the procedures of the previously presented theory as practical classroom activities, and their effect on the spoken fluency and speaking skills of the students.

Chapter 4: Pedagogical Intervention and Implementation

4.1 Introduction

A CLIL approach consists of learning and teaching content subjects through an additional language (Coyle et al., 2010), where content or language teachers are usually non-native speakers in charge of delivering CLIL based lessons (Dalton-Puffer & Smit, 2013) and teaching core subjects (Science, Social Studies, and Maths) through English, from preschool to high school in Colombian private institutions. Because of this, learners have the challenge of learning a foreign language and content areas as a dual-process that requires teachers to apply diverse types of activities to make learners use the foreign language accurately and understand the content effectively.

A CLIL approach requires cultural changes and modifies institutional structures, based on Graddol's (2005) analysis. The expectations of the National Bilingual Projects (MEN, 2015) for private and public institutions, revealed a need to apply innovative tools to allow teachers to perform and learners to achieve a real language acquisition process.

The implementation of a CLIL approach focuses on improving the foreign language fluency without adding more hours to the student's school schedule. According to Lasagabaster & Sierra (2009) teaching English as an isolated subject is not enough to increase the learners' capabilities and proficiency in a foreign language. Unfortunately, Colombian bilingual schools policies sometimes oblige "CLIL" teachers to concentrate on covering the content of the syllabus rather than making learners produce language, since the curriculum is very extensive as McDougald (2009) affirms. Hence, it is essential to find strategies to help teachers work on content and language simultaneously, which allows learners to perform better during their learning process. Consequently, if learners do not develop the language skills, they will find the dual-

process difficult. In contrast, public schools do not offer young learners the opportunity to become familiar with a foreign language. In many public schools, children do not study English, and those who do instruct in this area do not count with qualified teachers. In this regard, CLIL interactive science lessons are a very useful strategy to enhance both English and content.

The interaction of learning and communicating as a strategy within CLIL interactive science lessons, increases young learners' spoken fluency and enables students to express and produce language by using content from the Science syllabus. Naiman claims as cited in Dalton-Puffer, (2008) that "CLIL learners often display greater fluency, quantity, and creativity and show the kind of higher risk-taking inclination often associated with good language learners" (p. 6). Therefore, we considered that this approach offered learners the opportunity to communicate with their partners within a more authentic environment, where they could become more spontaneous in face-to-face interaction.

The research project consisted of 12 lessons around the bean plant life cycle. In this way, we used the CLIL interactive Science lessons to offer first graders from a public and a private school the experience of learning about a daily life topic while simultaneously using the target language. It was also necessary to plan different tasks to promote the interaction among learners so that they could have more opportunities to speak English. Furthermore, we were able to analyze the possible impact of these activities on learners' spoken fluency.

Finally, to integrate the implementation of the CLIL interactive Science lessons under a holistic perspective, we considered the four visions: learning, language, curriculum and classroom, and the instructional design steps to carry out the implementation as suggested by our University. They helped us determine the most appropriate tasks to reach the objectives established for this research project.

4.2 Visions of language, learning, and curriculum

4.2.1 Vision of language

Language is composed by symbols that people use to communicate and produce meaning (Valli & Lucas, 2000). In this study, the young learners could interact not only in their native language but also in the foreign language to convey meaning about the Science project. Thus, they communicated their ideas through English while learning content as CLIL approach allows learners to learn the language within an authentic environment by “experiencing real-life situations in which they can acquire the language more naturalistically” (Coyle et al., 2010, p. 11). The plant life cycle served as an authentic topic connected to the learners’ daily lives and culture, which helped them express and interact with their peers. Therefore, we also perceived language as a way to “transmit information, also known as its communicative function” (Brinton & Brinton, 2010, p. 2). Robinson & Ellis (2008) claim that “language is used to organize, process and convey information, from one person to another” (p. 3). In this study, the learners were involved in activities in which they needed to interact with their partners and communicate their knowledge about the bean plant life cycle. Therefore, the vision of language for this study was as **a tool to interact** as well as to **convey meaning** in regards to the Science project.

4.2.2 Vision of learning

According to Slavin and Davis (2006), “Learning is acquiring or getting knowledge of a subject or a skill by study, experience, or instruction” (p. 138). We considered the vision of learning for this study in relation to **living experience and instruction**. The learners had the opportunity to experience an authentic environment by learning and experimenting the bean plant life cycle that could help them increase vocabulary and spoken fluency. Tennant states as cited in Hanušová & Ziková (2008) that “regular subjects, such as history and math, are taught in

a foreign language in order to enhance target language exposure and acquisition” (p. 10).

Therefore, these young learners experienced learning as a dual focused process where they could acquire, both knowledge about the bean plant life cycle, as well as the target language.

4.2.3 Vision of curriculum

Both institutions’ curricula share the same topics as they were designed based on the MEN (Ministerio Nacional de Educación) standards (MEN, 2015). We decided to choose a common Science topic, the plant life cycle, for the purpose of our study. We were aware of integrating our research project into the curriculum in order to have a more meaningful impact on our learners and the institutions, reinforcing this topic in relation to the rest of first-grade groups.

Learners immersed in the CLIL interactive Science lessons used the topics of the curriculum and practiced the target language simultaneously, while reinforcing the Science content through related communicative activities. In both contexts, this study took advantage of the curricula by using CLIL as a bridge to integrate content, language, and methodology. Thus, the bean plant life cycle experiment fit into the institutions’ requirements. Our vision of curriculum was seen as a foundation to provide the researchers with goals, methodologies, and content Egan (1978), that we needed to integrate with this study in order to comply with the institutions’ requirements and promote meaningful learning environments.

4.2.1 Vision of classroom

Wang and Hannafin (2005) state that the learning environment “is a natural classroom replete with the flow of potentially competing activities and influences typical in everyday school” (p. 16). In other words, the classroom is a space where learners explore and carry out activities that help them develop different skills and strategies that contribute to their learning process. This was the place where learners could be exposed to a foreign language, in this case, and interacted with

their partners through communicative tasks and collaborative work. Furthermore, the classroom is a place where teachers and learners can share opinions, knowledge and values that cultivate the learners' education.

Our vision of classroom is based on a **flexible environment** mediated by collaborative work, interactive tasks, meaning negotiation, and ICT tools guided by the teachers. Thus, during this Science project, young learners had the opportunity to work collaboratively while experiencing a real-life situation. Besides, they practiced and were exposed to the foreign language through interaction.

4.3 Instructional design

Concerning the instructional design, we considered three broad areas of careful revision. The first one is the speaking as a fundamental skill to interact and put into practice prior learning. Second, CLIL interactive Science lessons as a core strategy to foster the mentioned skill. Third, TEYL as principles that keep in mind the young learners' cognitive processes concerning language and content in the Science class as a solution to the learners' lack of spoken fluency.

For that reason, we outlined a scaffolding process that has a stronger impact when delivered in the timeframe of the zone of proximal development. Given that a successful scaffolding process, in Ausubel's study as cited in Reigeluth (2013) allows learners to organize information by giving the higher level of importance to their cognitive structure, the constructivist view of instruction gaze at learners' performance is the main influence of instruction success. Jonassen (1999) establishes certain principles of the instruction in a constructivist approach: a. the learner will be embedded in a realistic and relevant environment, b. Provide for social negotiation, c. Support multiple perspectives and the use of multiple modes of presentation. d. Encourage ownership of the learning and e. nurture self-awareness of the knowledge construction process. Consequently,

this perspective seemed to be the most appropriate to work within a CLIL approach because we focused on content in real life to create an appealing environment for the learners.

In addition, Hannafin, Land, and Oliver (1999) worked on Open Learning Environments, where activities and materials outline the teachers’ desired framework beyond the classroom itself. Because our contexts were extremely different, we needed to consider both learners’ needs and schools resources in the design of the plan. Initially, we used certain static resources as the board, flashcards, and paper to present concepts. We intended to include metacognitive and procedural scaffolding by using dynamic resources as multimedia aids, videos, projected pictures, presentations, and portfolios. In this way, we intended to apply principles for instruction design which are Problem, Activation, Demonstration, Application, and Integration based on Merrill's (2001).

Table 1. <i>Instructional design implementation.</i>			
Implementation Stage	Time	Activities	Data Collected
One	Four weeks	Vocabulary Input: Content and Language Images, videos, puzzles, classroom language, drawing, painting.	Learners’ Logs Teacher’s Journals
Two	Four weeks	Content and Language Use:	Learners’ Logs Teacher’s Journals Video recording

		Bean plant cycle video, in class procedure, mind maps, interaction with concept checking questions.	
Three	Four weeks	Presentations: Design of a poster with the plant life cycle and its corresponding presentation in groups.	Learners' Logs Teacher's Journals Video recording

4.3.1 Lesson planning

Considering that the problem in both cases relied on the learners' lack of enough elements to speak fluently, we tackled the issue with basic vocabulary that in one of the contexts was familiar. Then, we outlined our pedagogical intervention that consisted of 12 two-hour lessons (24 hours in total) about the bean's plant life cycle. The lessons were divided into three main stages. Each stage had four lessons (See Table 1). With the first stage, the researchers sought to familiarize learners with the vocabulary of the plant life cycle by using diverse techniques in order to meet the learners' needs. Researchers planned four lessons to scaffold the vocabulary by presenting it to learners through pictures, images, short stories, songs, and videos. Once they got familiar with the vocabulary, teachers helped learners retrieve with the help of interactive activities that included dialogues, drawings and small presentations where learners identified words, related them with images and used them into sentences. The first stage's objective was to provide learners with the input of the key vocabulary that would better help them describe the sequence of the plant life cycle in the following stages.

Following the ADDIE model taxonomy revised by Gustafson and Branch (1997), we used the output of each stage as input for the next one. Therefore, in the second stage, we intended to have learners explain the plant life cycle more freely, fluently, and without depending on reading the words. For this purpose, we planned a set of activities, starting with the experiment of a sprouting seed, and then they created mind maps to describe the cycle using the key concepts learned. Consequently, the learners could interact by assessing their peers with concept checking questions used by the teacher in class.

The last stage's goal was to have learners present in a more formal demanding scenario. With this intention, the activities included the design of a poster with a summary of the process of the sprouting seed experiment they carried out. Learners were asked to present their posters with images and key words. After this, learners used their mind maps as a model to design their poster and practice the presentation with their partners. In the last session, they had to socialize the final version of their posters with their classmates. They also assessed their peers with the help of a rubric that included content evaluation, the process, and the product that are the main stages of our research project. Simultaneously, researchers recorded the presentations in order to apply the rubric to judge individual performance and fluency.

4.3.2 Implementation

The researchers applied the lesson plans in 24 class hours distributed as presented in the previous section (Table 1). The first stage was the activation of prior knowledge with the new content and its use in an experience relevant for the learner. In this stage, the teachers used receptive skills (listening, reading, watching videos) to help learners get familiar with the vocabulary. A survey, students' logs and teachers' journals provided information for the data collection process of the first stage.

Then, the concurrent lessons on Stage 2 provided multiple representations of the content with the help of diverse media in order to show consistent situations for the learners to use the knowledge to evidence the level of understanding by manipulating materials. Learners related concepts studied with physical representations and the task aimed to promote interaction. Dialogues, songs and group work were registered along the practice with the help of video recordings that contribute with data for the analysis phase.

Finally, Stage 3 allowed the application of the content and language learned, where learners attempted to solve a problem, consistent with the knowledge connected to the goals. Moreover, at the end, the student demonstrated the ownership of knowledge by creating and exploring alternatives to use that knowledge. Here, they created posters in order to represent the process of the class and supported them by explaining in English. To register the process and progress, this final product was also recorded.

As stated in the planning, the materials varied to scaffold the processes in each stage. At the end of each lesson, learners filled out a diary to give their perceptions about the process and the teacher completed her journal. In order to close each stage, there was one session to apply instruments for data collection: a midterm and final survey, and a video recording.

4.4 Conclusion

To sum up, this chapter explained the visions of language, learning, curriculum and classroom that best approached the implementation of the study according to the contexts. It also described the instructional design theory, also the planning and implementation processes of the proposal. Moreover, the chapter illustrated the stages and the planning supported on the theory that allowed the researchers to establish a timeframe, including the materials, strategies and resources used for this study. These instruments provided us with the information to determine if

there was any evidence of the effectiveness of using interactive Science lessons within the CLIL approach to foster spoken fluency on these young learners. The collection of this data is analyzed in the next chapter.

Chapter 5: Results and Data Analysis

5.1 Introduction

Considering the information described in the previous chapters about the visions that influenced the design of the lessons, the planning and the implementation, this chapter will describe the concepts, approaches, and procedures adopted to analyze the data. We decided to carry out an inductive analysis that allows for the information to emerge from the data. This process facilitates the interpretation of the data from the researcher's point of view "starting with specific data and ending with categories and patterns" (McMillan & Schumacher, 2014, p. 367).

Regarding the speaking skill, we observed the ability of learners to interact with their teacher and peers to convey meaning, and their attempts to speak fluently. As the participants' ages ranged from six to seven, we considered that we could foster this subskill with the implementation of CLIL interactive science lessons. Regarding their particular childhood stages, and seeing CLIL as an approach that under a certain set of conditions, combines the process of learning content with the process of learning a language, being the last one a vehicle to guide those learning processes (Coyle et al., 2010). Speaking is a complex skill that demands a careful tracking and an observation process. As a consequence, the data management needs to take into account the population: in our case, young learners' needs constituted a central aspect to consider.

Since the constructs mentioned before helped us focus the data analysis to the research question (see Research question and objectives) it is worth to specify that although learners belong to different contexts, both groups shared commonalities as the age, the syllabus standards, the evaluation parameters into the national educational system, and the lack of fluency in the

foreign language (3.3). Learners also had differences regarding context, conditions, and learning environment, a remarkable variable in the analysis of the proposed strategy's impact.

Once the intervention started, a constraint came up in the operational stage of the logs in the public institution. The learners who participated in the needs analysis stage were literate and filled in the surveys we applied. However, the learners from the public school were still not trained to write. The solution was to record the answers of their impressions of the class (logs) in three moments during the implementation, as well as the responses to the surveys.

After revising, we transcribed and digitized the videos, surveys, journals, and interviews. That process allowed us a first approach to classify the data in the light of the research question. Afterwards, the information was organized in a matrix (6.6 Appendix K:) that provided a broad vision of the data and the opportunity to determine the best way to interpret it. The first approach to data revealed information related to the foreign language use, the features that emerged from using a CLIL approach, and the learners' spoken fluency and interaction. Then, we proceeded to apply the grounded theory methodology to reduce and evaluate the data.

5.2 Data management procedures and analysis methodology

This project follows the grounded theory principles in Corbin and Strauss (1994, p.273), where researchers constantly interacted with the data in relation with the existing theory, which allows the analysis and interpretation of the data, both to relate the information with the constructs and study the impact of this theory in the social context. To implement the principles of grounded theory, the researchers started by implementing an open (color) coding. We interpreted the segments of data from the logs, surveys and teachers' journals independently, as McMillan and Schumacher (2014) affirm "a data segment is a text that is comprehensible by itself and contains one idea" (p.370). This allowed us to identify relevant information that turned

into codes. The instruments mentioned above, described in detail in Chapter 3 (Data collection instruments), helped researchers to categorize initial, middle and final learner utterances to measure proficiency as empirical evidence of progress (Chambers, 1997). When triangulating the information provided by the instruments, it was feasible to infer whether the implementation of interactive CLIL Science lessons had an impact on the length and complexity of the learners' interventions. The data analysis also allowed to determine if interaction increased learners' fluency in terms of spontaneity and automaticity. Each instrument content was divided into sections that facilitated the coding process. A Microsoft Excel file helped with the constant comparison of the open coding results and the posterior quantitative analysis of the same information.

After the coding process and before re-articulating the obtained information, the researchers developed a descriptive quantitative statistic. This method consists of assigning a quantitative weighted value to the number of yes/no answers: it determines an average over the total amount of learners with the tendency of a particular answer and then compares it with the qualitative results of the same instrument in a more advanced stage.

5.2.1 Logs

The study includes the analysis of logs and surveys with a descriptive quantitative analysis statistic. First, to present the data clearly enough for the reader. Second, to have an accurate view of the progress (if any) of the learners who studied a particular topic using a CLIL based set of lessons. Third, to establish the relationships regarding the frequency of the codes in contrast to the numerical variables of the learners' progress.

The analysis of the logs gave a general picture of the learners' understanding on how the approach influenced communication in the classroom. The questions guided the learner to share

the impressions they had regarding the CLIL based lessons. The logs contained semi-structured questions. The first part (yes/no questions) provided a percentage of agreement or disagreement. The second part supplied reflective open question answers that aimed to discover the insights of the learners about the strategies used in the class. (See Table 2)

Table 2				
<i>Comparison of questions 1 to 4 from San Carlos students' logs.</i>				
Log 6				Log 9
	Number of Learners	%	Number of Learners	%
1. Did you use English during the classes?				
Yes	17	71	22	92
No	4	17	0	0
No Answer	3	13	2	8
2. Did you use what you learned in class?				
Yes	17	71	20	83
No	4	17	2	8
No Answer	3	13	2	67
3. Did you participate in class?				
Yes	17	71	24	100
No	7	29	0	0
No Answer	0	0	0	0
4. Did you speak with your partners in English?				
Yes	20	83	20	83
No	4	17	4	17
No Answer	0	0	0	0

In the first question, learners' answers in San Carlos School revealed that more than half of the group did not use the language in English class. The rest of the learners did not answer. For the same question in the ninth log, learners said that they use the language in class and supported their answers with brief comments or examples.

“Si, Para saber cuáles son las plantas”

[Yes, to know which are the plants]

Sample 1: Student 5. Log 9. San Carlos School.

“Sí, para jugar, hablar en inglés, hacer matas con la profe” [Yes, to play, speak in English, do plants with the teacher]

Sample 2: Student 16. Log. 9. San Carlos School.

When learners were asked about how useful was what they had learned in class, their perception changed from the first class to the final class. Only one-third of the group expressed that they used the knowledge in class, and the other two-thirds did not answer the question in the first log. In the final log, learners seemed to be much more familiar with the process because the number of responses increased considerably. In questions 3 and 4 related to participation and interaction, learners did not provide answers in the initial log. In contrast, five weeks after that, in the final log, 95% of the class affirmed that they had participated in class and 59% said that they had interacted with their peers using English (See Table 2). Learners who elaborated on their answers displayed a certain degree of awareness of their processes and unveiled the weaknesses and strengths they identified when they used the language to communicate in class.

In contrast to the absence of replies from the same question in log 6 (See), surveys also provided closed questions that contributed to the overall analysis of the learners' responses, adding validity to this study.

For the case of the Gimnasio Británico School, results were positive but in a minor scale. These bilingual school learners had more exposure to L2. Additionally, they were almost entirely literate which eased the filling of the logs and following instructions from the teacher.

For these reasons, we can observe how the logs provided similar information from the beginning to the end and displayed different changes on learners’ perceptions of their learning process after the experience of a CLIL based approach (See).

Table 3: <i>Comparison of questions 1 to 4 from Gimnasio Britanico students’ logs.</i>				
Log 6			Log 9	
	Number of Learners	%	Number of Learners	%
1. Did you use English during the classes?				
Yes	17	71	22	92
No	4	17	0	0
No Answer	3	13	2	8
2. Did you use what you learned in class?				
Yes	17	71	20	83
No	4	17	2	8
No Answer	3	13	2	67
3. Did you participate in class?				
Yes	17	71	24	100
No	7	29	0	0
No Answer	0	0	0	0
4. Did you speak with your partners in English?				
Yes	20	83	20	83
No	4	17	4	17
No Answer	0	0	0	0

The closed questions allowed researchers to see that initially, most learners affirmed that they used English in the class, but one-third of the class displayed awareness of the lack of use of the language. However, four weeks later, the negative answers dropped to zero, and only two learners did not respond. The rest of the learners, 20% more than in the middle of the implementation, said they had used English during the class. See Sample 3 to Sample 5 to illustrate answers to the question: “Did you use English during the classes?”

Si antes me daba mucho miedo pero mis papás me dijeron no importan como hable y lo logre.

[Yes, I was frightened before, but my parents told me it does not matter the way you speak, and I made it]

Sample 3: Student 10, Log 6, Gimnasio Británico School.

“Si, ablando con samuel, Dasha y ana balentina y juan camilo y ablamos de la planta y isimos un poster y lo presentamos al frente de nuestros compañeros y lo isimos en equipo”.

[Yes, talking with Samuel, Dasha and Ana Valentina and Juan Camilo and we talked about the plant, and we made a poster and presented it in front of our partners and we did it in the team].

Sample 4: Student 8, Log 6, Gimnasio Británico School.

“si, hoy able mucho mas igles que antes en las otras clases”

[Yes, today I spoke a lot more English than before in the other classes]

Sample 5: Student 24, Log 6, Gimnasio Británico School.

When learners were asked about the use given to the content learned in class, their initial answers were closely the same to those from the first question. Afterwards, learners seemed to be more confident to express whether they had used the knowledge in class, or increase their participation. The last question did not show any change.

5.2.2 Surveys

Five questions from the surveys were taken into account to statistically analyze the percentage of the learners who responded affirmatively or negatively, as shown in Table 4; **Error! No se encuentra el origen de la referencia..**

Table 4				
<i>San Carlos School Midterm and Final Surveys' Results</i>				
	Mid Term Survey		Final Survey	
	Number of Learners	%	Number of Learners	%
1. Did you use English during the science project?				
Yes	14	56	21	84
No	4	16	1	4
No Answer	7	28	3	12
2. How many times did you participate in each class?				
1 to 5	8	32	16	64
More than 5 (Many)	7	28	1	4
No Answer	8	32	3	12
3. Do you think you speak more confident?				
Yes	16	64	17	68
No	0	0	2	8
More or Less	7	28	3	12
Can you say sentences in English? Please, give an example.				
Yes	12	48	17	68
No	5	20	2	8
No Answer	7	28	3	12
Do you like Science class in English? Why?				
Yes	17	68	22	88
No	0	0	0	0
No Answer	7	28	3	12

The selected questions also included information questions. Quantitative statistics helped us to have a general idea of the learners' progress in their language and content learning

process. In the midterm survey, applied five weeks after the beginning of the project, learners did not seem to speak English with enough frequency or confidence. They appeared to remember sentences and words, and their answers displayed a certain degree of engagement with the class. Compared with the final survey, learners' participation using the English language increased 28% and the frequency of that involvement in 32%. Surveys did not evidence significant changes in the confidence in relation to the previous survey, but learners displayed awareness of the learning process, and using the language. See Sample 6 to Sample 9 to observe how learners answered to the question "Can you say sentences in English?"

Sí [Yes]. Song... The plant is song

Sample 6: Student 24, Midterm Survey, San Carlos School.

"the plant petals, the plant sun, flower, petals"

Sample 7: Student 24, Final Survey, San Carlos School.

No

Sample 8: Student 17, Midterm Survey, San Carlos School.

Hello, good morning teacher, fine thanks, yellow, blue, leaves, stem.

Sample 9: Student 17, Final Survey, San Carlos School.

In the surveys, learners expressed their enthusiasm to the class in question five. They said they liked the class and provided a variety of reasons very close related to the topics studied during the implementation of the proposed strategy. In the midterm survey, more than the half of

the class felt engaged with the topics and the class itself. Even more, the number of learners that expressed empathy with the class increased about 20% after five weeks. Sample 10 to Sample 11: Student 3, Final Survey, San Carlos School.

below show answers to the question: Do you like the Science class in English? Why?

“Porque me gusta mucho y toca.... Voy a aprender a hablar en Ingles.”

[Because I like it a lot, and we have to ... I am going to learn to talk in English]

Sample 10: Student 3, Midterm Survey, San Carlos School.

“Si, porque hemos aprendido mucho, hemos utilizado nuestras manos y nuestra boca.”

[Yes, because we have learned a lot, we have used our hands and our mouth]

Sample 11: Student 3, Final Survey, San Carlos School.

“Sí, porque es chévere, hablar en inglés, aprender cosas de las ramas, de las flores, de las hojas.”

[Yes, because it is nice, speaking in English, learn things about the branches, the flowers, the leaves]

Sample 12: Student 5, Final Survey, San Carlos School.

From a qualitative point of view, these instruments presented a significant positive change in the learners' perception of the language. The instruments provided evidence of the learners' progress in the language and content knowledge and use. In the same path, learners displayed positive changes in regards to the perception of the class by pointing out the aspects

they had enjoyed and learned during the CLIL based lessons. Students answered the following question: Sample 13. See Sample 13 to Sample 15.

“Sí, porque es muy divertida, porque enseñan arto.”

[Yes, because it is fun, because there teach a lot]

Sample 13. Student 4, Final Survey, San Carlos School.

“sí, porque se hablar Ingles”

[Yes, because I can speak in English]

Sample 14: Student 8, Final Survey, San Carlos School.

“sí, porque aprendimos de plantas de árboles y de mucho mas de plantas, como hacemos las plantas en el papel que hicimos las plantas.”

[Yes, because we learned about the plants, the trees and a lot more about the plants, and how we make the plants in the paper where we made the plants]

Sample 15: Student 9, Final Survey, San Carlos School.

Children from Gimnasio Británico are much more fluent even in their mother tongue, which helped them to better express and expand their answers. Although their responses in the logs are very similar from one class to the other, they evidenced certain level of awareness of their learning process as shown in their responses. To the question: Do you think you are more confident to speak? Sample 16 and Sample 16: Student 1, MidTerm Survey, Gimnasio Británico School.

revealed the progress of student 2.

“Si porque aprendo mas palabras.”

[Yes, because I learn more words]

Sample 16: Student 1, MidTerm Survey, Gimnasio Británico School.

“Si porque ya sé más palabras.”

[Yes, because I know more words]

Sample 17: Student 15, Final Survey, Gimnasio Británico School.

“Porque la miss enseña más y más porque aprendo más palabras.”

[Because the miss teaches more and more and because I learn more words]

Sample 18: Student 2, Final Survey, Gimnasio Británico School.

5.2.3 Rubrics

In lessons eight and twelve, learners developed a task to assess their spoken skill, in general terms. We used a rubric adapted from Cambridge Flyers speaking rubric and evaluated learners' individual performance in two different tasks. Hence, the teacher could register learners' performance in the use of the vocabulary (language and content), topic understanding (grammar and pronunciation), and fluency. The rubric contained four performance criteria that provided quantitative and qualitative results of each learner's progress in the middle and at the end of the process.

In the first task, learners displayed difficulties to express ideas in the target language. They seemed to have concepts but they were not able to use them to communicate complete ideas. They struggled to recall and use vocabulary, and the majority of the group lacked fluency. After four weeks of study and practice, they displayed general improvement in the use of the concepts.

Although they were not able to use complete, grammatically correct sentences, they were able to convey meaning to explain the plant life cycle. Figure 1 and Figure 2 are the graphic comparative analysis of the advance of each student's progress from video 1 to video 2.

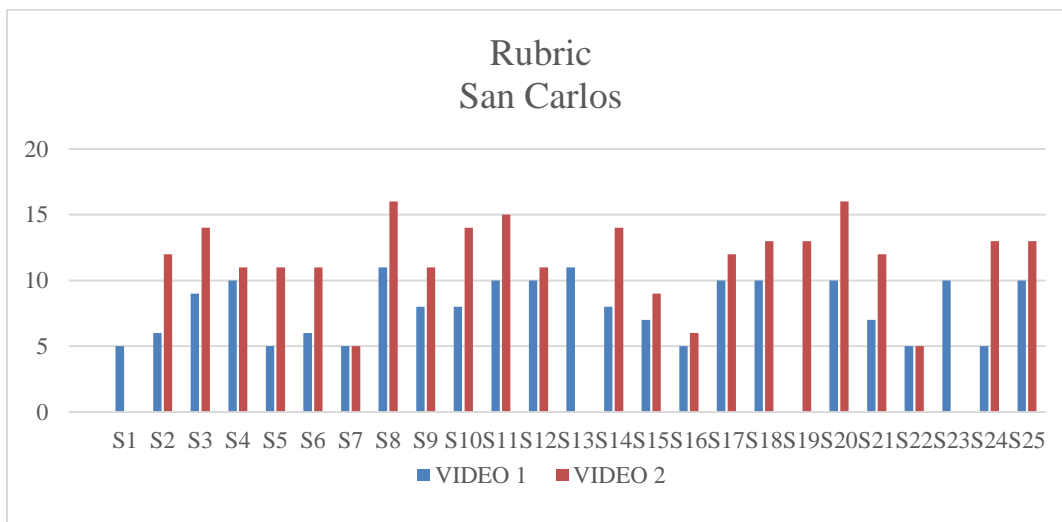


Figure 1: San Carlos School General Rubric Results

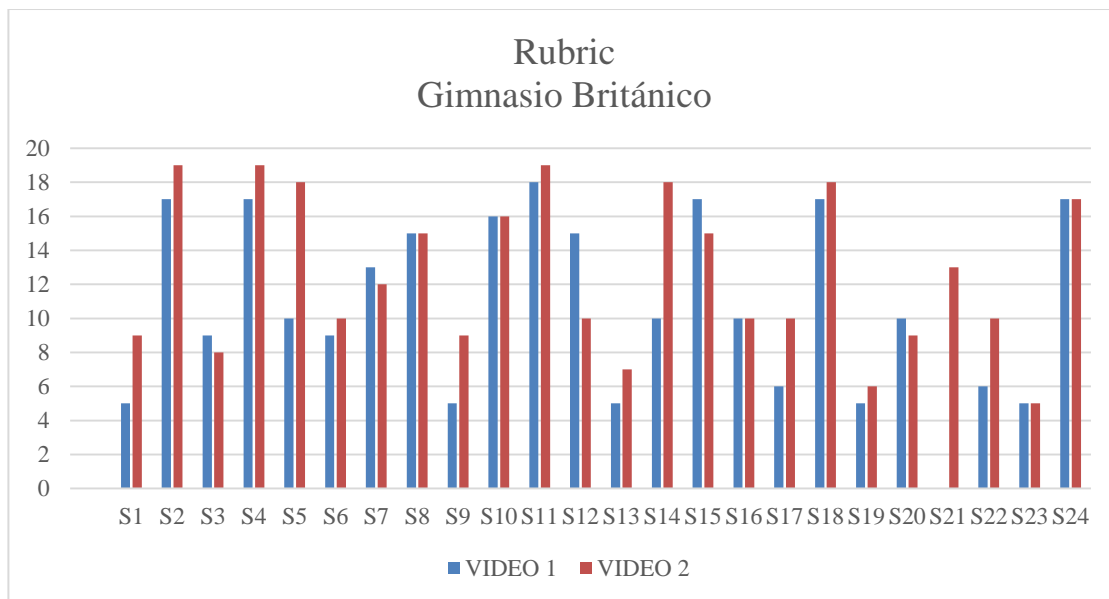


Figure 2: Gimnasio Británico General Rubric Results

Learners were able to work in groups to organize a presentation and express ideas to their partners and teachers. Besides, children seemed to be more confident compared to the

previous task. In the second task, learners recalled words in English and fitted them into their Spanish discourse. See Sample 19

Teacher, I need ... cómo se dice [how do you say] ... a stem ...

Sample 19: Student 20, Video 2, San Carlos School.

The rubric criteria allowed researchers measure to a certain extent whether the learners had progressed in their spoken fluency, considering learners speed, hesitation and sentence formation process. Hence, the criteria examined the different stages of the task, where they designed, created, and presented a poster about the plant life cycle. Unfortunately, they did not display the acceptable use of linguistic elements to connect ideas, but they attempted to put words in short sentences and point referents in the visual aid. Figure 3 and Figure 4 illustrate the fluency subskill results isolated from the general rubric results.

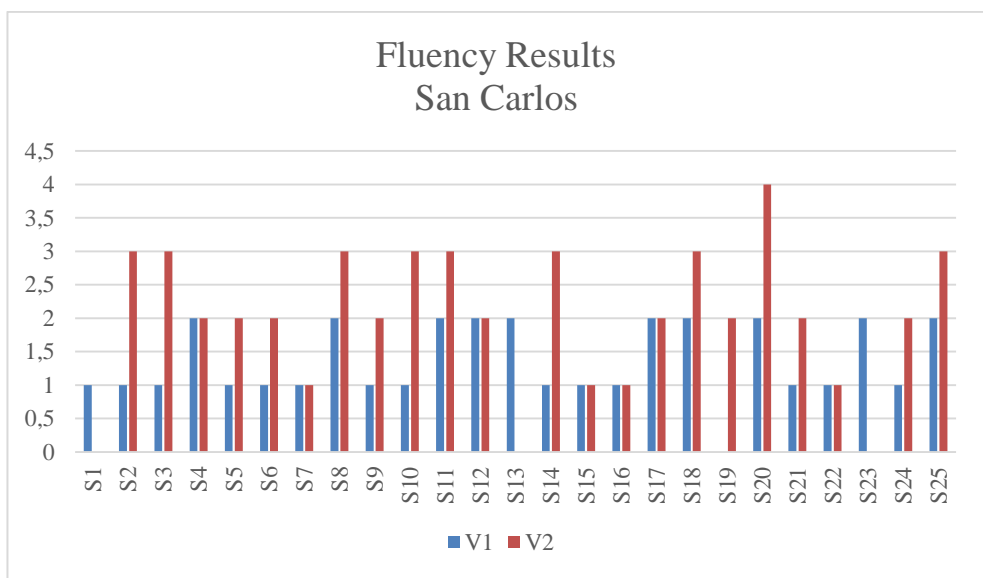


Figure 3: San Carlos General Rubric Results

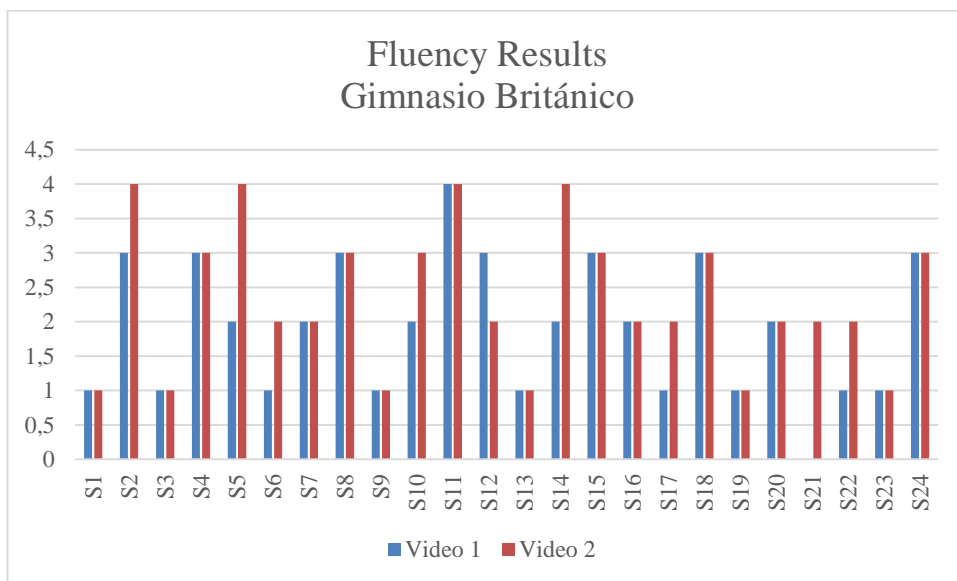


Figure 4: Gimnasio Británico General Rubric Results

In the case of the teachers’ journals, the abstract nature of the information allowed only for a general view of the frequency of the codes observed in the instruments, compared with the number of lessons. The videos, a quantitative tool, provided an explicit comparison of the learners’ achievements in the middle and at the end of the process concerning grammar, vocabulary, comprehension, fluency and pronunciation criteria, which can be regarded as individually and as a whole to analyze learners’ progress.

5.2.4 Validation

A mixed approach - qualitative and quantitative data - helped to narrow down the gathered information, providing validity to the emergent codes and categories. Initially, it was hard to collect information because learners were not literate (in the case of the public school), and the questions seemed to be confusing for them. Revising the first logs, researchers found out that learners did not respond and tended to replicate part of the questions to answer. To validate the information we discarded the first logs, and to establish parameters of equality with the other

group's data management procedures, the researchers decided to choose two logs: one from the middle of the process and another one from the end. This selection allowed researchers to triangulate the information with the midterm and final surveys, and with the teachers' journals.

Logs and surveys provided qualitative and quantitative data. The questions were aimed to know the learner's perceptions about the class, the process, their personal achievements and progress. Open-ended questions guided the researchers to know what learners thought about the class and gave genuine impressions of the learners about their own process. Closed questions gave us percentages of what learners considered as participation and interaction and how they related those considerations with communication in regards of language and content. This facilitated a quantitative analysis to triangulate the instruments and validate the gathered information. Under those circumstances, the triangulation process of the instruments avoided researchers to bias the interpretation of learners' thoughts. Therefore, once learners got familiar with the questions, they felt more comfortable sharing their answers in a more critical way.

5.3 Categories

5.3.1 Overall category mapping

The emerging codes included vocabulary, language knowledge, language use, content knowledge, content use and feelings related to the dual process of learning Science and language (Coyle et al., 2010). The most significant patterns that emerged from the coding were vocabulary, content and strategies to communicate using the target language. The instruments also generated results regarding spontaneity (automaticity) and risk taking progress.

Axial coding process eased the stage of making connections among codes and patterns (Corbin, 2008). The researchers established relationships through a constant comparison of the emerging codes and determined how those patterns were connected to the theoretical constructs

initially observed. Simultaneously, these relationships generated core categories that pointed the results in the direction of answering the research question. (See Figure 5 and Figure 6 below)

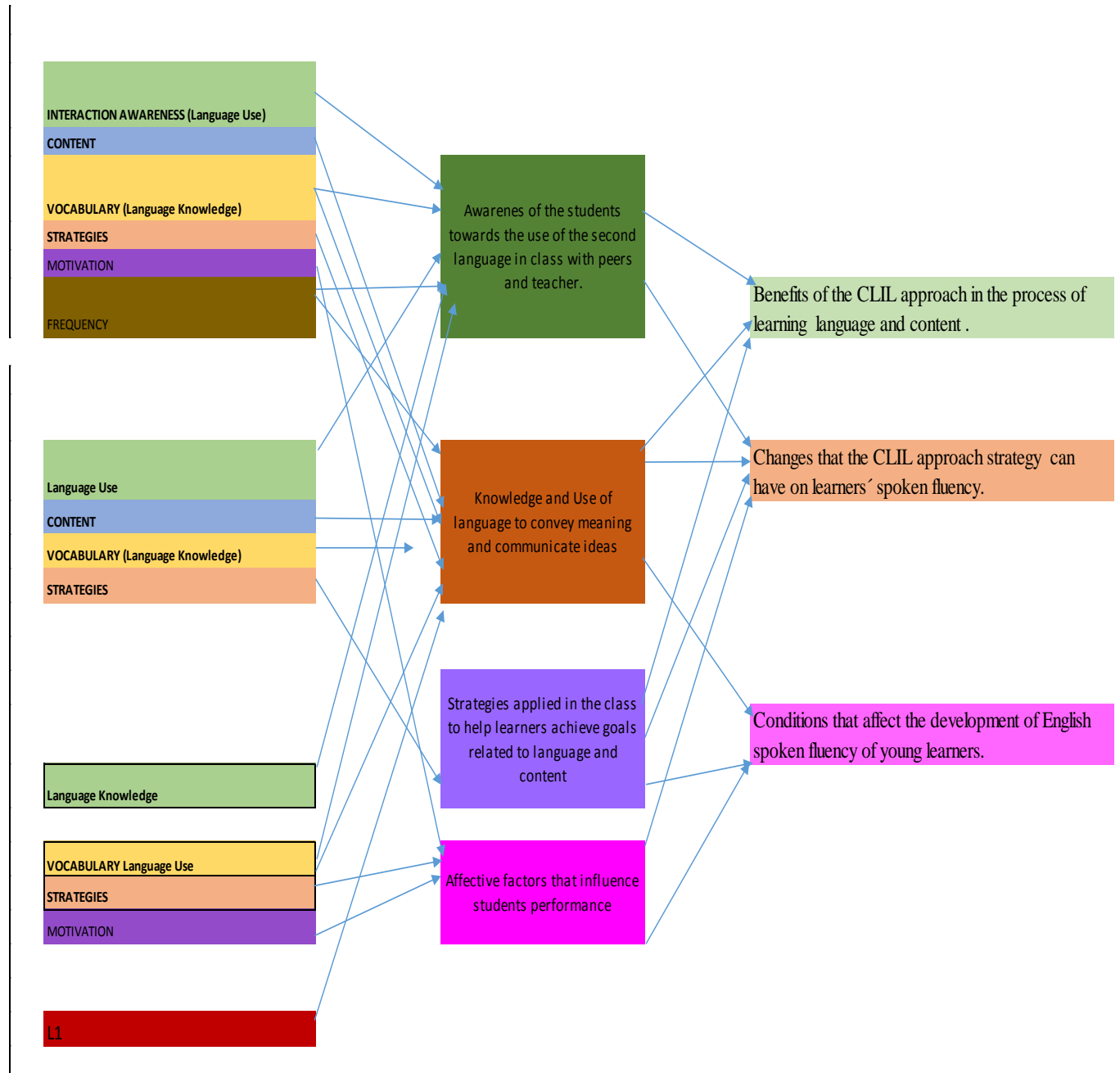


Figure 5: San Carlos School Category Mapping

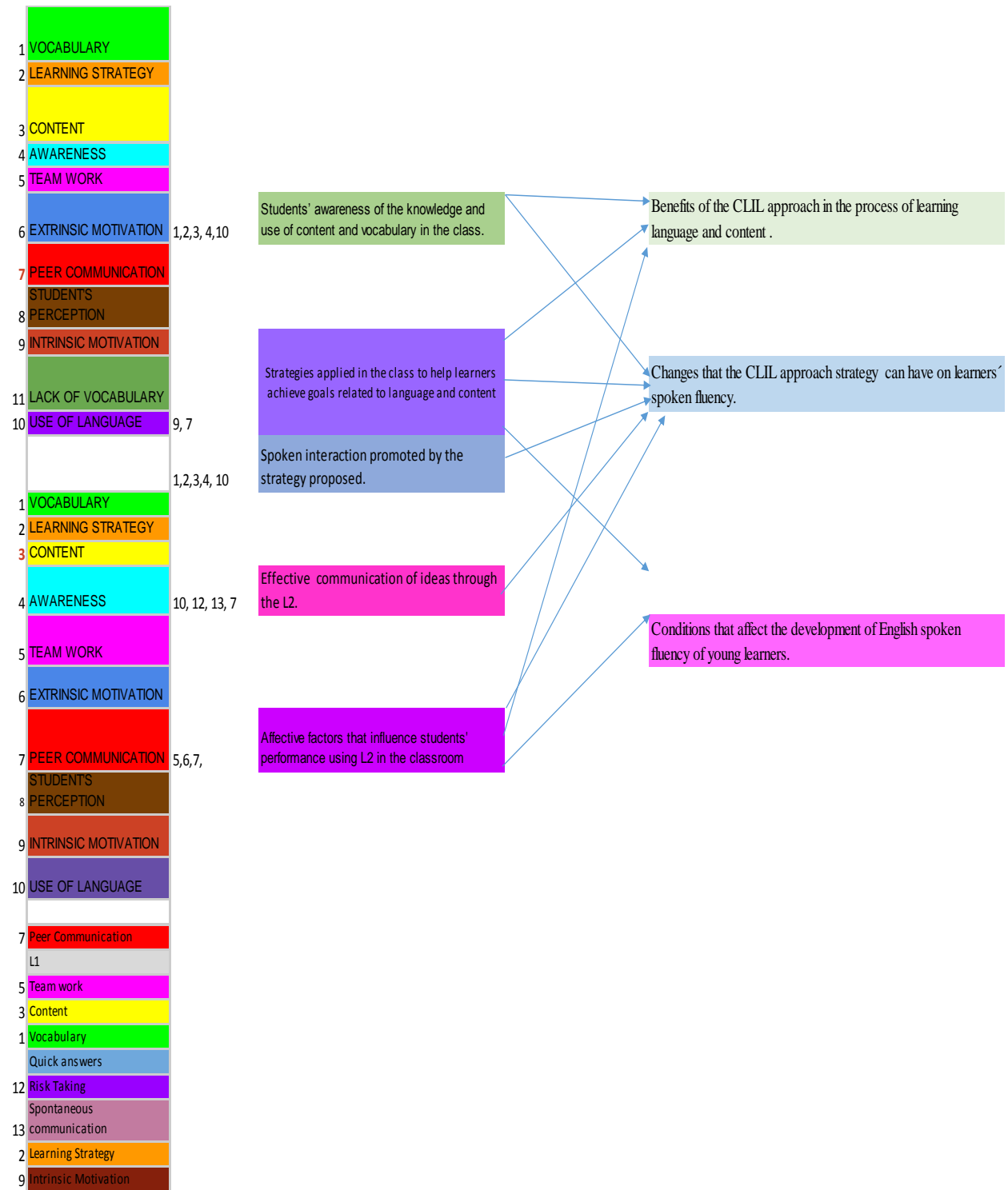


Figure 6: Gimnasio Británico School Category Mapping

5.3.2 Categories

5.3.2.1 Subcategories

Learners' awareness of the use of the L2 in the class as a means of communication with peers and the teacher.

Through the experience of participating in CLIL science lessons with English as an additional language, learners were able to correlate, besides the language and the content, the functions of the language. In doing so, learners acquired fundamental elements to communicate, which evidenced in their attempts to communicate and in the new fragmented sentences they used.

Learners identified that when the teacher started the science class, part of the requirements were greeting, asking for permission, and taking turns in English. They began to use the additional language to complete sentences with their mother tongue elements (Llinares, Morton, & Whittaker, 2012).

Awareness of cognitive and linguistic demands

Analysis of the data evidenced an advance in learners' strategies to overcome cognitive and linguistic demands based on the statements consulted in Coyle et al., (2010). Although the teachers provided suggestions and prompts to communicate in the classroom, they came up with diverse strategies that allowed them to express ideas automatically and convey meaning in the classroom.

For instance, they started using code switching spontaneously, locating nouns and adjectives from the additional language in the appropriate corresponding place in the sentence structure of their mother tongue. This sensation of freedom gave learners the ability to transform the environment and make decisions about the way they preferred to carry out a task. They

negotiated and exchanged materials and information, actively participated, and attempted to get information from the teacher and their partners. Learners were in contact with nature, as findings revealed in Massler (2012), through the experiments and through diverse activities, as visiting the gardens of the school where they used the learned content to make realistic and useful sentences. The project permitted learners to relate content with their lives and to use the language as a mean of communication in the school, making the teacher a referent of the additional language even outside the classroom.

Learners' perception of the language and the learning process changes

Researchers also identified changes that using a CLIL approach strategy had on learners' spoken fluency. An advantage of working with children, compared to adults, is that children do not need to understand every procedure: children just tried and observed what went well and what did not. In a particular context, with few tools or opportunities to learn, adults tell (directly or indirectly) children that English is difficult. The project helped learners think that it was not that hard and that they could acquire the language if they wanted to, enhancing social, content and language learning process as stated in Hanušová & Ziková (2008).

Hands-On activities are crucial to mediate the use of language for practical and communicative purposes. Six and seven year old learners want to touch, grab and do (Pinter, 2006; Piaget, 1976; Vygotsky, 1993). When they get involved in a task, they allow the language to flow and begin to understand, and help others to understand. As an example of this, teacher's journals reflected how learners gave explanations to others and how they asked for help, not only to the teacher but to their peers. This eased learners' understanding about English as a new strategy to communicate, learn, and teach.

As learners were simultaneously studying other subjects, they could compare the proposed approach with the ones applied to other topics. They became aware of the scientific method, and they noticed that they could identify and talk about nature in Spanish and English. Learners identified the additional language as an advantage (Llinares et al., 2012), which is an intrinsic motivation for them. This motivation makes them want to do it better each time, in regards to the accuracy of pronunciation and spontaneity in their speech.

Hughes (2013) refers to three aspects of spontaneous speech that have to do with the development of oral skills: the property of interactivity, real-time, and the relationship with the individual over the writing skills. Also, she states that part of the teachers' role is to raise awareness on the learner about these aspects to get acquainted of how they can use the language simultaneously to communicate and learn a new content. What the selective coding discovered in the instruments was that learners became aware of the elements they needed from language to convey meaning with their peers and teachers, and that they could use the language chunks acquired to communicate in the CLIL classroom. Children also expressed directly and indirectly the way they felt in regards to peer communication and interaction.

According to the instrument analysis results, the learners acquired vocabulary and structures to interact and convey meaning. The rubric indicates that learners' performance in oral spoken fluency improved, compared to the previous speaking task. It is also observable that fluency displayed higher scores compared to the first task in more than 50% of the learners.

In the case of the Gimnasio Británico, learners evidenced an evolution in their spoken interaction processes using L2. As they were used to use English in science class, the interactive science project helped them increase the confidence to involve their peers in their learning process, favoring the amount of attempts to communicate, the effectiveness of the

communication and speed to respond when interacting with their peers. The CLIL approach provided the learners with a learning environment that made easier the use of the language for socio – cultural exchange (Mehisto et al., 2008).

In regards to the private bilingual school, learners increased the speed of their sentences and their response time. It seems that the environments, along with the taught vocabulary, provided learners with enough confidence to express ideas in a more spontaneous way. Samples revealed learners' understanding of the topic and the knowledge that they were able to use for different purposes (see Sample 17: Student 15, Final Survey, Gimnasio Británico School.

) to convey meaning and communicate ideas.

Finally, the triangulation of the information generated a set of factors that could influence the language and content learning process, which we grouped as conditions that affected the development of English spoken fluency on young learners. One of the principles of the CLIL dual process (Coyle et al., 2010) is to facilitate the learning by transforming the environment to fit learners' context. Learners' responses and teachers' notes revealed that the changes in the methodology and the exposure to the language motivated learners and fostered their potential to learn a language. Learners' achievements also motivated them and their peers to be part of the class activities. This approach made learners feel comfortable with the class. The design of the activities included varied audio-visual support. Learners felt attracted by the variety and unusual nature of the lesson. Learners used to write down and express themselves in Spanish, but then, they seemed to have discovered a different way to learn by feeling good and enjoying activities. Anxiety levels and fear of failure seemed to decrease. Therefore, learners had a suitable environment to learn collaboratively according to their pace.

Affective factors can influence the process of language and content learning positively and find strategies to achieve their goals

The research suggested that a CLIL based approach guided learners to recall or propose strategies to achieve their goals. Educational systems, particularly in elementary school, train young learners to follow instructions, award correctness, and punish mistakes. The instructional design of our proposal outlined diverse strategies for learners to interact with their peers, their environment, their teacher, and even with their families around an experiment that they set, observed, drew, and presented. During the development of the project, learners received and discovered strategies to learn content, language, and ways to improve their knowledge. A feature that resulted naturally from that stage is the “asking questions” mode. Children asked about everything and adults used to give them the answers immediately. With this project, they needed to think deeper and to make an effort to find the answers because the teacher replied in the additional language. Thus, the learner had to create alternatives to understand.

CLIL is an approach that combines learning both content and language, being the last one the vehicle to guide both learning processes (Coyle et al., 2010). The data evidenced the relationship of the learning of the content and the learning of the language. In the logs, learners exemplified what they had learned in content and language. Learners also expressed in the logs and surveys that one of the things they had liked about the class was that they had learned about the plant and had developed activities to use that knowledge.

5.3.2.2 Core category

The coding and data reduction process led us to analyze subcategories, uncovering a core category that provided researchers with elements to answer the research question. We classified the information and grounded it to the theory that let us determine that **hands-on activities**

through interactive science content foster learners' willingness to communicate fluently regardless the context. Although the amount of research papers regarding CLIL approaches in working with children (Anderson, Cuesta, & McDougald, 2015) is limited, the relevance of CLIL and studying SLA with children is increasing. The trends on bilingualism and immersion programs are focusing on language exposure. However, this exposure is not used accordingly with syllabi needs. Institutions reduce core subjects' time to allocate it to L2 or vice-versa. In some cases, the subject or the language teacher attempts to deliver lessons without basis or principles that would guarantee the adequate management of content and language, which is fundamental to children's developmental stages.

5.4 Conclusion

This chapter describes the procedures, methods, and techniques to manage and analyze the data collected during the implementation stage. It describes the systems used to treat the data and the validation strategies that were taken into account. Moreover, it gives an overview of the results obtained from the quantitative data, as well as the reduction, coding, and categorization process. Both techniques allowed for the information's triangulation that generated a map where the researchers correlated to interconnect the emerging patterns and the theory that support the research question. Moreover, the discussion takes into account the specific objectives derived from the research question to specifically analyzed factors that might influence children's spoken fluency when using interactive CLIL science lessons as a combination of strategies in the classroom that promote the learning of language and content simultaneously. Thus, the results, analysis, and interpretation of the data, provided the elements to outline the conclusions of this project in the light of the theoretical framework. We found how CLIL principles, focused on interactive science lessons, attained motivation by displaying a natural environment and

promoted oral production on young learners, regardless the context's conditions. This allowed our study to contribute by filling in the gap of the existing literature about the use of CLIL to foster fluency on young learners.

Chapter 6: Conclusions and Pedagogical Implications

6.1 Introduction

This research project sought to find how an interactive Science project in English might affect first graders' spoken fluency in two different contexts. In this chapter, we first compare our study's results with previous studies to highlight the benefits and changes that the implementation of our CLIL strategy had on young learners. Secondly, we explain the significance of the results regarding Fillmore, Kempler, & Wang (2014) definition of fluency. However, considering that we implemented the strategy in two different contexts, we narrowed the range of fluency features to length and complexity of speech and automaticity (or spontaneity) according to the studies of Chambers (1997) and Towel et al., (1996). Interactive CLIL Science lessons were the strategy selected to help young learners improve their spoken fluency by acquiring more vocabulary, content knowledge and by becoming aware of the language to communicate coherent sentences. Thirdly, we describe the limitations that affected the amount or quality of the data gathered which might have hindered relevant findings. Finally, we outline how this research opens alternatives to continue implementing CLIL and analyze the possible changes not only on young learners' spoken fluency but also on other populations, content and language skills.

6.2 Comparison of results with previous studies' results

The results revealed that learners widened their vocabulary range and content simultaneously which helped them communicate better in the L2, as well as the strategies used by them such as peer-communication, code switching, and self – awareness of the language needs. Those aspects and strategies allowed them to be more spontaneous when speaking, which according to the theory can be catalogued as indicator of fluency progress (Chambers, 1997).

The reasons above contributed to the improvement of these young learners' fluency. Unlike other studies that focus their analysis on speech rate and pauses, we decided to measure fluency in terms of coherent and reasoned sentences within a smooth and effortless speech by using the Science content as a vehicle to enhance learners' fluency. According to Juan (2010), "learners involved in immersion programs conducted through a CLIL approach develop higher levels of fluency and confidence in the second language" (p. 42). She measured fluency in terms of pauses and speech rates revealing positive findings towards CLIL learners' fluency. She also affirms that "CLIL learners speak more fluently than learners who exclusively benefit from EFL education" (Juan, 2010, p.43). In our study, the CLIL based Science project content helped learners be more fluent in terms of vocabulary improvement and content, since communication was authentic rather than focusing on English Language. Learners were able to communicate smooth and effortless sentences to convey meaning.

According to Papaja's research study at University of Silesia (Papaja, 2012), "CLIL learners like learning English in general, but probably due to the difficulty of the subjects being studied in English, their positive attitude slightly decreases" (p. 51). In contrast, Lasagabaster & Sierra (2009) note that "CLIL classes hold significantly more positive attitudes towards English as a FL than those in EFL classes" in secondary learners. In our study with young learners, the data also revealed that learners were strongly motivated to learn Science content through English because they enjoyed doing the experiments and describing examples related to the plant's life cycle. They also became more aware of the language because "CLIL's main focus is on doing things with words and not using words to achieve things" (Marsh, 2008, p. 238). This means learners do not realize they are learning the language while they are learning content.

Other studies (Castellar, 2013; Urquijo, 2012) have undertaken research projects to improve oral production on children within the content-based approach and metacognitive skills. However, this approach does not seem to offer the condition of a pleasant environment that CLIL does. Besides, Monsalve and Correal (2009) conducted their research to improve children's fluency and confidence at speaking by providing learners with enough content and vocabulary, using diverse activity without a specific strategy or approach. In contrast, our study offered CLIL science lessons to promote spoken fluency on young learners. Although, in Tunja, Colombia, a case study was conducted with fifth graders from a bilingual school under the characteristics of content-based English by implementing CLIL to contribute to the education of those learners (Mariño, 2014), it was focused on the general benefits of using CLIL rather than on a specific linguistic aspect. Another study was undertaken at Universidad de La Sabana (Bryan & Habte-Gabr, 2010) in Colombia with young adults and adult learners by using CLIL to enhance learners' language skills and help them become proficient. Nevertheless, they did not focus on speaking only and the implementation of CLIL was not with young learners. This means that the results of using CLIL with young learners to promote spoken fluency had not been deeply explored by researchers.

In regards to speaking, other studies have implemented visual literacy (Pimienta et al., 2013) and role plays (Báez & Chacón, 2013; Rubiano & Cruz, 2013) as strategies and activities to improve motivation, vocabulary, and participation on learners in order to help them express their ideas orally. However, CLIL science lessons in an additional language (English) included audiovisual material and diverse techniques that helped students interact to enhance spoken fluency with a more natural approach. In addition, other research studies (Buitrago & Ayala, 2008; Duarte et al., 2012) used songs and games as techniques to provide an enjoyable

atmosphere and to foster learners' communication. As a result, the learners overcame their fear to speak in class and demonstrated language improvement. It is worth considering that our study measures the progress of the learners' fluency process, from the action research perspective. This perspective gives researchers the opportunity to follow up the process and provide learners and other teachers with strategies to improve and measure the progress in regards to fluency.

6.3 Significance of the results

As Dalton-Puffer (2008) states, one of the benefits of using a CLIL approach is linked to the improvement of receptive skills such as vocabulary, fluency, risk-taking and affective outcomes. Combined with diverse classroom tools that included interaction as a teaching - learning strategy, CLIL eased the communication in the classroom, and helped learners become more risk-takers and spontaneous during class participation. This means that implementing CLIL by following the 4Cs (communication, culture, cognition, and content) helps learners become more aware of the language without learning the foreign language explicitly given that the main focus is on the content. This action research study can contribute to EFL teaching involving CLIL lessons to foster fluency through interaction in diverse contexts. The principles of CLIL might provide teachers and researchers a field to explore the use of content to take advantage of the time and transform institutional guidelines and syllabi. Interaction in the classroom can be a practice that guarantees learners exposure to the foreign language. In doing so, CLIL interactive lessons can generate opportunities to expand the studies to diverse population ages or content areas to complement the current programs that intend to develop bilingual projects in the country. This perspective would imply training teachers on CLIL to enlarge the benefits of this approach on learners. These results would contribute to the revision of local and national policies

that redistribute and reinforce the content and language curricula by taking better advantage of learners and teacher's time.

A CLIL approach can be considered as a vehicle to “foster implicit and incidental learning by centering on meaning and communication” (Lasagabaster, 2008, p. 32). In our study, the first graders from both contexts were able to associate the suitable vocabulary to explain the parts of the plant, their functions, and the plant life cycle. Moreover, Lasagabaster (2008) affirms that CLIL is aimed at improving the learners' language skills, vocabulary and content knowledge. Therefore, this study greatly contributes to English Language Teachers to start implementing CLIL lessons in order to enhance learners' spoken fluency and motivation regardless the context. The ELT community might reconsider their methodologies and use CLIL to improve the learners' receptive skills. It is also suggested that CLIL might increase the learners' motivation towards learning English through the teaching of appealing content as revealed by the results of working with CLIL based Science lessons.

6.4 Limitations of the present study

The instruments chosen to collect the learners' insights about the research study and learning process should not have been surveys and logs, as young learners seemed reluctant to write down the answers. Therefore, this could affect the amount and quality of the gathered information, and might bias fluency qualitative and quantitative values. In addition, the learners' level of literacy in their native language was different in both contexts, which affected the implementation of the same instruments. The bilingual school learners were able to answer the surveys and logs whereas the public learners were still consolidating the process of reading and writing in their first language. Thus, this hindered the implementation of the mentioned instruments. We decided, then, to ask them the questions orally and record their answers. Hence,

it is crucial to make sure of the instruments' effectiveness especially with young learners.

Recorded interviews would also contribute to measure more specific fluency features such as accuracy and pronunciation, among others.

Even though the implementation of the videos allowed us to analyze the spoken fluency changes on the learners and the interaction given among them throughout the pedagogical intervention, we realized that we set the camera in the same spot for most of the lessons and, during the free practice, the researchers walked around to record data from each student. Sometimes an external person helped us record the lessons but other times he did not. This probably affected the amount of data collected and analyzed of each student. Videos are a good tool to observe and analyzed the learners' interaction and fluency. However, we could have collected more and more precise data from each participant by implementing individual interviews and/or focus groups where learners carry out speaking activities. In doing so, we could have profoundly analyzed each participant.

The knowledge about planning interactive CLIL science lessons was crucial to undertake this project. In the bilingual school, teachers do not follow the CLIL approach with the 4 Cs, which hinders the effects of the approach. We planned and delivered the lessons using CLIL principles, which permitted us to identify the problem that the bilingual institution had. Learners were not exposed to this approach because lessons are taught using English instruction but not following the 4 Cs as such. This means that EFL teachers who work at bilingual schools and content teachers need training on the design and implementation of CLIL lessons.

6.5 Further Research

There is a need to undertake further research about the impact of using a CLIL approach on young learners from the same context. We carried out the research in different contexts

because they were our places of work, but we consider that a comparative study with a bigger amount of students from the same context and the same level of literacy would display valuable results to keep on analyzing the benefits of using CLIL from early ages. The fact of implementing interactive CLIL lessons of different content areas with participants who share the same characteristics would make the analysis more reliable and objective.

After the present study, there is a gap to fill in regards to implementing CLIL interactive lessons using the 4Cs in order to compare the possible changes on the learners' language skills, before and after implementing this approach. This project can be carried out in schools where the time allotted to teach the foreign language is limited, where the English level is below in regards to the Country's Educational Standards, where learners need to upgrade their language level, and where teachers need to be trained on the use of this approach. At a local level, this study could be the base to explore deeper alternatives for covering the national bilingual expectations. Using the findings of this study, we can provide teachers with tools to modify curricula in order to extend the time of English exposure through a CLIL approach, designed for a specific context. Another alternative is the design of a CLIL standard approach for the local community, even for Latin-American communities, by doing simultaneous or concerted studies in institutions that share features in neighboring countries, exchanging experiences and sharing strategies based on the CLIL principles. In that sense, other researchers could lead a project on the impact, innovations, and needs of content and/or language teacher training.

6.6 Conclusion

As the main problem that led us to undertake this research project was the lack of spoken fluency on first graders to communicate their ideas in the L2, we decided to use CLIL approach as the strategy to tackle this problem. As a result, fluency in terms of length and complexity and

speech automaticity was enhanced through the implementation of a CLIL based lessons, and had a positive impact on these first graders. Learners from the public school displayed more significant changes than learners from the private school, even though they had never received any English instruction before. The findings revealed that learners from both contexts were able to express effortless speeches using the content learned during the implementation of the project, and they internalized some language chunks that allowed them to construct fair sentences to communicate their ideas related to the content and classroom language. They used the language to explain about the Science topics and communicate with their partners and the teacher. This helped most learners become risk takers to say spontaneous responses either through teacher – student or student – student interaction, and to construct fair sentences according to their language level.

In addition, the data allowed us to identify the young learners' motivation towards the Science content. They expressed that they enjoyed the lesson because of the content used throughout the project and they developed a self-awareness strategy in regards to their English language process. Therefore, the CLIL approach generated a convenient environment that allowed young learners to develop social communicative skills by using the additional language to interact in class within authentic environment (CLIL interactive Science lessons). Thus, the CLIL approach allowed us to focus our lessons on content and communication to the enhancement of the spoken fluency, as learners used the language to convey meaning about the content and classroom situations.

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Appendix A:

Consent Letter Addressed to the Vice Principal of Gimnasio Británico

Apreciada Señora

Ángela García de Piraquive
Vicerrectora del Colegio Gimnasio Británico

Cordial Saludo

Actualmente estoy desarrollando un trabajo de investigación titulado **“The Influence of Using CLIL Through a Science Project to Promote English Spoken Interaction in Young Learners ”** como requisito de la “Maestría didáctica del Inglés con énfasis en ambientes en aprendizaje autónomo” que estoy realizando en la Universidad de la Sabana. Este trabajo está encaminado a mejorar la habilidad de oral del inglés en la asignatura de ciencias a través de descripciones en los estudiantes de primer grado (103). Durante esta investigación se llevaran a cabo varias actividades para recolectar información que será analizada con el fin de explicar los resultados encontrados durante todo el proceso.

Por consiguiente necesito su consentimiento para llevar a cabo una encuesta y una entrevista a los estudiantes de 103 para el desarrollo de esta investigación. Cabe resaltar que las actividades que se trabajarán con ellos serán confidenciales y usted puede tener acceso a esta información cuando lo desee. Además, esta investigación no tendrá ninguna influencia en las notas académicas.

Muchas gracias por su colaboración

Cordialmente

Natali Sarmiento

Appendix B:

Consent Letter Addressed to the Parents of Gimnasio Británico

Mayo 9 de 2014

Apreciados Padres de Familia del grado 103

Cordial saludo

Como docente de Lengua Castellana, Inglés y Francés y queriendo mejorar mi carrera profesional, actualmente estoy desarrollando un trabajo de investigación titulado **“The Influence of Using CLIL Through a Science Project to Promote English Spoken Interaction in Young Learners”** que me exigen en la “Maestría en didáctica del Inglés con énfasis en ambientes en aprendizaje autónomo” que estoy estudiando en la Universidad de la Sabana. Este trabajo está encaminado a mejorar la habilidad de oral del inglés en la asignatura de ciencias a través de descripciones en los estudiantes de primer grado.

Durante esta investigación se llevaran a cabo una encuesta y una entrevista para recolectar información que será analizada con el fin de explicar los resultados encontrados durante todo el proceso. Estas actividades se realizarán utilizando el material del colegio y en las clases.

Cabe resaltar que las actividades que se trabajarán con ellos serán confidenciales y ustedes pueden tener acceso a esta información cuando lo deseen. Además, esta investigación no tendrá ninguna influencia en las notas académicas en la institución y estará supervisado por las directivas del colegio.

Muchas gracias por su colaboración

Cordialmente

Natali Samiento
Directora de grupo 103

Yo _____ autorizo a mi hijo (a)
_____ para participar en el trabajo de investigación de la docente
XXXX, directora de grupo del grado 103.

Firma

Padre de familia

Appendix C:

Consent Letter Addressed to the Principal of I.E.D. San Carlos

Apreciada Señora

Nelfa Belén Rincón Leal
Rectora
I.E.D San Carlos

Cordial Saludo

Actualmente estoy desarrollando un trabajo de investigación titulado **“The Influence of Using CLIL Through a Science Project to Promote English Spoken Interaction in Young Learners”** como requisito de la “Maestría didáctica del Inglés con énfasis en ambientes en aprendizaje autónomo que estoy realizando en la Universidad de la Sabana. Este trabajo está encaminado a mejorar la habilidad de oral del inglés en la asignatura de ciencias a través de descripciones en los estudiantes de primer grado. Durante esta investigación se llevarán a cabo varias actividades para recolectar información que será analizada con el fin de explicar los resultados encontrados durante todo el proceso.

Por consiguiente solicito su consentimiento para llevar a cabo una encuesta y una entrevista a los estudiantes de primero para el desarrollo de esta investigación. Cabe resaltar que las actividades que se trabajarán con ellos serán confidenciales y usted puede tener acceso a esta información cuando lo desee. Además, esta investigación no tendrá ninguna influencia en las notas académicas.

Agradezco su colaboración

Cordialmente

María Isabel Pinilla
Docente Inglés

Appendix D:

Consent Letter Addressed to the Parents of I.E.D. San Carlos

Mayo 9 de 2014

Apreciados Padres de Familia

Cordial saludo

Como Licenciada en Lenguas Modernas Inglés – Español, en aras de mejorar mi formación personal y mi desempeño profesional, actualmente estoy desarrollando un trabajo de investigación titulado **“The Influence of Using CLIL Through a Science Project to Promote English Spoken Interaction in Young Learners”** como requisito para optar al título de Maestría en didáctica del Inglés con énfasis en ambientes en aprendizaje autónomo, que en la actualidad desarrollo en la Universidad de la Sabana. Este trabajo busca introducir la habilidad oral de los estudiantes a través de contenidos del área de ciencias.

Durante esta investigación se llevaran a cabo una encuesta y una entrevista para recolectar información que será analizada con el fin de explicar los resultados encontrados durante todo el proceso. Cabe resaltar que la información recolectada durante el proceso es confidencial y ustedes podrán tener acceso a esta información en cualquier momento. Además, esta investigación no tendrá ninguna influencia en las notas académicas en la institución y estará supervisado por las directivas del colegio.

Agradezco su colaboración

Cordialmente

María Isabel Pinilla
Docente Inglés

Yo _____ autorizo la participación de mi hij@
_____ del curso _____ en el trabajo de investigación de la
docente XXXX.

Firma

Padre de familia

Appendix E:

Rating Scale

Estimado estudiante. Te agradezco tu colaboración al contestar el siguiente cuestionario:

Encierra la respuesta en cada pregunta

¿Cuántos años tienes?

5 años 6 años 7 años 8 años

Indica tu grado de acuerdo o desacuerdo con las siguientes afirmaciones.

(1: Muy en desacuerdo; 2: algo en desacuerdo; 3: ni de acuerdo, ni en desacuerdo; 4: Algo de acuerdo; y 5: Muy de acuerdo)

- Cuando participo lo hago en Inglés 1 2 3 4 5
- Intento hablar en Inglés todo el tiempo en clase 1 2 3 4 5
- Debo mejorar como hablo en Inglés 1 2 3 4 5
- Puedo mantener una conversación en Inglés 1 2 3 4 5
- Tengo dificultades al hablar en Inglés 1 2 3 4 5

¿Es difícil hablar en inglés?

Si No

¿Por qué?

Appendix F:
Teacher's Journal

TEACHER'S JOURNAL|

Date:

Lesson # _____

<u>Objective</u>	
<u>Students' interaction</u>	
<u>Students' participation</u>	
<u>Students' spoken fluency</u>	

Appendix G:

Logs

DIARIO ACADÉMICO

Fecha:

Clase # _____

<i>Hoy aprendí ...</i>	<i>¿Es fácil para mí utilizarlo en clase? Si / No ¿Por que?</i>	<i>¿Utilicé inglés en la clase? ¿Cómo?</i>	<i>¿Participé en Clase?</i>	<i>¿Interactúe con mis compañeros fácilmente? Si / No ¿Por qué?</i>

Appendix H:

Mid Term Survey**MID TERM SURVEY**

Estimado estudiante. Agradezco tu colaboración respondiendo el siguiente cuestionario.

1. ¿Hablas en inglés durante la realización del proyecto de ciencias?

Sí No ¿Por qué?

2. ¿Intentas hablar en inglés en todas las clases en las cuales se realiza el proyecto de ciencias?

Sí No ¿Por qué?

3. ¿Cuántas veces participas en cada clase en la que se realiza el proyecto? ¿Por qué?

4. ¿Crees que hablas con más seguridad en inglés?

Sí No ¿Por qué?

5. ¿Puedes decir frases más largas en inglés?

Sí No ¿Por qué?

6. ¿Crees que hablas en inglés sin hacer pausas constantemente?

Sí No ¿Por qué?

7. ¿Te gusta realizar un proyecto de ciencias en inglés?

Me gusta mucho Me gusta Mas o menos me gusta Me gusta poco No me gusta

¿Por qué?

Appendix I:

Final Survey

FINAL SURVEY

Estimado estudiante. Agradezco tu colaboración respondiendo el siguiente cuestionario.

1. ¿Hablas en inglés durante la realización del proyecto de ciencias?

Sí No ¿Por qué?

2. ¿Intentas hablar en inglés en todas las clases en las cuales se realiza el proyecto de ciencias?

Sí No ¿Por qué?

3. ¿Cuántas veces participas en cada clase en la que se realiza el proyecto? ¿Por qué?

4. ¿Crees que hablas con más seguridad en inglés?

Sí No ¿Por qué?

5. ¿Puedes decir frases más largas en inglés?

Sí No ¿Por qué?

6. ¿Crees que hablas en inglés sin hacer pausas constantemente?

Sí No ¿Por qué?

7. ¿Te gusta realizar un proyecto de ciencias en inglés?

Me gusta mucho Me gusta Mas o menos me gusta Me gusta poco No me gusta

¿Por qué?

Appendix J:

Rubric to Evaluate Speaking Proficiency

Studen #				
	Needs Improvement	Satisfactory	Good	Excellent
Grammar	The learner does not communicate his/ her ideas because of the lack grammar basis.	The learner expresses ideas adequately with some errors in sentence structure and tenses.	The learner expresses ideas and responds fairly with some mistakes that do not interfere with the meaning.	The learner expresses ideas and respond with ease using proper sentence structure and tenses.
Vocabulary	The learner does not have enough vocabulary to express hihe/sher ideas, which hindered the student’s response.	Student is able to use general vocabulary words but he/she does not expand on hihe/sher ideas. He/she produces incomplete sentences	The learner uses the words learned in class, in an accurate manner for the situation given.	Rich, precise and impressive usage of vocabulary words learned in the class according to the situation.
Comprehension	The learner displays difficulty for understanding the questions and topics that were being discussed.	The learner fairly grasped some of the questions and topics that were being discussed.	The learner displays understanding and responds to the questions and topics discussed.	The learner displays understanding and responds to all of the questions and the topics with ease and goes beyond with hihe/sher comments.
Fluency	The learner’s speech is very slow, stumbling, nervous, and uncertain with response, except for short or memorized expressions. It is difficult for the listener to understand.	The learner’s speech is slow and often hesitant and irregular. Sentences are incomplete, but the student make an effort to continue.	The learner’s speech is mostly smooth but with hesitation, rephrasing and struggling for words.	The learner’s speech is effortless and smooth with fair speed and sense.
Pronunciation	The learner produces uncomplete sentences, difficult to understand, quiet in speaking, unclear in pronunciation.	The learner produces slightly unclear words and sentence fragments with pronunciation issues	Good pronunciation of words and sentences with errors that do not interfere with communication	Pronunciation was very clear and easy to understand.

