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**Content and Language Learning in Primary
Schools: Instructional Strategies and Students'
Progress in Aural/Oral Proficiency**

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TESIS DOCTORAL:

**Content and Language Learning in Primary Schools:
Instructional Strategies and Students' Progress in Aural/Oral
Proficiency**

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CHAPTER 1: BACKGROUND AND PURPOSE OF THIS STUDY

1.1 Introduction

Defined broadly, bilingual education can mean any use of two languages in school – by teachers or students or both – for a variety of social and pedagogical purposes (National Association of Bilingual Education, 2014). When bilingual programs are designed to promote learners' cognitive growth and bilingual abilities, historically, the results have been positive, as shown in a number of large-scale research projects designed to test the theories underlying bilingual education (Admiraal, Westhoff & de Bot, 2006; Corallo & McDonald, 2002; Dutcher, 1995; Gale, McClay, Christie & Harris, 1981; Hüttner, 2010; Lasagabaster, 2008; Malherbe, 1978; Oller, Pearson & Cobo-Lewis, 2012; Ramirez, 1991; Ruiz de Zarobe, 2008, 2010; San Isidro, 2010; Skutnabb-Kangas, 1979; Thomas & Collier, 2002, 2009; Várkuti, 2010). It has, therefore, been shown that bilingual education is a viable and highly desirable form of instructional delivery with a variety of program models. Students gain a great many benefits from these types of programs, from developing the ability to express themselves in two languages in both social and academic settings to increasing tolerance and openness to people with other languages and cultures.

Indeed, researchers in the field have come to the conclusion that, when implemented based on solid foundations supported by research, bilingual education is so thoroughly proven to be a sound structure for education that further research no longer needs to be undertaken to show the program's effectiveness, but rather studies should focus on identifying foundational features that make the program an effective option for stakeholders (educators, parents, students) (August & Hakuta, 1997).

Regardless of the program model being implemented, effective bilingual education programs share three foundational components: second language instruction, sheltered subject matter teaching, and instruction in the first language. They also have two goals: developing proficiency in a second language and culture and fostering academic achievement. High-quality bilingual education instructional strategies are based on multiple factors, including program model, program goals, program design, curriculum design, teacher preparation, community support, and classroom teaching (National Association of Bilingual Education, 2014).

Building on this solid foundation for this model of education, research into various elements of bilingual programs as well as the number of bilingual education programs being implemented continue to grow in response to present-day social, economic, and political environments in which citizens benefit greatly from being able to communicate through more than one language. Since 2006, the Council of Europe has been encouraging governments and education authorities on the continent to design new programs and curriculum there for the teaching and learning of languages. They encourage program designers to include specific instruction in the target language to enhance communication targets, expanding beyond descriptive knowledge (describing things, events, processes and their attributes and their relationships to each other) or knowledge of basic language forms (grammars) and into successful communicative tasks. The Council of Europe put special emphasis on the promotion of language diversity, intercultural values and democratic citizenship (Council of Europe, 2011; Eurydice Report, 2006).

1.2 Bilingual Education in Europe and Andalusia, Spain

In a European report which studied the progress of students at the end of their secondary education, (Ministerio De Educación, Cultura, y Deporte, 2012), Spain was ranked ninth out of fourteen countries in the percentage of students reaching second language proficiency levels as outlined by the Common European Framework of Reference (Council of Europe, 2011). The report stated that over 80 percent of those Spanish students were only able to understand simple, common daily expressions in English when stated orally. Related to this finding, efforts have been made to make changes in the bilingual education programs in Andalusia, Spain. In 2004, the *Andalusian Plan for the Promotion of Plurilingualism (APPP)* (Junta de Andalucía, Consejería de Educación, 2004) was introduced. The plan was created for the Andalusian territory based on the European language policies regarding the teaching and learning of languages and became the cornerstone of new language policies there (Lorenzo 2010).

The APPP demonstrated an awareness of the need to adapt to new language teaching programs in Andalusia. The document also pinpointed language diversity as a source of richness and a valuable heritage belonging to all humankind. The major goal of the *APPP* was to design a new language policy for Andalusia, based on the principles of the European Council (Junta de Andalucía Consejería de Educación, 2004), and it aimed to lead educators in the development of plurilingual and multicultural competence for its citizens in order to respond to the economic, technological, and social challenges, based on an integrated curriculum with key stages for all languages and using Content and Language Integrated Learning (CLIL) (Junta de Andalucía Consejería de Educación, 2004). CLIL is a model of bilingual education which intends to

encompass the most effective instructional elements of English as a Medium of Instruction (EMI), Language Across the Curriculum (LAC), Content-Based Instruction (CBI) and Content-Based Language Teaching (CBLT); this involves teaching subject matter through the medium of a foreign language, or language teaching bringing content into the foreign language lesson (Nikula, Dalton-Puffer, & Llinares, 2013). The implementation of CLIL programs varies widely in program components between regions of Spain, however, since its 19 autonomous regions have had political and administrative sovereignty since 1978.

An expansion of the APPP was released by the *Consejería de Educación* in January 2017 and recognized the successes of the initiatives begun in 2004. The new plan is called “Strategic Development of Languages in Andalusia. Horizon 2020” and points out that the number of bilingual centers in Andalusia has grown from 27 in the 1998/99 school year to 1,020 in the 2016/17 school year, providing bilingual instruction to a greater number of students than in any other region of Spain (Consejería de Educación, 2016) in the largest array of languages: 11 (Arabic, Chinese, English, French, German, Italian, Japanese, Modern Greek, Portuguese, and Spanish as a second language). The Horizon 2020 plan states that it has as a major goal the improvement of language instruction for all students in Andalusia. Additional goals include increasing the number of teachers with advanced levels of target language proficiency and increasing second language proficiency levels for students, to include a minimum of 50% of 15-year-olds with an intermediate level of second language proficiency by 2020. In addition, the plan sets a new course for professional development for teachers, stressing a shift away from traditional styles of language teaching pedagogy (ie.

abundant written seat work, translations, grammars and book-based activities) to innovative, communicative instructional strategies including project-based learning.

1.2.1 The Need for Research on CLIL in Andalusia, Spain

Although a sizeable body of literature has been produced on CLIL, a call went out in 2011 to increase efforts to produce outcome-oriented research into CLIL effects (Pérez-Cañado, 2011). Since then, the enthusiasm for program creation and implementation began outpacing the completion of research studies in Andalusia. In 2015, Ander Merino and Lasagabaster pointed out that research into CLIL primarily focused on target language attainment and to a lesser degree first language development. While the diversity of CLIL models being implemented provides for greater flexibility of program creation, it also implies differing interpretations of what comprises a CLIL program and therefore complicates research analysis and conclusions (Cenoz, Genesee & Gorter, 2014) since their goals, pedagogical approaches, hours of second language exposure, and classes taught in English may vary widely. Some researchers have begun advocating through their studies for a clarification of the definition of CLIL, its program components, and teaching pedagogies, citing these as critical to the systematic improvement and evolution of CLIL (Cenoz, Genesee & Gorter, 2014).

It has been suggested that research in Spain currently can be sorted into three scenarios. (1) The Andalusian model illustrates attempts to promote bilingualism in a monolingual community. (2) Programs which attempt to foster multilingualism in a community where bilingualism is already an established attribute including programs in the Basque Country, Catalonia, Galicia, Navarre, and Valencia, although their

programs follow different program models. (3) Madrid and the Balearic Islands participate in the Bilingual and Bicultural project, which attempts to raise English levels of children in mainstream public schools. Presently, Madrid is in the process of creating a plan similar to Andalusia's 2004 APPP, which would then fall into scenario (1), promoting bilingualism in a monolingual community.

In Spain, the historically bilingual communities of Catalonia and the Basque Country are prominently positioned within the Spanish CLIL scene, given their long and entrenched tradition in bilingual teaching and research (Navés & Victori, 2010). Currently, trilingual programs have been introduced into Basque schools, using a CLIL approach to present instruction in Basque, Spanish, and English (Parsons, 2015). Research which monitors performance and investigates possible language and content gains in other parts of Spain has been nowhere near the quality of that of the Basque country. Efforts to normalize the presence of instruction in Catalan have recently become politicized in Catalonia, placing the future of CLIL programs in doubt there (Perez, 2015). The lack of overall continuity of the Catalonian programs in general has caused that region to be far from having a sound CLIL policy.

Furthermore, a shortage of research on CLIL and related practices in Spanish monolingual communities was identified several years ago (Fernández Fontecha, 2009). Areas then identified as being in urgent need of research include analyses of the methodology used and CLIL teacher observation (Admiraal, et al., 2006; Pérez-Cañado, 2011; Lasagabaster, 2008), and the need continues to exist (Pérez-Cañado, 2016; Pavón Vazquez, 2014), Andalusia is among the Spanish regions identified as being comprised of monolingual communities, standing out for their absence of a solid tradition in foreign language teaching (Pérez-Cañado, 2011). Research diminishes in monolingual

communities such as Andalusia, where the CLIL tradition is much more recent and thus not as firmly ingrained as in bilingual ones (Fernández Fontecha, 2009; Fortanet-Gómez & Ruiz-Garrido, 2010). A study conducted by Lorenzo in 2007 was the first significant instance of empirical research into the effects of CLIL in Andalusia and has led to continued research activities (Pérez-Cañado, 2011). The investigation was both quantitative and qualitative in nature, and has become the starting and reference point for the research in Andalusia. The authors of the research, commissioned by the Junta de Andalucía Consejería de Educación, administered skills-based language tests to 1,768 fourth-grade primary and second-year secondary students participating in English, French, and German bilingual sections in 61 randomly selected schools across the whole of Andalusia. The results reported that the primary and secondary students outperformed their mainstream peers at statistically significant levels and led the authors to conclude CLIL programs have rapid effects and that there is a non-linear correlation between exposure and competence. As mentioned in Section 2.4, however, design questions regarding this study and others have arisen, prompting a call for continued research to more strictly apply sound research methodologies so that their results can be considered empirically valid, indicating where CLIL stands in Andalusian bilingual programs (Pérez-Cañado, 2011, 2016).

Researchers have identified 3 challenges to CLIL implementation in Spain: program composition, implementation, and research (Pérez-Cañado, 2016) since the enthusiasm of educators to put programs in place may be overrunning these considerations. That is to say, in the zeal to meet the goals of the APPP and the current Horizon 2020 Plan, combined with a lack of conceptual clarity in how to implement CLIL programs, the rapid pace of program implementation is causing concern among

researchers that these programs might not be functioning at levels sufficient meet the potential of CLIL as a model. While the flexibility allowed in creating a CLIL program had been heralded as a strength, it is now being examined carefully to determine its effects more carefully. A second phase of CLIL research has begun since 2010, with a more pessimistic view of the positive effects of those programs (Pérez-Cañado, 2016), and researchers are advising caution in rushing into CLIL program implementation. In addition, concerns have recently been expressed regarding the research methodologies employed in previous CLIL research reporting beneficial program outcomes. Researchers urge using more rigorous research designs, targeting longitudinal rather than cross-section studies, treatment and comparison groups, and triangulations (Pérez-Cañado, 2016) resulting in more empirical products.

It is recommended that this research include the main needs and problems stakeholders face in their daily practice (Fernández Fontecha, 2009; Perez-Vidal, Juan-Garau, & Bel, 2008). As a result of his research, Pavón Vazquez (2014) recommends that collaboration be fostered between language and content teachers in order to coordinate linguistic functions, grammar instruction, and the use of specific vocabulary in all classes. In this way, students have opportunities to encounter similar language in multiple contexts. In addition, Pavón Vazquez encourages teachers to collaborate on evaluation activities and procedures, creating more connections for students between classes and subject matter. In another study (Pérez-Cañado, 2016). which sought to examine classroom practice and more precisely define the characteristics of successful CLIL program design, researchers conducted a series of classroom observations of classes in CLIL contexts in 12 Spanish provinces within 3 autonomous communities (Andalusia, Extremadura, and the Canary Islands). Content subject instruction and

English as a foreign language instruction were observed and videotaped in one-hour sessions by two researchers per class in a variety of settings: public and private schools, primary and secondary education, and rural and urban. Teachers later participated in face-to-face interviews with researchers providing more open-ended information. An observation protocol was developed for this project to identify and validate teacher behaviors.

The researchers reported that their study resulted in their gaining a more complete image of what CLIL looks like in classrooms regarding characteristics such and second language use in class, academic language development in the second language, and competence levels in written and oral contexts. In addition, their observations allowed them to identify and describe how materials and resources were being used in classes, what types of groupings were present, and what general methodologies were being employed for both teaching and evaluation. This project is being presented as one which can provide insights for program designers, as the protocol designed for the project is available for them to use. Also regarding appropriate instruction, in an examination of CBI and CLIL programs, Cenoz (2015) reported that his analysis of the two program types found that both programs share fundamental characteristics and pedagogies. He found no differences in underlying teaching methodologies. Since CLIL is the format of teaching which the Andalusian government recommends be used in bilingual programs there, research projects such as these measuring the quality of CLIL instruction and the effects that instruction has on student achievement continue to be needed.

1.3 Purpose and Rationale for this Study

Following the recommendations for research projects as stated above, the main purpose of this study is to quantify and measure the quality of instruction provided in English to second grade students (ages 8 and 9) in bilingual programs in Seville (Andalusia, Spain) and then to correlate the quality of instruction to students' progress in English oral/aural proficiency.

To carry out the study, this project targeted the second grade classrooms in five schools in Seville where CLIL programs were being implemented. The researcher used the Early Language Listening and Oral Proficiency Assessment (ELLOPA) (Thompson, Boyson & Rhodes, 2006) as a pre-test (and later as a post-test) to measure the oral/aural language proficiency levels of a group of second grade students (n=149) participating in bilingual education programs in seven different classes taught at five different public schools. Then, on a regular, scheduled basis over a 14-week period, the researcher used the Sheltered Instruction Observation Protocol (SIOP) (Echevarria, Short, & Powers, 2003), a research-based, validated and reliable instrument, to measure the quantity of strategies to increase second language development that teachers (n=11) used in those classes. As an additional data point, the level of English proficiency of the group of teachers was also evaluated using the Student Oral Language Observation Matrix (SOLOM) and this data was correlated to SIOP results and student proficiency gains. Finally, the level of increases in oral/aural English language development that the student sample made during the time this project was conducted was correlated to the quantity of strategies used by the teachers to increase second language development. Research questions to be investigated and answered are

- Is best practice for instructional strategies in bilingual programs being employed in participating bilingual classrooms?
- What CLIL instructional best-practices are being employed in the bilingual classrooms studied?
- What are the language acquisition outcomes for students in the bilingual classrooms studied?

The results of this research can be used to

1. direct future professional development initiatives for bilingual programs in Seville,
2. inform teacher preparation programs and policies (pre-service and in-service),
3. recommend improvements to present bilingual programs.

1.4 Structure of this Dissertation

Chapter 2 provides the theoretical framework for bilingual education models used on a worldwide basis and the instructional strategies that underpin them. The chapter begins with a historical overview of the global research which supports the effectiveness of bilingual education as an approach, since the term ‘bilingual education’ is used as a broad umbrella term for a number of different program designs. CLIL is defined and introduced and research on CLIL programs is reviewed, including that performed in Andalusia. The research-based findings for four expected measurable outcomes that effective bilingual programs produce are introduced: (1) second language acquisition (2) the rate of second language acquisition (3) first language development, and (4) the development of subject content knowledge in both the first and second

languages. Bilingual education curriculum is then discussed, followed by an overview of the research which defines four components that are required for a bilingual program to be effective: (1) language instruction components (2) clear expectations for defining language “proficiency” (3) attention to academic language, and (4) interaction among students. Study results are then presented that define effective teaching strategies to promote bilingual language acquisition, including the need for teachers to be explicit in creating language and content objectives in a bilingual classroom. Research indicating the need for and benefit of standards and basic principles to drive high-quality instruction in second language learning environments and the research bases for three assessment tools precede the final section of Chapter 2 which presents the body of research which points to the types of effective teaching behaviors that are necessary to make instruction in bilingual programs, including CLIL programs, successful.

Chapter 3 presents the methodology that was used in the research project presented in this dissertation. As previously discussed, the study analyzes the quantity of research-based, effective instructional strategies that were employed by a group of teachers in CLIL classrooms in Seville and makes correlations between the level of their use and the language development of the students in those classes. The study model is supported specifically by the results of research for the SIOP and the ELLOPA. As detailed earlier in this chapter, a group of teachers were observed over 14 weeks during the 16-week study while they provided CLIL instruction to groups of second grade students, and the SIOP was used to identify effective teacher behaviors the teachers used while providing instruction. The ELLOPA was used as a pre- and post-test to measure gains in student language proficiency during the study period. An additional informal language measure, the Student Oral Language Observation Matrix (SOLOM),

was used to evaluate the level of English proficiency the classroom teachers possessed. In this chapter, the measurement tools are described and the base of research which supports them is explored. The sample groups are presented, including their defining attributes and a complete description of the steps followed to complete the study are given. The data collected in this study is shared in Chapter 3, and a discussion of the validity of this study is included. Variables which may impact the results of the study are also considered. The results are described and presented in the form of tables and graphs, with specific data and calculation details appearing in the Appendix. Categories are divided by data collected on teachers (SIOP and SOLOM) and students (ELLOPA). SIOP data is then examined overall by years of program implementation, by subject area, by individual teacher, by individual teacher by subject area, and in correlation to SOLOM scores. Overall ELLOPA data is examined next and then disaggregated by proficiency area and number of years a school's program existed. Pre- and post-test ELLOPA data is correlated by school and takes into account variables such as whether a child attends English classes outside of school and whether a child speaks a language other than Spanish at home.

Chapter 4 presents a discussion of the results of the study conducted for this dissertation, based on the data collected and presented in Chapter 3. The importance of the main findings are discussed and a comparison between the results of the observations conducted for this project and desired outcomes for CLIL programs is made in this chapter. Specific attention is given to the results found regarding the level of appropriate strategies teachers in the study used while teaching in CLIL classrooms, providing examples in practical terms. Key findings are summarized, and needs are identified, particularly in light of training goals established for Andalusia

Chapter 5 explores the significance of the results of this study and makes connections to the base of research in this field. In support of needs identified in the results of this study, the chapter presents a model of complex change and discusses the elements required to promote systematic change in relation to observations made in at bilingual centers in Seville. Suggestions for future studies to build on the one presented here are outlined, and conclusions are drawn regarding further steps needed to ensure success in CLIL programs in Andalusia, with connections and recommendations made regarding professional development goals which have been set by educational authorities for that region of Spain.

1.5 Summary

The Horizon 2020 plan, an amplification to the *Andalusian Plan for the Promotion of Plurilingualism* (APPP) introduced in 2004, has been presented to the community and extends the scope of the APPP by calling for increased numbers of student participants, increased language proficiency of teachers, and professional development initiatives for teachers. The original APPP encouraged education authorities throughout the region to design new language learning programs based on European language policies as outlined by the Council of Europe and had as a goal the development of plurilingual and multicultural competence in Andalusian citizens. A bilingual education model known as Content and Language Integrated Learning (CLIL) was introduced there as a vehicle to meet this challenge, and underwent rapid development in Andalusian schools following its introduction (Ruíz de Zarobe & Lasagabaster, 2010) although program implementation in Andalusia evolved at a faster rate than research to support it did. Since many models to implement CLIL exist

throughout the 17 autonomous regions of Andalusia because no single blueprint for the design of those programs exists, a call for empirically based research was made during the early years of the APPP to promote program effectiveness (Fernández Fontecha, 2009; Perez-Cañado, 2011; Pérez-Vidal, et al. 2008).

Two areas of research acknowledged as necessary included observing CLIL teachers and investigating the methodology used in CLIL classes (Admiraal, et al., 2006; Lasagabaster, 2008; Pérez-Cañado, 2011). Pérez-Cañado (2016) responded to this call for research by conducting a study specifically using teacher observation to investigate what techniques were being used in CLIL classrooms in 3 regions of Spain and identified a need for further research there centering on how programs are created (their components) and how they are implemented, using research methods that meet the highest empirical definitions.

In response to the recognized need for investigation topics that seek to determine the quality of programs in Andalusia, the research study presented here aims to look at the level of implementation of best practice strategies in the instruction being provided in English to second grade students attending CLIL programs in Seville. Those results will be correlated to the students' progress in English oral/ aural proficiency.

CHAPTER 2: THEORETICAL FRAMEWORK FOR BILILINGUAL EDUCATION MODELS AND INSTRUCTIONAL STRATEGIES

2.1 Introduction

A variety of bilingual program designs exist worldwide. High-quality bilingual education instruction is based on multiple factors, including program design, curriculum design, and classroom teaching. It is up to the educational community to choose and design an effective program based on research that best meets their intended educational goals for their students. These decisions should be based on the makeup of their target population, human and material resources available, and desired outcomes. Upon implementation, the adult stakeholders in the process (administration, teachers, parents, and community members) need to actively support and promote the bilingual education program. Support is given through facilitating curriculum development, providing resources (material and personnel), adequately training personnel, providing forums for open communications among stakeholders, allowing teachers adequate planning time, and providing program oversight which includes regular review and revisions of program implementation (Grossman, 2006).

In an effort to support and establish quality assurance and further educational development worldwide, the body of research that exists on bilingual education has become expansive. A review of research on a variety of models of bilingual program evaluations made by the Center for Applied Linguistics in Washington, D.C. (August & Hakuta, 1997; Rossell & Baker, 1996) concluded that research has found no differences between the English language and academic development of students in bilingual programs compared to students who received instruction in only one language. Other reviews of bilingual programs point to a positive effect of these programs (Collier &

Thomas, 1989, 1992, 1997, 2004, 2009b; Thomas & Collier, 1997, 2002, 2012), citing that students in bilingual programs outperform their peers in monolingual programs in language acquisition. Similar research conducted in Europe support these findings (Bergroth, 2006; Jäppinen, 2005; Merisuo-Storm, 2003). Indeed, in a review of studies about bilingual education, May (in Cummins & Hornberger, p. 15; 2008) sums it up: “There is currently no doubt that, under certain conditions, the effects of bilingual education can be clearly beneficial.”

In Andalusia, Spain, a purposeful effort to increase the number of bilingual education programs following a Content and Language Integrated Learning (CLIL) model is under way. Supported by encouragement at the European level (Council of Europe) as well as at the regional level (Junta de Andalucía), bilingual programs are rapidly being implemented across Andalusia. These initiatives face challenges, however, including standardizing quality of instruction and language proficiency of teachers (Cenoz, Genesee & Gorter, 2014; Juan-Garau and Salazar-Noguera, 2015; Ruíz de Zarobe & Lasagabaster 2010; Salaberri Ramiro 2010). Researchers and leaders in the education field have indicated that scientifically based research to document the condition of these programs is also a need to ensure their proper implementation. In addition, as discussed in Chapter 1, a call for empirically based research following rigorous design protocols has been made to determine the quality of bilingual education programs being imparted throughout Andalusia, with a focus on program design, methodologies employed, and research design (Cenoz, Genesee & Gorter, 2014; Juan-Garau and Salazar-Noguera, 2015).

This call for research into the effective components of bilingual programs being implemented there connects with the research agenda outlined by the National Research Council (NRC) of the National Academy of Sciences in the United States. Based in part on the findings from their two-year review of the existing body of research about bilingual education, the NRC made the recommendation in 1997 that future research should focus on pinpointing features of effective bilingual programs, rather than debate the effectiveness of these programs as a whole (August & Hakuta, 1997). For this reason, beginning in Section 2.4, the bulk of this chapter is devoted to reviewing studies identifying components of bilingual programs necessary to create the most effective outcomes for learners. Before that is presented, however, the variety of bilingual programs that exist is discussed in the next section.

2.2 Options for Bilingual Program Design Models

Forty years of research and literature on bilingual education has produced a broad array of program descriptions, analyses and models. These programs do not exist in pure forms, as schools mix and blend aspects of various programs (May, 2008). Various large- and small-scale studies have examined the effectiveness of these programs and will be reported here in upcoming sections. Research examining the success or failure of various program models has not completely addressed the central question of how best to educate second language learners (Lindholm-Leary & Genesee, 2010); nevertheless, the body of research has reported detailed studies of what has worked in actual classrooms. Rather than focus on the efficacy of a single program model, this research has concentrated on the characteristics of schools and classrooms that contribute to successful educational practice for second language learners (Collier,

1989; Krashen, Scarcella, & Long, 1982; Lindholm-Leary & Genesee, 2010; Rennie, 1995). May (2008) has synthesized bilingual education programs into meaningful categories that highlight broad agreements among researchers. These categories are summarized in Table 1 below. Unless otherwise noted, the models are described within a context of students' learning English as their second language.

Table 1: DESCRIPTION OF THE CHARACTERISTICS OF BILINGUAL EDUCATION MODELS

PROGRAM, ATTRIBUTES ↓	TRANSITIONAL BILINGUAL	MAINTENANCE BILINGUAL	FRENCH CANADIAN IMMERSION	TWO-WAY BILINGUAL IMMERSION (AKA: dual language, enrichment, developmental)	CLIL (Content and Language Integrated Learning)
PROGRAM GOALS	Remedial Program Development of the language transitioned to only	Enrichment Program 1.) Bilingualism/ biliteracy in the home language and a second language 2.) High academic achievement 3.) Positive cross-cultural relations	Enrichment Program 1.) Bilingualism/ biliteracy in French and English 2.) High academic achievement	Enrichment Program 1.) Bilingualism/ biliteracy in the home language and a second language 2.) High academic achievement 3.) Positive cross-cultural relations	Enrichment Program 1.) Bilingualism/ biliteracy in the home language and a second language 2.) High academic achievement 3.) Positive cross-cultural relations
STUDENT POPULATION	Language Minority Populations	Language Majority and Minority Populations	Language Majority Population	Language Majority and Minority Populations	Language Majority and (in some cases) language minority populations
ROLE OF L1 AND L2	L1 used as a medium of instruction, but is phased out as L2 proficiency increases L2 taught using second language methodology L2 becomes the exclusive medium of instruction	L1 and L2 used as a medium of instruction L2 taught using second language methodology in early grades	L2 used as a medium of instruction in early grades L1 and L2 used as a medium of instruction in later grades	L1 and L2 used as a medium of instruction L2 taught using second language methodology	L1 and L2 used as a medium of instruction L2 taught using second language methodology

PROGRAM, ATTRIBUTES ↓	TRANSITIONAL BILINGUAL	MAINTENANCE BILINGUAL	FRENCH CANADIAN IMMERSION	TWO-WAY BILINGUAL IMMERSION (AKA: dual language, enrichment, developmental)	CLIL (Content and Language Integrated Learning)
PROGRAM LENGTH	Short term 2-4 years	Short term Kindergarten through grade 6	Sustained 6 to 12 years	Sustained 6 to 12 years	Sustained 6-12 years
COGNITIVE EMPHASIS	Some	Some	Strong	Strong	Strong
ACADEMIC EMPHASIS	Yes	Yes	Yes	Yes	Yes
LANGUAGE DEVELOPMENT EMPHASIS	Target language only	L1 and L2 academic proficiency	L1 and L2 academic proficiency	L1 and L2 academic proficiency	L1 and L2 academic proficiency
SOCIO-CULTURAL EMPHASIS	Some	Moderate	Strong	Strong	Some
NATIVE LANGUAGE ACADEMIC SUPPORT	Some	Moderate	Strong	Strong	Strong
EXPOSURE TO TARGET LANGUAGE STUDENT SPEAKERS	None (self-contained classes; exposure to teacher as target language model only)	Yes (in content subject classes)	Strong	Strong	None (exposure to teacher as target language model only)

Adapted from Collier, 2009b
L1= First, Home, or Native Language
L2= Second or Target Language

2.2.1 Transitional Bilingual Education

In transitional programs, second language students begin receiving instruction in their home language for the majority of the day and a portion of the day in English as a second language (ESL) or English as a foreign language (EFL) classes. As they progress in grade and English proficiency, they receive less of the home language and more English, moving into content classes, until over time they receive instruction only in English (Lindholm-Leary & Genesee, 2010; May, 2008; Rennie, 1995). The transitional model serves as a bridge for students, helping them move from their native language to the language of the classroom and wider community (e.g., English), and any given program may do so more quickly or more slowly (May, 2008). U.S. federal guidelines now suggest that 3 years is the target amount of time for learners to receive first language support, in spite of studies showing that 5 to 7 years is a more realistic time frame for learners to reach levels comparable to their native English speaking peers (Collier, 1987, 1989; Collier & Thomas, 1988, 1999, 1992; Cummins, 1981; Genesee et al., 2006; Hakuta et al., 2000; Krashen et al., 1982).

The goals of transitional bilingual education are assimilationist, and the outcome is generally subtractive bilingualism (May, 2008). Still, it is hoped that these programs will provide the content area support which will enable these students to succeed in school. These programs are often found in predominantly native English-speaking communities with significant populations of non-native speakers, particularly of one or two language backgrounds. This makes it easier and more desirable in terms of community attitudes and finding bilingual teachers. The U.S. government, through Title VII grants, funds transitional programs in that country.

2.2.2 Maintenance Bilingual Education

In maintenance programs, students receive the majority of their classes in English and a smaller amount, usually one class, in native language development. This language class for native speakers develops language skills through the use of literature and content instruction, with the development of academic language being the focus. The goal of maintenance bilingual programs is to promote bilingualism and biliteracy. Rather than having an assimilationist goal, this model promotes pluralism (May, 2008). Languages other than English are seen as resources. Because it promotes the development of two languages, the outcome is additive bilingualism, which is associated with positive cognitive benefits (Cummins, 1981). As with transitional programs, these programs are found in predominantly native English-speaking communities with significant populations of non-native English speakers (May, 2008).

2.2.3 Enrichment, Two-Way, Dual Language or Developmental Bilingual

Enrichment bilingual education, also referred to as two-way, dual language, or developmental bilingual, involves not only non-native speakers but also native speakers (May, 2008). Native speakers of two different languages attend classes together. A portion of the day is taught in one language, and a portion of the day is taught in the other language, dividing the delivery of the content instruction between the two languages. Both groups receive native language instruction during the day, and both groups receive second language instruction during the day as well (Collier, 1989; May, 2008).

While they are segregated in first or second language subject content classes initially, the goal is to have the students of both language backgrounds studying content classes in both languages (Collier, 1989; Lindholm-Leary & Genesee, 2010;

May, 2008; Rennie, 1995). Like maintenance bilingual education, the goal of enrichment bilingual education is pluralistic: the development of biliterate and bilingual individuals. Both (or several) languages are given equal value. Outcomes of enrichment bilingual programs are additive bilingualism, not just for one ethnic group but for majority and minority speakers. In order to ensure a balance of languages, several alternatives are possible. For example, classes taught in the morning might be taught in one language, while classes taught in the afternoon might be taught in the other. However, it is recommended that the languages switch slots periodically, as students are said to be more alert in the morning (Lindholm-Leary & Genesee, 2010).

Another possibility is to teach one content class, such as math, in one language, and then teach the next math class in the other language the following semester (May, 2008). Possibilities such as these are identified as alternate because languages are alternated by time or by subject matter. A second approach is known as concurrent, in which classes are simultaneously taught in both languages in a team teaching approach, where one teacher represents one language and the other teacher represents another language. In the preview-review technique of concurrent language teaching, one teacher previews the lesson in his/her language, the other teaches the lesson in the other language, and the first reviews the lesson in the first language.

Team teaching has been found to have several drawbacks, however. First, though the goal is to provide a balance of input in both languages, it has been found that one language tends to dominate: often English when it is language of the community (Ovando & Collier, 1985). In addition, there can be a great deal of repetition, which may waste time. Finally, students who know they will hear the

material in both languages may simply not pay attention until the teacher begins using their preferred language. These obstacles can be overcome when there is a commitment to the goals of the program (Fillmore & Snow, 2000; Ovando & Collier, 1985). Enrichment bilingual education programs require a high level of community support and involvement, both financial and human, by both majority and minority speakers. They are more complicated to set up, and the scheduling of students, teachers, and classes requires more effort; however, the results are highly promising for both groups participating. When students continue their bilingual schooling from early primary grades (e.g., kindergarten) through the middle education years (e.g., the 7th and 8th years) and into the upper grades (e.g., the 9th year and beyond), academic achievement is very high compared to comparable groups receiving schooling only in the target language (submersion) (Thomas & Collier, 2002).

2.2.4 Immersion (Canadian Model)

The immersion model was originally developed in Canada, and was and is used successfully with English speakers learning French as a new language as well as with growing numbers of minority language children (Taylor, 1992). Though nothing in the definition of immersion bilingual education excludes minority language children, it may happen in practice (Cummins, 1981a; Swain, 1978). When immersion is used with majority English speakers learning French, immersion bilingual education is generally pluralistic and promotes additive bilingualism. Learners become biliterate and bilingual in two languages. However, when minority language speakers are immersed in the majority language, the goal is frequently assimilationist and results in subtractive bilingualism (May, 2008; Swain, 1978) since these programs focus solely on the development of the new language and do not give instructional attention to the home language. Consequently, as minority

language students routinely use and develop the majority language, the disuse of their own home language (the minority one) over time causes them to experience a loss of fluency in that language, even to the point of forgetting it almost entirely, and it may become replaced by the new language. This process has come to be known as subtractive bilingualism (Cummins, 1999).

A variety of immersion models are used with majority English speakers in Canada, from early to late total immersion and from partial to full immersion, and differences in outcomes between these models seem to be relatively minor (Swain, 1978). Again, due to confusion in the usage of the terms, it is especially important to differentiate between submersion for minority students in English-speaking classrooms and French immersion for minority students in French-speaking classrooms: the difference relates to first or second language oriented pedagogy. That is, minority language students in an English-medium class with mother tongue speakers of English experience pedagogy intended for first language speakers; hence, English is not presented as an second language, neither is pedagogy necessarily appropriate for second language learners (May, 2008). In a first language classroom, on the other hand, minority and majority children alike are not expected to speak French as a first language; therefore, the program is entirely geared to second language learning and the pedagogy is geared to second language learners.

2.2.5 Outgrowths of the Canadian Immersion Model

The first immersion programs in Finland were broadly based on the original early total French immersion program in Canada (Swain & Lapkin, 1982). Children who enrolled in the optional preschool program at the age of 6 (one year before they started primary school) and who had no knowledge of Swedish were immersed into a total Swedish speaking environment. The teachers were native or near-native

Swedish speakers who used the immersion language for 100 percent of instructional time. In 1987, a pioneer Swedish immersion program in the city of Vaasa/Vasa was initiated, with differences. The program varied from the Canadian model in two respects: (1) teaching in the students' first language was used in grade one in primary school and (2) the program had a multilingual orientation. The students in this program were introduced to a third language in primary school and to an optional fourth language in secondary school. The third and fourth languages were taught through language arts by using the principles of immersion pedagogy. In years following the initiation of the Finnish Immersion Program, research has clearly shown that bilingualism favors the acquisition of additional languages concerning both the rate of acquisition and students' linguistic competence in the additional languages (Bergroth, 2006; Björklund & Suni, 2000). Immersion programs in Finland are now generally based on the Vaasa/Vasa Swedish immersion model. English in these programs is often a third or fourth language (Tedick, Christian, & Fortune, 2011).

2.2.6 An Additional Option: CLIL

The acronym CLIL (Content and Language Integrated Learning) was coined in Europe in the nineties (Coyle, 1999) to describe any dual-focused type of program design in which a second language, foreign or a regional language, is used for the teaching and learning of a non-language subject matter, with language and content having a joint and mutually beneficial role (Marsh, 2002). CLIL is a one-way model of bilingual education primarily implemented in Europe and is an outgrowth and extension of the Canadian and Swedish immersion models, described above. It is intended to be an additive model, promoting the learning of a second language (often English or a heritage language) for community-language speakers and is based on

the premise that second language instruction which is integrated with content matter has proven to be more effective than second language instruction in isolation (Genesee, 1994). CLIL is considered to be distinct from other models of bilingual education in that it integrates language and content along a continuum, in a flexible and dynamic way, without an implied preference for either language, which reflects a very European attitude about language itself (Coyle, 2006). Language is taught directly and through subject content in CLIL. A program goal is to achieve a functional as opposed to a native-like competence in the second language through subject content learning without altering national curricula.

Other important differences between CLIL and immersion education rest on allowing a lesser command of the language of instruction by CLIL teachers (Harrop 2011; Ruíz de Zarobe & Lasagabaster, 2010). A minimum of a CEFR B2 level is recommended for programs in Spain; however, teachers at the B1 level were allowed to teach until 2014, when a B2 level became the requirement. The Horizon 2020 Plan aims to increase the number of teachers at advanced levels (CEFR C1) over time. Other examples of differences include starting with lower amounts of exposure to the target language at older ages, in the use of abridged rather than authentic materials, in providing language education through the teaching of academic subjects rather than from everyday life or the target language culture, and in the greater absence of immigrant students in the program (Dalton-Puffer, Nikula, & Smit, 2010; Lasagabaster & Sierrra, 2010). CLIL is a way of teaching that intends to encompass the most effective instructional elements of English as a Medium of Instruction (EMI), Language Across the Curriculum (LAC), Content-based Instruction (CBI) and Content-based Language Teaching (CBLT) – all of which guide teaching subject

matter through the medium of a foreign language, or language teaching bringing content into the English lesson (Nikula, Dalton-Puffer, & Llinares, 2013).

CLIL instruction has a dual focus: teaching promotes the learning of content knowledge and the simultaneous acquisition of a foreign language. By using CLIL strategies, the learner does not necessarily need to have the English proficiency level expected to cope with the subject before beginning its study (Graddol, 2006). Teachers are expected to adjust their methodology to ensure that the students comprehend the content of the lesson as well as the language (Coyle, 1999). Teachers do not simply present the content and assume that their students understand it. They must employ other means which increase the comprehensibility of the subject matter (such as group work, task-based learning, concrete examples, increased use of visuals); and educational materials, including textbooks, need to reflect the CLIL approach. CLIL is more than just presenting the native-language curriculum in a foreign language. Just because a school presents content instruction in a foreign language does not mean it is employing CLIL. The students cannot simply be instructed as if they were native speakers using the types of lesson delivery and strategies appropriate for native-speaking students.

Lesson materials must be adapted for CLIL (textbooks, worksheets, assignments) to reflect a language-rich environment of instruction and the role that language plays in the students' comprehension of the subject matter). Assignments and classroom expectations (reading/writing/speaking tasks) must be adjusted to students' language proficiency levels and reflect the variety of students' learning styles. CLIL is applicable to students at all achievement levels and is intended to fit well into mixed-ability classrooms (Graddol, 2006).

A report of how CLIL is being implemented throughout Europe (Eurydice Report, 2006) made it clear that CLIL is still far from being a consolidated and fully articulated educational model in any of the European countries surveyed and that a great deal more needs to be done in order to consolidate the theoretical underpinnings of CLIL and create a conceptual framework that is both coherent and appropriate to different local conditions. The Eurydice report contains national descriptions of CLIL programs from the 30 Eurydice Network member countries and illustrates the similarities and differences in CLIL programming and execution with the European Community.

Although the implementation of CLIL is quite varied throughout Europe, given the very different circumstances surrounding language teaching across the continent, certain common characteristics can be identified in European CLIL application (Fortanet-Gómez & Ruiz-Garrido, 2009; Marsh, 2002). European CLIL programs aim to systematically increase the presence of the target language in the curriculum by incorporating a number of subjects taught through it for at least four years. Nevertheless, as discussed in section 1.2.1, it is this variety in design that has added to the complications of conducting empirical research into the effectiveness of CLIL, and the rapid growth of program implementation throughout Spain has also encouraged research into these programs, although at present there continues to be a need for empirical studies, especially those that will focus on program design and methodologies.

Furthermore, since no specific implementation policy exists nationally, and few do regionally, programs there are without guidance to assist them in becoming more effective. Indeed, the fact that Spain is decentralized for some issues such as education contributes to a high degree of variability in CLIL implementation there.

The creation and implementation of programs is left to individual school teachers and administrators. For example, although researchers in the regions of Catalonia and the Basque Country have a history of producing CLIL studies as an extension of their established tradition of bilingual education, Catalonia lacks a solid CLIL policy for its programs there (Navés & Victori, 2010). In particular, research which monitors performance and investigates possible language and content gains is nowhere near the quality of that which has been done in the Basque country (Lasagabaster & Ruiz de Zarobe, 2010).

Andalusia has been a region without a solid tradition in foreign language teaching, and with a fast pace of new bilingual program creation there, Andalusia stands out in the CLIL scene as being in need of additional CLIL research applying rigorous research methods (Pérez-Cañado, 2011). CLIL implementation in monolingual communities of Spain is much more recent and thus not as firmly ingrained as in bilingual ones (Fernández Fontecha, 2009; Fortanet-Gómez & Ruiz-Garrido, 2009), and further research continues to be called for in order to provide comprehensive and empirically valid information about where CLIL stands in Andalusian bilingual programs (Pérez-Cañado, 2011, 2016). Since CLIL is the format of teaching which the Andalusian government recommends be used in bilingual programs there, research projects measuring the quality of CLIL instruction and the effects that instruction has on student achievement are needed. In accordance with these recommendations, the research study documented in this dissertation focuses on the quality of CLIL instruction provided by teachers in programs in Seville, Spain, and student outcomes there.

2.3 The Development of CLIL Programs in Andalusia, Spain

A major government plan, called “Strategies for the Second Modernization of Andalusia,” was designed in 2003, demonstrating an awareness of the need for the Andalusian people to adapt to the new language teaching programs (Salaberri Ramiro & Sánchez Pérez, 2011). The document also pinpointed language diversity as a source of richness and a valuable heritage belonging to all humankind. In 2004, the Consejería de Educación in Andalusia introduced the Andalusian Plurilingualism Promotion Plan (APPP) for the region based on the European language policies regarding the teaching and learning of languages in response to encouragement by The Council of Europe who advocated for the design of new language learning programs and curriculum. Since the introduction of the plan by the autonomous government in Andalusia, dramatic changes have taken place in the bilingual education programs there (Lorenzo, 2010), and a special emphasis has been called for to promote language diversity, intercultural values and democratic citizenship (Eurydice Report, 2006). The APPP gained a great deal of information from the first experimental bilingual sections set up in some schools by the Andalusian government in 1998, when, following the content-based approach, French and German were used to partly teach other subjects (Lorenzo 2010). Overall, the major goal identified for the APPP was to design a new language policy for Andalusia, based on the principles of the European Council (Junta de Andalucía Consejería de Educación, 2005).

An amplification of the plan was released in January 2017, as discussed earlier in Chapter 1, Section 1.2. The Horizon 2020 strategically outlines the continuation of the Andalusian language policy and sets goals regarding the creation of even more bilingual centers, the addition of programs targeting a wider variety of second

languages, and the development of professional development opportunities for teachers. As with the initial 2004 plan, the Horizon 2020 plan places an emphasis on promoting intercultural understanding and providing instruction that will lead to greater student proficiency levels in a second language.

Regarding the implementation of CLIL programs in Andalusia, in 2010 Fortanet-Gomez identified two immediate challenges: (1) a lack of language proficiency of the teachers and (2) the absence of CLIL-related training for teachers. She then referred to the CLIL courses currently being taught at the higher education level as needing improvement. Salaberri Ramiro (2010) outlined initiatives being enacted throughout Andalusia to address these two challenges. She related that the Autonomous Community of Andalusia adopted the recommendations made at the Conference of the Modern Language Project in 1997 regarding foreign language instruction in the education system. Following a model from the United Kingdom and Norway, 32 teacher training centers were created in Andalusia as permanent training institutions. Each of the training centers in Andalusia has an expert in bilingual education appointed who is in charge of designing an annual teacher training plan for the center. Between 1989 and 1993, these centers offered a variety of different types of teacher training, including (1) courses to develop scientific, technological, cultural and/or pedagogic knowledge; (2) seminars related to the study of a variety of educational issues; and (3) group work to design teaching materials. At a meeting of the Council of Europe held in Barcelona in 2002, improving the quality of teaching training programs was declared a priority. Andalusia is said to have taken this charge seriously and initiated sessions through their training centers, some employing the use of distance learning, aimed at improving the teaching practice of those participating in the APPP.

The newly released Horizon 2020 plan reflects Andalusia's ongoing attention to expanding teacher training opportunities. Salaberri Ramiro (in 2010) described the involvement of the teacher training centers as developing teacher training courses in early language learning, teacher training courses to improve teaching practice, especially related to communicative language teaching, and a training program for teachers in the "non-linguistic" areas of bilingual programs. They also provided for in-school training programs, work groups, intensive foreign language courses for all teachers, but especially targeting those in bilingual schools. Training through distance learning also became an initiative. Actions not involving the training centers included awarding licenses for specific language training abroad, establishing a catalogue of good practices for language teaching; and creating a language skills profile for teachers of non-linguistic areas. Additionally, a series of annual regional meetings have taken place since 1997 to address teacher training issues in Andalusia. Their main goals have been to provide information and training, to promote effective teaching strategies, and to allow for an exchange of experiences. At a provincial level, the training centers have designed additional teacher training meetings aimed at providing resources and strategies for teachers in bilingual programs in collaboration with their institutes of higher education. Each year's meeting focused on different issues such as intercultural communication, attention to immigrant students, online training, methodologies, the development of teacher-made materials, the development of an integrated language curriculum, and training trainers.

Another group in Andalusia charged with providing training for teachers is the Official Language Schools. These schools have been charged with providing language courses for teachers of infant and primary education and for those of non-linguistic

subjects in bilingual centers. These courses are intended to help teachers reach fluency in the language they are teaching, especially in oral skills. In a further attempt to assist teachers in reaching fluency in the languages they are teaching, the Regional Ministry of Education has engaged in collaborations with universities and teacher training centers in a variety of European countries. These agreements facilitated the participation of over 600 teachers in immersion courses in those countries between 2009 and 2010. Participants in the program included teachers with language proficiency levels from the very low (CEFR A1/A2), intermediate (B1/B2) to higher levels (C1/C2).

The newly released Horizon 2020 plan gives specific direction regarding the continuation of professional development efforts for teachers in CLIL programs in Andalusia. It provides for continued increases in the numbers of teachers in CLIL programs as well as an increase in their levels of target-language proficiency through their participation in courses offered at the Official Language Schools, Erasmus programs, and online formats, including blended formats (a combination of online and face-to-face trainings). To assist teachers with pedagogical matters, the plan will support the creation of a connected web among bilingual centers, promoting the exchange and sharing of ideas and even job shadowing to model and observe best practices in action. An online resource center where teachers can deposit lesson ideas for others to review, use, and expand is also planned. Teachers will be encouraged and supported in their development of what the plan considers to be innovative language teaching techniques, such as cooperative learning and project-based learning. CLIL programs are encouraged to foster teamwork among the language teachers and their counterparts instructing classes considered to be non-linguistic as

well as with researchers and developers. Collaborating in research projects has been given priority attention in the Horizon 2020 plan.

2.4 Research Supporting the Effectiveness of Bilingual Education Programs

Research on bilingual education programs has been conducted for decades and has spanned the world, resulting in the conclusion that this model of instruction as a way of teaching is proven to yield positive results in a number of areas relating to language learning and academic achievement when programs are created and implemented based on sound program attributes and when teachers have been appropriately trained in second language teaching pedagogies. Researchers are urged, however, to ensure the virility of their results by creating studies based on empirical methods since concerns have been expressed regarding CLIL research in particular.

2.4.1 CLIL Studies Called into Question

Regardless of the body of CLIL research that existed prior to 2010 which primarily painted a positive picture of program outcomes, a number of researchers have expressed concern regarding some of those studies, specifically concerning their research design and reported results. In part as a response to the rapid rate of program implementation, particularly in regions of Spain, as discussed in Section 1.2.1, some researchers have identified a lack of continuity in program design and implementation as an issue causing them to question the appropriateness of some of those studies. Cenoz, Genesee, and Gorter, (2014), for example, point to a number of empirical gaps affecting results shared by some researchers. They cite as evidence the fact that many studies compared CLIL and non-CLIL groups of students and reported greater gains in language knowledge for students participating in the CLIL

programs. They point to a lack of causal effects in these studies, suggesting that they do not prove that the participating in CLIL classes is a critical variable in the research and that non-CLIL students might have performed as well in the second language as the CLIL students did had they received the same number of hours of instruction in that language, whether it be in a CLIL environment or not. These authors also put forth the notion that because CLIL programs lack clarity and continuity in their conception, the resulting differences in how CLIL programs are designed prevent direct comparisons, given that there is wide variety in the subjects offered to students in English, in the number of hours student work in English per day and week, and in the grade levels where students begin studying in English. These concerns were echoed by Pérez-Cañado (2016).

An additional impediment to research design was identified by Juan-Garau and Salazar-Noguera (2015) as being due to the fact that in the six official bilingual communities of Spain (Balearic Islands, Catalonia, Galicia, Navarre, Valencian Community, the Basque Country), a student who attends bilingual programs may be in class alongside another student who has a different home language, since students are usually not separated into programs based on their mother tongue. These situations greatly complicate the creation of sound research studies since the resulting data must account for a larger number of variables.

In addition, Blasco (2011) points out that in many studies from Spain, particularly when comparisons are made between CLIL student performance and the performance of students receiving the target language through foreign language instruction only, the hours of instruction in the target language are inconstant. Blasco calls attention, for example, to the fact that cases were reported where CLIL learners received 105 hours of extra English exposure that the non-CLIL groups did

not receive. She posits that this may have influenced the results obtained, as the gains CLIL learners show in the measures used to analyze their oral production skills in English could be due to the greater amount of exposure received rather than to the type of instruction. In recent years, however, Spanish researchers have been trying to mitigate the concern cited in the paragraph above by controlling the number of hours of English instruction students in the study groups receive. For example, Vallbona (in Korosidou & Griva, 2014), compared overall language proficiency (listening, reading and writing) of 5th and 6th grade students in primary education after having been exposed to 35 hours of CLIL (in addition to three hours of EFL lessons a week) with students of the same grades that had only been in regular EFL lessons. The results of her study showed that CLIL learners in grade 5 out-performed their peers in the non-CLIL group in fluency and lexical diversity whereas 6th grade students showed statistically significant results in lexical diversity. Several variables were taken into account for the statistical data analysis of this project, including the number of hours of school exposure to English up to 5th grade and the participants' extracurricular exposure to the target language.

San Isidro (2010) conducted research on the impact of CLIL programs in Spain in the region of Galicia. This work reports significant differences in the areas of listening, speaking, reading, and writing in the second language with the CLIL students outperforming the non-CLIL groups. Nevertheless, Bruton (2011) has since called these results into question, citing that the proficiency levels of the non-CLIL groups were lower than the comparison group of CLIL students at the outset of the study. Therefore it was to be expected that the final results that the language abilities of the CLIL group would be higher than the non-CLIL group by the end of the study. Bruton also pointed out that the instruments used to assess initial and final language

abilities were different, also calling into question the conclusions San Isidro drew about the effects of the Spanish CLIL model.

Additional favorable results were reported in a study by Lorenzo, Casal, and Moore (2010) who claimed that in programs studied in the region of Andalusia, Spain, where the languages of French, German, and English were introduced, CLIL learners performed better than non-CLIL students in listening, speaking, reading and writing skills in the second language after only one and a half years of CLIL education. Nevertheless, Bruton (2011) has indicated a need to consider these reported results closely, since a number of factors may have influenced the positive results. He draws attention, for example, to the fact that no data was included in the study to measure initial language proficiency levels of the two groups studied, and he considers it an absolute that the non-CLIL group began the study period with lower levels of abilities, making the finding logical that the two groups would end with the CLIL group having higher levels of language proficiencies.

For similar reasons, Bruton also brought attention to results by Navés and Victori (2010) who compared the linguistic competence of CLIL and non-CLIL students in primary and secondary education from different Catalan schools showing that CLIL learners performed better in most of the tests (listening test, cloze test, grammar test, dictation test and a writing composition) than non-CLIL learners. Although their study concluded that in many of the aspects analyzed, learners in grades 7 and 9 who had received CLIL instruction were two years ahead of learners who had only received English lessons, Bruton suggests that these researchers did not adequately investigate initial language proficiency levels of study participants before drawing final conclusions of CLIL effectiveness because one group had higher levels of proficiency than the other.

Yet another Spanish study Bruton calls into question was conducted in the Basque Country by Lasagabaster (2008), who compared the linguistic competence of secondary CLIL students to students in traditional English as a foreign language courses. Lasagabaster found that students in secondary education CLIL programs performed at statistically significant higher levels in speaking, writing, grammar, listening and overall English competence. Lasagabaster states that students voluntarily elected to join the CLIL programs studied, but Bruton points out that since 65% of the parents of participating students were college educated, there is a high likelihood that those students were more motivated learners than non-CLIL program students. In addition, Bruton suggests that this same group of students may have also been attending private English classes outside of the school day, although he presents no data to support that suggestion.

Bruton extended his concerns about not comparing test group levels of performance at the beginning of a CLIL study to research conducted outside of Spain where a study was conducted in the Netherlands by Admiraal, Westhoff, and de Bot (2006). There, the results of CLIL on the attainment levels of English as a second language in secondary education reported that students in CLIL classes performed statistically better in reading comprehension and in oral proficiency than students in regular education. Bruton's criticisms of some CLIL research studies highlight the need to ensure that investigations conducted adhere to the highest research standards in order to assure reliability of their results and truly guide program implementation.

2.4.2 Research on CLIL and Other Bilingual Education Models Around the World

Despite concerns expressed about some CLIL investigations, additional research on CLIL and other bilingual program models produced around the world have historically produced sound results and reported this approach to learning as effective. In Austria, research conducted in 2007 by Hüttnner and Rieder-Bünemann (Dalton-Puffer & Smit, 2010) showed that students participating in a CLIL program for seven years obtained higher scores in areas such as verb forms and anchor tense consistency than non-CLIL learners. The CLIL students also performed higher when asked to give reference to plot elements or descriptions of conceptually complex story elements. In Hungarian secondary schools, Várkuti (2010) found that CLIL students performed significantly better in communicative and academic language skill tasks than non-CLIL learners. Várkuti's study also reported that CLIL learners possessed a larger active and passive lexicon. In another case conducted in Austrian secondary schools, it was reported that CLIL learners outperformed non-CLIL students in second language accuracy and lexical diversity and in aspects of fluency, such as sentence length and the ability to produce continuous speech (Laurisdan, 2007).

Beyond Europe and CLIL programs, a large body of research has also investigated the efficacy of additional bilingual program models conducted in other parts of the world. In Central America, after three years of bilingual schooling, Maya-speaking children achieved higher scores in Spanish, their second language, than those obtained by their Maya-speaking peers who had been exposed only to the second language in the traditional all-Spanish school (Dutcher, 1995). In Nigeria, Africa, students in grades 1 through 6 learning in their first language (Yoruba) and English outperformed their peers, who had been learning only in English, on all tests of achievement in English (Dutcher 1995).

Research throughout the United States also supports the effectiveness of bilingual education programs. In a bilingual program in the state of Washington, McConnell and Kendall's 1987 study found that by Grade 5, immigrant students were scoring at or above the 50th percentile in English on norm referenced tests of mathematics, vocabulary, and English reading. Medina and Valenzuela de la Garza reported in a 1987 study that at the end of the third grade in four bilingual programs in state of Arizona, that Mexican American students were scoring above national norms in all subject-area tests (Collier & Thomas, 1997). In further research in the United States in a French-English bilingual program in the state of Minnesota, Troike (1978) reported that students were at or above national norms in all content areas by the end of 5 years of schooling in both languages. In a study of Navajo students participating in bilingual programs in the state of Arizona, Vorih and Rosier (1978) found that those in a bilingual program reached national norms by sixth grade. These results were compared to students in the same school who were schooled only in their second language (English) and performed substantially below the experimental group. In a bilingual program in the state of Connecticut, Plante studied the achievement of Hispanic students from low income backgrounds in 1976 (Plante in Cheung & Slavin, 2012). These students were at or above national norms in English and mathematics by the end of Grade 3, whereas a comparison group receiving instruction only in English performed significantly less well than the students in the bilingual program (Collier & Thomas, 1997).

The Australian experience with bilingual education has included programs in Chinese, German, French, and numerous indigenous languages. Eckstein (1986) found that in partial immersion programs in primary schools in Mellbourne, native-English-speaking children who studied science in German were able to successfully

transfer concepts learned through their second language to their first and demonstrated increased cognitive flexibility and more divergent thinking than students who had learned the same content only through their first language. Students learning German as their new language spent time in that language only during the content class. In a longitudinal study in that country, conducted by Gale, McClay, Christie, and Harris in 1981, it was reported that Aboriginal students taught in their native language and in English for all grades performed significantly better on 10 different oral and written measures of English after 7 years of schooling than did aboriginal students schooled only in English (Yucesan Durgunoglu & Goldenberg, 2011).

Notwithstanding the positive reports of second language attainment in the studies conducted throughout the world and cited above, numerous studies have also shown that students in bilingual programs often gain more proficiency in the receptive skills (listening, reading) than they do in the productive skills (writing and speaking) (Bialystok & Hakuta, 1995). Swain (1988: 69) pointed out that “not all content teaching is necessarily good language teaching”. She elaborates by saying that in an attempt to make themselves more comprehensible to students, teachers in a second-language-through-content setting may not model a wide variety of linguistic functions. This lack of higher-function, higher-complexity language examples may explain the low linguistic gains some learners in content-based language settings show.

Muñoz (in DeKeyser 2007, pp. 229) suggests incorporating some focus on form (referring to “how focal attentional resources are allocated”) into CLIL because many pieces of research from Canadian immersion programs indicate that students who have been in the second-language learning environment for long periods of time

show problems in producing accurate language (Blasco, 2011; Genesse, 1994; Lyster, 2008). Blasco proposes that one of the possible explanations for this may be the lack of focus on form within immersion programs. As a consequence, many researchers in the field of second language acquisition defend the use of an approach which integrates both focus on form and meaning in order to obtain higher acquisition levels of the target language in the classroom (Lyster, 2008; Muñoz, 2007; Pérez-Vidal, et al., 2008). Research conducted by Grim (2008), for instance, shows positive effects on the learning of grammar, vocabulary and culture when a planned focus on form is contained in content-based classrooms taught in a second language. Doughty and Williams (p. 18, 1998) suggest that an approach based on form may be needed to move from a “communicatively effective language toward target-like second language ability”.

2.5 Expectations for Bilingual Program Outcomes: Research Findings

While research regarding the overall effectiveness of bilingual programs has been conducted worldwide, as outlined in the previous section, studies focusing on outcomes for specific components of bilingual education, including studies concerning levels of second language achievement, first language development, and content attainment, have also been produced. While the education field anticipates the publication of research aiming to measure these areas for the plentiful CLIL programs recently being implemented throughout Spain, in the meantime, they can look to the results of experts such as August and Hakuta (1997) who provide a comprehensive review of optimal learning conditions that serve second language learning student populations and that lead to high academic performance. Their review of 33 studies of bilingual education programs indicates that there is a set of generally agreed upon practices that foster academic success and that those practices

can exist across program types. August and Hakuta (1997; 171) found that the following school and classroom characteristics were likely to lead to academic success:

“A supportive school-wide climate, school leadership, a customized learning environment, articulation and coordination within and between schools, use of native language and culture in instruction, a balanced curriculum that includes both basic and higher-order skills, explicit skill instruction, opportunities for student-direct instruction, use of instructional strategies that enhance understanding, opportunities for practice, systematic student assessment, staff development and home and parent involvement.”

These findings have been confirmed in other studies, such as those of Corallo and McDonald (2002) and Marzano, Marzano and Pickering (2003). Thus, it can be concluded that students learning a second language benefit greatly from cognitively challenging and student-centered instruction that employs students’ cultural and linguistic resources (Banks & Banks, 2010). In addition, as discussed in Section 1.2.1, Pérez-Cañado (2016) has worked to create a protocol outlining teacher behaviors in effective CLIL programs in Spain which is being suggested as a beginning of an identification process for best practice for CLIL programs there.

From the results of their longitudinal research, Collier and Thomas (2009b) describe six major characteristics of effective bilingual education programs. (1) They are long term; student participation in six or more continual years of bilingual education is necessary to bring their second language to grade-level proficiency. (2) Instruction in academic work through the first language is presented. When learners are allowed to develop cognitively in their first language, longitudinally they become more successful in their second language. (3) Academic work *and* targeted language development instruction through the second language is provided. One of these areas alone is not enough to develop grade-level proficiency in the second language. Both are necessary. (4) Sociocultural support is present. Linguistic diversity is highly

valued and supported within the school and community environments. (5) Interactive, cognitively challenging, and discovery learning is present. Learning must include critical thinking and be interactive, with hands-on problem solving. Applications and development of technology, multiple intelligences, learning strategies and global perspectives must be integrated into the curriculum. (6) Integration into the mainstream is achieved by well-trained staff. Program models which integrate students into grade-level, mainstream classes need to be carefully designed, delivered, and led by staff who possess and strategically employ appropriate skills and strategies to promote language development and who understand the second language learning process.

Important studies of effective bilingual education programs investigate the level of acquisition of both the first and second languages, the rate of acquisition of the second language, and the development of subject content knowledge attained in both first and second languages. These four areas of research are detailed in the following subsections.

2.5.1 Second Language Acquisition in Bilingual Programs: Expectations and Research Findings

Second language and literacy skills develop interdependently although their rate of acquisition varies in different settings (Araujo, 2002; Tabors; 2008). Many individual and environmental factors impact second language acquisition including age, exposure time to the target language, and educational backgrounds (Collier, 1987; Lightbrown & Spada, 2006). In addition, program type, curriculum design, and the number and quality of opportunities for learning the new language in and out of school shape a student's acquisition of the second language.

The broad base of research in second language acquisition shows that in key aspects of language learning such as vocabulary and grammar attainment, length of utterance, and fluency, students develop in similar ways, or by following similar routes to proficiency, no matter what their age is, whether or not they are learning the second language in a classroom in a country where the language is spoken, no matter what their first language is, and no matter what they were actually taught (Snow, Burns, & Griffin, 1998; Tabors, 2008; Tabors & Snow, 1994). These learners follow predictable stages, and acquire (use fluently in a meaningful context) predictable language structures in a predictable order, sometimes in spite of direct, grammatically based instruction. These stages generally proceed along a continuum of (1) silent processing (The student listens but does not speak. Demonstrations of comprehension are made by performing tasks in response to requests or commands. For example, the student hears “Put your book on the table,” but does not respond verbally. Comprehension is demonstrated physically because the student puts the book on the table, as requested.) (2) one- and two-word phrases, usually action verbs and concrete nouns (3) simple, highly functional statements and questions using simple tenses, often with variable syntax (4) simple sentences using more complex tenses (continuous, perfect) and more standard syntax (5) simple, mostly grammatical sentences with a greater complexity of embedded phrases and clauses for the purpose of description, but the student has command of less vocabulary than native-speaking peers (6) a variety of sentence and question structures including compound and complex (7) elaborated statements and questions.

The route followed to second language attainment is fundamentally similar to that of the route followed by native speakers of English (Bialystok & Hakuta, 1995). Whereas these groups of learners may follow different paths (learning two languages

simultaneously; adding a second language before or after age 2 or in adulthood) both groups gain two languages, although acquiring the second language may require conscious effort on the part of the learner.

One line of research into the variability of second language acquisition in bilingual education programs has focused on the role of learner socio-linguistic variables (Berry, 1998; Dörnyei, 2001; Sawyer & Ranta, 2001; Skehan, 1989, 1998). This research has shown that these variables play an important role in the rate of second language acquisition. For example, some of these studies show that students in these programs may be different from non-bilingual-program students because of the selection process. Students may be selected by committees on the basis of factors such as scholastic aptitude and motivation. They also may self-select or be put in the program by their parents, indicating a greater amount of parent support for education which may result in higher student motivation levels. Especially within schools that offer both a bilingual and a regular program, selection criteria may account for a large part of the differences in development of language proficiency between groups (Dörnyei, 2001).

Cross-cultural studies in cognition point out the existence of different ways of thinking and learning which are generally overlooked by Western-style education. Research points out that cultural differences might also determine the way in which a new language is learned, particularly when the process of socialization is not as verbally marked or influenced as the one characteristic of Western-style middle class families (Lopez, 2000). For example, in some rural and indigenous South American communities, the role of silence may be fundamental in second language learning since the traditional mode of learning is one where careful observation and adult and peer imitation play an important role. Bialystok & Hakuta (1994) note that although

cultures may vary in their practices of language socialization of infants and toddlers, the outcome of first-language acquisition remains universal. The two researchers further point out that this cultural identification and absolute fluency, however, is not a guaranteed outcome in second-language learning. These ideas are in line with the work of Vygotsky (1962) and Bruner (1996) who reported that the relationship between language and thought is basically related to environments and cultures. They point out that language is not only something that the learner thinks about, but it is also part of the learner's thinking process itself.

2.5.2 Expectations for Rate of Second Language Acquisition in Bilingual Programs: Research Findings

Empirical studies focusing on the rate at which students attain their second language in CLIL programs are still to be presented. Meanwhile, other studies indicate that while the rate of English as a first language acquisition is highly predictable and essentially similar among speakers (Tabor & Snow, 1994; Tabor, 2008), the rate of English as a second language acquisition is varied and difficult to predict due to the high number of variables that can be present. These may include quality of the program model, time spent in first and second language environments, age of the learner and cognitive ability of the learner (Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Collier, 1989; Cummins, 1999).

A review of 71 peer-reviewed journal articles studying pre-Kindergarten through grade 12 second language learners who were participating in bilingual programs found that those students required 3 to 7 years to reach proficiency in that second language, with younger learners typically taking longer but more likely to achieve close-to-native results (August & Hakuta, 1997). This finding connects to work done by Collier (2009), who analyzed the length of time required for 1,548

immigrants to the U.S. to become proficient in English as a second language skills for all content areas when schooled only in English. Students who had received instruction, then were tested in the fourth, sixth, eighth, and eleventh grades on reading, language arts, social studies, science, and mathematics using standardized tests produced by Science Research Associates (SRA). The study included a range of students beginning with those who began exposure to English, their second language, at age 5 and continuing through those beginning at age 15. Length of residence ranged from two to five years. Over 75 first languages were represented in the sample. Only students who were at grade level in their home language when they entered the U.S. and who had no previous exposure to English were included in the study. Social class background of the sample was middle to upper class in the home country with relatively lower income in the U.S. but with strong middle-class aspirations. Collier found that students who were 8 to 12 years old on arrival were the first to reach norms for native speakers, which is considered to be the 50th percentile or normal curve equivalent (NCE) on all content-area tests, doing so within 4 to 5 years. Students who were 5 to 7 years old on arrival fell significantly behind the older children in academic achievement, requiring 5 to 8 years (4500 to 7200 hours) to reach the 50th percentile or NCE, assuming a continued rate of gain similar to the one at the time of the study. Arrivals at ages 12 to 15 experienced the greatest difficulty reaching age and grade norms, requiring 6 to 8 years at their same rate of gain.

Very little longitudinal research has been conducted in dual language or CLIL environments that provides evidence indicating a rate for second language acquisition in those programs ; however, Collier's analysis of existing research found that consistent, uninterrupted cognitive academic development in all subjects

throughout students' schooling is more important than the number of hours of second language instruction for successful academic achievement in a second language, which is an important finding CLIL program creators might wish to consider.

In three studies (Howard, Christian, & Genesee, 2003; Lindholm-Leary, 2005; Thomas & Collier, 2002) involving two-way, or dual-language immersion programs, researchers studied the oral second language development of both native-Spanish speakers learning English as a new language and native-English speaking children learning Spanish. In a review of studies Genesee (in Genesee, Lindholm-Leary, Saunders & Christian, 2006) reported that noteworthy trends emerge from comparing the data of these three studies. On oral proficiency assessments using a Likert scale of 1 to 5 (1 being no proficiency at all; 5 being native or native-like proficiency) students in the bilingual programs – both the English as a second language learner *and* the Spanish as a second language learners – took a minimum of 3 years of program participation to achieve a level of 4 or higher in their new language. The reviewers of the studies continued their comparison of studies, and found that even students in programs where they were assumed to be receiving the maximum level of input in the second language (immersion programs) did not achieve a level of 4 or higher until after they had participated in the program for a minimum of 3 years. The researchers furthermore noted in their comparison of studies that none of the students in the programs studied began to approach a level of 5 (native-like) until at least 5 years of program participation. The trends observed held regardless of whether students participated in bilingual or immersion programs. The reviewers also reported that the students in elementary bilingual programs tended to make more rapid progress from lower elementary to middle-elementary

ages (grades 1 – 3) and that slower progress was achieved as they moved beyond grade 3, where literacy expectations increased.

Genesee et al., (2006) concluded their review and comparison of second language acquisition studies in bilingual programs by noting that despite varied measures, samples, program models, and even languages taught, rates of second language oral proficiency progress appeared to be strikingly consistent. Hakuta, Butler, and Witt (2000) summed up the body of research regarding the rate of second language acquisition in bilingual programs by noting that oral proficiency can develop to a basic sentence level in as little as 1 year, but takes 3 to 5 years to develop to native-like levels, while academic English proficiency attainment can take 4 to 7 years.

2.5.3 Expectations for First Language Acquisition in Bilingual Programs: Research Findings

In settings where bilingual education is offered as a program model to serve language minority students seeking to acquire the majority language of the community, in many cases children learning their second language by participating in bilingual education programs outperform their peers who learn their second language through programs where they receive all their content instruction only in the target language. Students in bilingual programs also show an improved linguistic performance in their first language, something their peers have not been given the chance to develop (Cummins, 1981).

Research suggests that first language education and development lay the foundations for second language learning, particularly in areas of linguistic development such as phonological abilities and conversational competencies. Children in bilingual education programs tend to speak more spontaneously and

fluidly than children in control schools educated through the medium of the second language only (Cummins, 1981; Lopez, 2000). For students in bilingual programs, second language pronunciation of new and conflicting sounds is more accurate and shows a decreased level of interference compared to that found in programs providing instruction only in the target language when those students attempt to carry out a conversation in the new language (Snow, 2013; Lopez, 2000).

As a result of his research regarding the development of the first language in bilingual settings, Cummins (1981, 1994) suggests an “interdependence hypothesis” which postulates the existence of a common underlying language proficiency for the two languages spoken by a bilingual individual. Cummins theorizes that there is a common underlying linguistic knowledge making it possible to transfer competencies developed in one language to the other language. In several studies he conducted, Cummins found that students who were provided with a substantial and consistent primary language development program learned mathematics, English as a second language, and English reading skills as fast as or faster than the norming population used in the study. He suggests that children in bilingual education settings take advantage of their previous linguistic experience when learning a second language. Those first-language experiences then, are crucial to second language learning. The interdependency hypothesis has been confirmed in various research studies carried out both in the United States (Snow, 1990) and Canada (Genesee, 1994) as well as in Latin America in pilot programs with indigenous minority populations in various countries. In Puno, Peru, for example, after four years of bilingual instruction, literacy competencies in bilingual children were evaluated, and a significant correlation was found between reading and writing skills in Aymara or Quechua, the students’ first language, and reading and writing in

Spanish, their second language (Rockwell, Mercado, Muñoz, Pellicer & Quiroz, 1989).

Also in Puno, Peru, studies conducted in two rural communities, showed that after the first two years of the introduction of a bilingual Quechua-Spanish curriculum, the children attending bilingual education developed a grammatically sound and more complete and complex use of their mother tongue. In comparison, their peers in a neighboring community, where traditional Spanish immersion education was used, children of the same grade and of comparable ages showed a much simpler use of their mother tongue and a higher reliance on Spanish loan words. These children could not read or write in Quechua as their bilingually educated peers could do, nor did they participate in class as actively and frequently as their peers in the bilingual schools did (Hornberger, 1988).

Similar evidence was found earlier in Mexico, when children who had been taught to read and write in their mother tongue were later tested both in the indigenous language and in Spanish (Modiano, 1973). In a 1996 study in New Zealand, research conducted in indigenous schools found that children who had learned to read in their first language (Maori) achieved higher scores in reading comprehension in the second language than their peers attending schools where only English was taught (Collier & Thomas, 2004).

Transfer not only seems to operate from the mother tongue to the second language but also from the second to the first language in writing situations as well. In a study conducted in Peru with Quechua speaking children who had learned to read and write only in Spanish, children were given a writing test in Quechua, the language they spoke fluently as their most preferred language in everyday situations. The results showed these children were able to write narrative texts in their mother

tongue, although they had never done it before. To accomplish this, they used a tool they had already acquired: the Spanish alphabet. Where a given Spanish symbol was not suitable to represent the indigenous language phonemes, the children would find systematic alternatives either establishing differences between letters of the Spanish alphabet or through letter duplication and forming a digraph; thus showing their metalinguistic awareness and how it helped them solve the task (Mendoza, 1988, in Lopez, 2000). Similarly, there is evidence from around the world that reading ability transfers from Chinese to English (Hoover, 1982), from Vietnamese to English (Cummins, et al., 1984), from Japanese to English and from Turkish to Dutch (Verhoeven, 1991).

In contrast to the studies cited above which were conducted in educational environments seeking to have students add the language of the surrounding community (a second language), the aim of many CLIL programs, particularly in Andalusia is to have students add a foreign language, usually English. Research conducted in Finland (Merisuo-Storm, 2003), where CLIL was the program model, showed that even when the different starting levels of the two groups were taken into account (level of school readiness and literacy skills), students' literacy skills developed at least equally as well in bilingual education classrooms as they did in classrooms where the students studied in Finnish only. Studying through one language or two languages did not appear to have any significant effect on the development of literacy skills regardless of whether the student's starting level at the beginning of first grade had been poor or excellent. It was noted that students in bilingual classes were especially advanced in reading comprehension skills. The results of the study illustrated a close connection between the development of literacy and second language acquisition; pupils who achieved a poor level of literacy

were less successful in their English studies than fluent readers and writers were. Nevertheless, even pupils whose literacy success was only modest had succeeded in acquiring a considerable amount of English.

Research indicates that children need at least 12 years to develop their own native language (McLaughlin, 1984). Such findings coincide with one of the last stages of Piaget's cognitive development in which children acquire higher levels of linguistic abstraction. During adolescence, children develop a kind of rational or propositional language which is the object of systematic instruction in school (Piaget in Gruber & Voneche, 1977). Dutcher (1995: 2) supports this:

...from ages 6 through 12, children accelerate their learning of vocabulary, tripling their word learning rate... They learn about complex topics, how to express relations between ideas, and how to use language in a metaphorical way. Much of their development is assisted by the acquisition of the complex skills of reading and writing, and their acquisition of information from language arts, mathematics, science, and social studies. Much of the school language is abstract or decontextualized, without the concrete references which supported the language development in the earlier years.

It comes as no surprise then that all over the world children of the same linguistic groups devote an important part of their time at school to language arts and to the development of their native language, both orally and in writing, increasing the emphasis on reading, writing and text production as the years progress. While designing and implementing CLIL programs throughout Spain, program creators had taken for granted students' development of their first language (Lorenzo, 2010). Stakeholders in the process of creating programs (administrators, teachers, parents) considered their students to be already competent in their own native language, even in academic settings. This assumption was called into serious question, however, with the publication of a Programme for International Student Assessment (PISA) report in 2012 which gave the results of a triannual evaluation in reading, math, and science

for 15-year-olds in 60 countries. The report provided data showing that in Spain, levels of native language proficiency, as measured by reading and writing assessments, were below average, ranking 27 out of the 65 European countries included. Scores achieved by students in 2012 remained virtually unchanged from their 2000 scores. This information contributed to the creation of a number of initiatives to begin throughout Andalusian CLIL environments. As a first step, a committee of educators produced a CLIL curriculum document whose intent was to radically affect first language instruction throughout the region. The underlying premise was based on research, such as that presented earlier in this section, showing that bilingual education yields positive effects on the development of the first language. Efforts continue to support teachers in implementing the new curriculum, for the dual benefit of students' first *and* second languages (Lorenzo, 2010).

A multilingual perspective of language learning implies that learners process language on two levels: one linguistic and one conceptual. On the conceptual level, the language user pulls together cognitive pieces to construct knowledge, comprehension, and understanding. The linguistic system creates a verbal manifestation of that comprehension. Researchers point out that bilingual people must have a distinct knowledge of their first language that monolingual speakers do not have as a result of their different experiences interfacing with a second language and the cultural concepts it carries with it. Being educated in two languages has effects on the development of the first, and researchers continue to investigate the question as to *how* these effects occur and what precisely they may be. Many of the results identified by researchers have are positive in nature. Future research into the CLIL programs in Spain may prove important as these programs move forward,

specifically in the historically bilingual communities where languages such as Basque, Galician, and Catalan are spoken as a home language, since the positive effects of bilingual education on first language skills could prove to be a driving force in the further creation of educationally sound publications (textbooks, ancillary materials) in those languages to support not only the development of the home language, but also the second one.

2.5.4 Expectations for the Development of Subject Content Knowledge in Both the First and Second Languages in Bilingual Programs: Research Findings

Much of the research conducted in the past concerning bilingual education programs has centered on the demands learners face when developing two linguistic systems. After an extensive review of the body of research into bilingual education programs worldwide reporting results in first and second language attainment and cognitive development, Collier (2009) generalized their findings by saying that when students are schooled in two languages, with solid cognitive academic instruction provided in both the first and second languages, in classrooms with both language minority and language majority students, both groups generally take from 4 to 7 years to reach national norms on standardized tests in reading, social studies, and science (on measures of thinking skills), whereas their performance may reach national norms in as little as 2 years in first- and second-language tests in mathematics and language arts (the latter testing spelling, punctuation, and simple grammar points). Social class background does not appear to make a significant difference in academic achievement in a dual-language program. In addition, the synthesis of research by Collier stated that immigrants arriving at ages 8 to 12, with at least 2 years of first language schooling in their home country, who are schooled exclusively in the second language after arrival in the host country, take 5 to 7 years

to reach the level of average performance by native speakers on second language standardized tests in reading, social studies, and science. Young arrivals with no schooling in their first language in either their home country or the host country may take even longer to reach the level of average performance by native speakers on second-language standardized tests: possibly as long as 7 to 10 years in reading, social studies, and science, or indeed, never.

Since the focus has been given to language achievement, very little longitudinal research has been conducted in dual language or CLIL environments concerning levels of subject content attainment; however, Collier's analysis of existing research found that consistent, uninterrupted cognitive academic development in all subjects throughout students' schooling is more important than the number of hours of second language instruction for successful academic achievement in a second language. In addition, the body of research has shifted emphasis from investigating social language development to emphasizing more academic English, and the research on academic achievement for second language learners in bilingual programs strongly supports this shift (Cook, Boals & Lundberg, 2011). CLIL professionals are also now recognizing the important need to include investigations seeking to measure subject content knowledge attainment in their call for increased research initiatives (Ruíz de Zarobe & Lasagabaster, 2010). Nevertheless, previous studies centered on this area of learning do exist.

In a Guatemalan Bilingual Education Project in 1983 which used a sample of 40 experimental schools and 40 control schools, after three years of schooling in their native indigenous language, Maya, and Spanish, children in the experimental schools with a bilingual curriculum obtained better grades in mathematics, social sciences and natural sciences than their peers who studied only in Spanish, the

native language (Stewart, 1983). Additionally, in a longitudinal study conducted in Bolivia between 1990 and 1995 with a sample of indigenous-speaking schools located in regions where Aymara, Guarani, and Quechua were spoken, after four years of bilingual education, students in the experimental schools outperformed their peers who had only education in Spanish in mathematical problem solving and in social sciences and natural sciences tasks (Lopez, 2000). These studies attributed the increases in student achievement to their participation in bilingual programs, citing the first language support they received and their additional opportunities to process content matter in their home language as well as contributing factors to their improvements.

Additionally, a research study conducted between 2004 and 2007 in the Basque Country of Spain reported that learning content through a second language presented no impediments to content learning (Ruíz de Zarobe & Lasagabaster, 2010). In Europe, until 2010, the connections between cognitive development and content learning had been an almost unexplored area, since, as already mentioned, most studies there had focused on the learning process of the foreign language or the mother tongue (Walker & Tedick, 2000), and empirical studies are still awaited there. Amid this research void, two researchers emerged as leaders in this arena: Bergroth and Jäppinen.

Bergroth (2006) reported that in programs implementing a CLIL program model, mother tongue development and content knowledge attainment were not decreased in bilingual (or multilingual) education. Bergroth found that students in multilingual instruction (Swedish, English, and Finnish, the home language) performed as well as their monolingually educated peers on the mandatory Finnish matriculation exam taken after completing secondary school. Again in a CLIL

environment, Jäppinen (2005) compared the learning of mathematics and science in the first language (Finnish) and the progress in learning it in a second language (English, French, or Swedish) for 669 students aged 7 to 15 in 12 Finnish schools. The aim of the study was to examine the cognitive development and content learning processes of both groups and compare them. This research pointed to positive results for the students' learning of subject content. In most cases, the cognitive development of students in CLIL classrooms was similar to the development of students taught in their native language. In some cases, the cognitive development of the group taught in CLIL environments seemed to be even faster than in those taught in the home language. Jäppinen noted that students at the younger ages in CLIL classrooms particularly exhibited greater gains in cognition. She proposed that this could be due to the fact that the cognitive load and complexities of more abstract thinking are part of math and science in the upper grades, whereas the amount of time those subjects are taught in the first and second language remained the same as in the lower grades.

2.6 Bilingual Education Curriculum

Curriculum development is a systematic design of what is to be taught. It is the process of setting up and establishing specific guidelines of instruction for the curriculum. The primary focus of a curriculum is on what is to be taught and when, leaving to the teaching profession decisions as to how this should be done. Program curriculum includes aims, learning methods and subject matter sequencing. It is a sophisticated blend of educational strategies, course content, learning outcomes, educational experiences, assessment, and the educational environment. Curriculum not only covers the formal teaching/learning but also the other aspects of human development associated with educational life. The curriculum indicates what

objectives must be achieved by the student and what tasks must be fulfilled in order to achieve these (Glossary of Education Reform, 2014). The design of the bilingual education curriculum should reflect an understanding of the route learners follow to language proficiency, and therefore have clear expectations of what learners can achieve at given points on the developmental continuum (Myles, 2002). Additionally, the curriculum needs to ensure that learners develop both formulaic expressions in English as well as rule-based competencies (Ellis, 2008).

Bilingual education curriculum development requires a decision-making process, the ability to perceive student needs and community culture, and skills in the instructional aspect of curriculum development; it cannot simply be a decision to teach an existing curriculum in two languages, because such a decision lacks a strategic reflection of the route learners follow in developing language proficiency (Myles, 2002).

With these concepts in mind and in response to the need to provide a measure of guidance to CLIL programs being formed in Andalusia, in 2008 the regional governing body (Junta de Andalucía) produced a curriculum document for CLIL programs there: *Curriculum Integrado de Lenguas*. Its initial goal was to encourage rethinking of the means, methods, and materials used to teach both first and second languages. It was also intended to create a common understanding among educators of the theoretical underpinnings of CLIL, and it included user-friendly answers to what its authors perceived would be the most commonly asked questions regarding teaching academic subjects through a second language (Lorenzo, 2010). The document contained sample lessons in German, French, English, and Spanish in an attempt to create a shared vision of the solid linguistic base upon which the CLIL model stands. Although language education in this region of Spain continues to be an

evolving initiative, the CLIL curriculum document represented a desire and commitment on the part of leaders in the education field there. The Horizon 2020 Plan has announced initiatives to foster curriculum support by promoting teacher participation in eTwinning, a technology based platform connecting European schools to form partnerships, share lesson plan ideas, and develop pedagogical skills together. Other actions encourage curriculum development activities through social networks and job shadowing opportunities between centers to facilitate shared learning. There is also a plan to create a resource bank of teacher-made CLIL lessons and materials. In addition a number of universities around Spain, including in Andalusia, have begun new programs on the masters and doctoral levels in teaching and learning a second language. Three universities stand out for these enterprises: Pablo de Olavide in Seville, Alcalá de Henare, and the Autonomous University in Barcelona. New courses are being delivered addressing skills in a bilingual classroom context including general teaching and learning concepts, the development of reading and writing, the delivery of content subject matter, cultural and intercultural notions, and assessment techniques.

2.7 Required Components for Effective Bilingual Programs

Although the integration of language and content is not a new development in the field of English language teaching, what is striking is the extent and diversity of programs that have developed in over the years (Freeman & Freeman, 2006; Short & Fitzsimmons, 2007). In a broad description, bilingual education can mean any use of two languages in school – by teachers or students or both – for a variety of social and pedagogical purposes (National Association of Bilingual Education, 2014). Effective bilingual education programs seeking to add English as a second language include all of these characteristics: (1) English as a second language (ESL) or English as foreign

language instruction (EFL) instruction (2) sheltered subject matter teaching, and (3) instruction in the first language. Accordingly, they should also establish goals for (1) acquisition of English as a second-language (2) maintenance and further development of the first language (3) acquisition of subject knowledge (4) acquisition of intercultural skills (4) learning to learn; developing appropriate learning strategies, and (5) practical application of the acquired competencies and skills, namely subject content, language and intercultural skills (National Association of Bilingual Education, 2014).

The National Association of Bilingual Education (2014), Rennie (1993), and Roberts (1995) assure in their research findings that although there is wide variety in the way effective bilingual education programs are designed, it is important to note that all properly designed bilingual programs have elements of purposeful language development in both the first and second languages. Since no specific outline for program design has as of yet been provided for Andalusian CLIL programs, educators there working to create these programs should look to guidance from research groups such as those presented in this section as they move forward with CLIL implementation. The Horizon 2020 plan does not include initiatives to consolidate or promote a set of best practices for CLIL program design; therefore, it is up to practitioners to collaborate and find information themselves to ensure the implementation of programs with components that are shown as essential, based on recommendations validated by empirical research.

2.7.1 Language instruction components

In programs with English as the target language, whether English as a second language (ESL) or English as a foreign language (EFL), language instruction is a required component. Whereas instructional strategies for ESL and EFL teaching

have strong similarities, they also have important and significant differences in pedagogy and curricular objectives. ESL instruction is provided in a setting where English is the language of the community and classes are usually composed of mixed nationalities where students do not share a common native language nor culture. Students have a specific, practical need to use English outside the classroom in places where they live their daily lives, and they are continually exposed to English outside the classroom.

EFL instruction takes place in a setting where English is not the language of the community outside the classroom. Students in the class usually share the same language and culture. In some cases, the teacher may be the only native English speaker or fluent speaker of the language the students have exposure to, and the classroom setting is often the only source of English language input that the students have access to. Many times English is being learned as an academic subject with no real or immediate practical application. Students' exposure to the English-speaking culture may be limited and distorted by media. ESL pedagogy differs from EFL pedagogy in that in the ESL context, the teacher provides ample concrete, hands-on classroom activities targeting the daily needs of the students (school, work place, and community). Assignments can capitalize on settings outside the classroom as appropriate venues for language input. Instruction specifically integrates elements of the community culture and creates bridges to integration into the local English-speaking community. In an EFL setting, since the teacher is one of the primary sources of language input, the teacher needs to create abundant, motivating language practice opportunities, especially oral ones. The teacher needs to create real reasons for the students to learn English so that the language does not seem to them to be merely a set of arbitrary rules and theoretical manipulations of grammar structures.

2.7.2 Clear Expectations for Defining Language “Proficiency” as a Program Outcome

Clear expectations, which define terms such as “*fluency*” and “*proficiency*” and describe behaviors and stages, should be a requirement of a well-designed language program. An essential question when looking at expected program outcomes and rate of language acquisition is: “What does ‘*proficiency*’ mean?” (Collier, 1992; Collier & Thomas, 1997). “Language ability” encompasses multiple aspects: listening, speaking, reading, writing, comprehension, pragmatics, semantics, phonology, morphology, and syntax, for example. The points of comparison among the 71 peer-reviewed journal articles, performed by August and Hakuta in 1997 and described in a previous section, contained varying goals for ‘*proficiency*’. Language learners at beginning levels of instruction are able to successfully use language to communicate an idea – sometimes with only a word or two or with “alternative” syntax forms. Educators, as well as researchers, have been seeking to refine descriptions of student ability as they develop their language skills.

To better define “*proficiency*”, frameworks describing the language user’s behaviors or use of language have been established as guidelines. *The Common European Framework of Reference for Languages: Learning, Teaching, Assessment* or CEFR, (Council of Europe, 2011), is one such guideline used to describe achievements of learners of foreign languages across Europe. Its use has spread to other countries as well. In the United States, frameworks such as the ones included in guidelines for young learners (Tabors & Snow, 1994), the Early Language Listening and Oral Proficiency Assessment (ELLOPA) scoring rubric (Thompson, et al., 2006) and the Student Oral Language Observation Matrix (SOLOM) (California State Department of Education, 1981) are other examples, all described below.

2.7.2.1 CEFR Proficiency Levels

To classify the proficiency of learners, CEFR divides them into three broad divisions that can be divided into six levels: A. Basic User (A1 breakthrough or beginner and A2 waystage or elementary). B. Independent User (B1 threshold or intermediate and B2 vantage or upper intermediate) and C. Proficient User (C1 effective operational proficiency or advanced and C2 mastery or proficiency). Furthermore, CEFR describes what a learner should be able to do at each level in the discrete language skills of reading, listening, speaking and writing.

2.7.2.2 Proficiency Level Guidelines for the Young Learner

Regarding language proficiency scales created for the young learner, Tabors and Snow (1994) described a four-stage developmental sequence for second language acquisition in young children learning a new language after the age of three and before the age of eight. The first stage is an early period of language development (Home Language Period) when the child is just becoming aware of or is still learning that more than one language exists. In a social setting in which those around the child speak a different language, the child may continue to speak the home language.

The second stage is an early/middle period (Observational/Listening Period). It is a non-verbal period when the child is gathering information about the new language. The child is not doing much talking. The child may rely on non-verbal communication, such as gestures and facial expressions, and may respond non-verbally when asked a question, such as by pointing or gesturing. In classroom where only a new language is used with no first language support, the child may even enter a phase in this period when s/he does not talk at all in either language but spends additional time listening only and responding non-verbally. In a bilingual classroom, the child may only attempt to talk with those who speak his or her home language.

During this period, the child gradually acquires the ability to understand a few key words (with contextual assistance) but continues not to communicate verbally in the second language.

The third stage, or middle period of early language development (Telegraphic and Formulaic Speech Period) is similar to the *holophrastic sentence period* (typically seen in monolingual infant development from 18 to 24 months) meaning that the child uses one or a few content words to signify an entire utterance. “Block” could mean “That is a block.” or “That is my block.” or “He took my block.” or “Give me that block!” depending on the intonation used and the situation in which the word is used. Also typical of this stage is that children use chunks of the same speech over and over to get their ideas across with minimal language use: “mine” or “Ok” are examples of utterances that get things done for children. The child also speaks using one or two words to answer questions, make requests, or make statements or use meaningful chunks of language modeled repeatedly by teachers (“Go.” “Come here.” “Give me”). The child in the middle period of early language development typically gives one-word responses such as “flower” or “yes,” omits articles (a, an, the) and prepositions (to, on, over), and says words that have been heard and understood many times (mine, OK, give, want, open, go) often using them to “get things done”.

The last stage Tabor and Snow describe is a late period (Productive/Fluid Language Use Period) when the child begins to use English creatively and productively and begins to build sentences on his/her own instead of just repeating phrases. Children begin to analyze language being used around them and begin to make guesses about how the language is constructed. They make many mistakes as they work through the process of acquiring the more complicated aspects of English: the mistakes may or may not impede comprehension by others. They speak in two-

or three-word sentences and make common errors of omission. They continue to be limited in vocabulary but become less hesitant to speak. At this point of development, they understand a lot more than in previous periods, but are still dependent on context to achieve understanding.

It is important to note that although children will pass through these stages in predictable sequences, the stages outlined by Tabors do not attach a timeline to the progression of children's language development through the stages. The researchers note that the second language acquisition of individual children will vary widely due to individual affective factors and is too unpredictable to accurately map (Tabors, 2008; Tabors & Snow, 1994). With regard to language development in general, but specifically for young children learning a second language, Tabors (2008) points out that *spoken language must occur before written language*. Young children must learn that it is possible to communicate in writing as well as orally, but only later, when children can read at a third- or fourth-grade level in their native language does written language help advance their oral language development in the new language (Snow, Burns & Griffin, 1998).

2.7.2.3 The ELLOPA: Early Language Listening and Oral Proficiency Assessment

The ELLOPA is an oral language assessment for young language learners developed by the Center for Applied Linguistics in Washington, D.C. (Thompson et al., 2006), and it was used in this study to gather data on the English language performance of the children. The rating profile (scoring rubric) for the ELLOPA has been modified for the developmental level of young learners from guidelines developed by the American Council on the Teaching of Foreign Languages (ACTFL) and consists of four proficiency levels (Junior novice-low; Junior novice-mid; Junior novice-high; Junior intermediate low) each containing five skill areas: oral fluency,

language control (grammar), vocabulary (speaking), listening comprehension, and communication strategies. (See Appendix I & II.) The first four skill areas are derived from the *ACTFL Proficiency Guidelines* (1986, 1999). The communication strategies and are drawn from the *ACTFL 1998 Performance Guidelines for K–12 Learners*. An equivalency scale between ACTFL and the Common European Framework (CEFR) was established in a study by Martínez Baztán (2008) and is summarized in Table 1 below.

Table 2: CEFR and ACTFL Proficiency Levels Equivalency

CEFR Proficiency Level	ACTFL Proficiency Level
C2	Advanced High, Superior
C1	Advanced Mid, Advanced High
B2	Intermediate High, Advanced Low
B1	Intermediate Mid, Intermediate High
A2	Lower Intermediate, Intermediate Mid
A1	Novice-High
<A1	Novice-Low, Novice-Mid

Students receive ratings in four areas: oral fluency, grammar, vocabulary, and listening comprehension. When these assessments are made at intervals of time, students' ratings are expected to reveal gradual progress in the target language(s). The four proficiency levels of the ELLOPA (see Appendix II) each contain five areas: oral fluency, language control (grammar), vocabulary (speaking), listening comprehension, and communication strategies.

The goal of the ELLOPA is to show what the students *can* do orally and aurally in the target language rather than focus on what they cannot do. The ELLOPA uses

an audio and/or video-taped interview format. The administrator conducts the interview of pairs of students in a friendly, non-stressful environment. Later the administrator reviews the taped interview, takes notes, and then assigns the students' ratings. (See sample rating forms, Appendix III.) This allows the interviewer to focus on eliciting language that will demonstrate the students' highest proficiency levels. Interviews are conducted entirely in the target language and take approximately 15–20 minutes to complete. Training for interviewers is required in order to ensure inter-rater reliability. This author of this thesis received training as an ELLOPA interviewer from 2000 to 2002, while she worked for the Center for Applied Linguistics in Washington, D.C., and collaborated with the creators of the ELLOPA on numerous projects.

The ELLOPA interviews consist of a series of games or tasks with varying levels of difficulty that elicit both academic and social language and are outlined in Table 2 below. The assessment activities follow what its creators consider to be the natural development of language skills, focusing first on listening comprehension and then on speaking. They feel that this sequence builds students' confidence, allowing them to respond successfully, receptive skills being less demanding than productive skills. Students are then encouraged to say as much as they can so that adequate speech samples may be obtained for accurate ratings.

Table 3: Summary of Selections for ELLOPA (Early Language Listening and Oral Proficiency Assessment)

Warm-Up	Goal: salutations and set phrases
Game 1: School Tools	Goal: TPR with schools tools (paper, pencil, scissors, etc.) Put students at ease with simple listening comprehension first, followed by speaking.
Game 2: Colors	Goal: Give students an opportunity to answer in one word or in short phrases or sentences.
Game 3: The Family	Goal: Answer questions - Give students opportunities to express ideas on familiar topics
Game 4: Talking with Puppets	Goal: Answer questions - Give students opportunities to express ideas on familiar topics. Describe - Give students opportunities to use academic language and to create language at sentence level.
Game 5: Story Retelling	Goal: Describe, narrate - Give students opportunities to speak about things that have happened in the past at paragraph level and beyond.

Adapted from Thompson et al., 2006

2.7.2.4 The SOLOM: Student Oral Language Observation Matrix

Another example of clearly set criteria for describing language proficiency is the SOLOM (California State Department of Education, 1981), a rating scale that summarizes judgment of a language learner's command of oral language on the basis of what a trained observer notes on a continual basis in a variety of situations, such as class discussions, playground interactions, and encounters between classes. The rater matches a learner's language performance in five domains - (1) listening comprehension, (2) vocabulary, (3) fluency, (4) grammar, and (5) pronunciation - to descriptions on a five-point scale for each (See Appendix IV). A level of 1 indicates that the learner has no proficiency ability in that category. A level of 5 represents a

native or native-like level of fluency. A SOLOM level 4 is considered the minimum necessary to provide instruction in the language being assessed: that is to say, non-native teachers providing language instruction should have a minimum SOLOM level 4 in the language they are teaching.

SOLOM scores represent whether an English teacher can effectively present oral language tasks typically expected in the classroom. The SOLOM does not require a special testing situation. To complete it, raters simply need to know the criteria for the various categories and observe the learner's language practices with those criteria in mind. The SOLOM is not commercially published. It was originally developed by the San Jose (California) Area Bilingual Consortium and has undergone revisions with leadership from the Bilingual Education Office of the California Department of Education. It is within the public domain and can be copied, modified, or adapted to meet local needs. The SOLOM was chosen as one of the assessments used in this study to provide an informal evaluation of the oral language ability of the teachers who participated in the study.

2.7.3 Purposeful Development of Academic Language Proficiency in Both First and Second Languages

Academic language proficiency generally refers to the different types of language abilities that learners must acquire in order to perform successfully in academic contexts. It refers to the way language is used in an educational environment: for example, knowing to write in a science report "which one do you choose?" vs. "what do you want?" It is the language of the classroom, textbooks, and standardized tests. In the late 1970s, Cummins began to focus the attention of educational researchers on a distinction between English spoken in classrooms and English spoken in social contexts when he described two discourse types, Cognitive

Academic Language Proficiency (CALP) and Basic Interpersonal Communication Skills (BICS) (Cummins, 1978, 1980, 1981a, 1981b). In the decades since, researchers have investigated the features of the language students need to succeed in school in an attempt to better define those skills.

Continued research by Cummins and others has brought educators to the general agreement that all students, both first and second language learners, are learning to manage new sociocultural and language routines in classrooms and schools and that in each content area, students make use of specialized vocabulary, grammar, language functions and related discourse structures, and text types. All students learning English, as a first or a second language, must learn to use the language appropriately in multiple academic environments, make sense of complex content matter, and articulate their understanding of that content using academic language. English used in science classrooms draws on vocabulary, grammar, and discourse unique to science. Table 4 summarizes the features of academic language. The development of academic language occurs within sociocultural contexts for language use, which involve the interaction between the student and the language environment; for example, the language of an oral presentation in a classroom will be different from the language used in a written report. As another example, the academic language students use during small-group interactive activities may be different from the academic language used when called on by the teacher to answer in front of the class. Within academic disciplines there are distinct patterns of oral and written language (Bailey, Butler, Stevens, & Lord, 2007). Academic language also varies according to register (formal/informal), the type of task, the topic, the participants' identities (individual/group presenter), and their social role (group leader/group member).

Dimension	Criteria	Features
Discourse	Linguistic Complexity	<ul style="list-style-type: none"> • Amount of speech/written text • Structure of speech/written text • Density of speech/written text • Coherence and cohesion of ideas • Variety of sentence types to form organized text
Sentence	Language Forms and Conventions	<ul style="list-style-type: none"> • Types and variety of grammatical constructions • Mechanics of sentence types • Fluency of expression • Match language forms to purposes/perspectives • Formulaic and idiomatic expressions
Word/Phrase	Vocabulary Usage	<ul style="list-style-type: none"> • General, specific, and technical language • Multiple meanings of words and phrases • Nuances and shades of meaning • Collocations and idioms

Table 4: Features of the Dimensions of Academic Language

As outlined in previous sections, regardless of program model, research indicates that when students receive a minimum of 2 hours a day in the target language in bilingual classrooms, second language oral and aural language proficiency (speaking and listening skills) typically develop to grade level in 3 to 5 years (See Section 2.5.2). Academic English proficiency, however, can take 4 to 7 years (Hakuta, et al., 2000). Additionally, researchers have found that this proficiency attainment happens faster when students begin to learn the new language at a younger age (Collier & Thomas, 1989, 1992; Hakuta et al., 2000). Cook

and Zhao (2011) examined the time needed for students to reach a score of proficient, as defined by local state regulations, in a paper investigating the growth of English proficiency and content knowledge attainment in bilingual classrooms in the United States where English was the target language and students were receiving a daily minimum of two hours in their new language. Over a 5-year instruction period, only 10 percent of students starting with the lowest level of English proficiency attained a score of ‘proficient’ in 5 years.

For English language learners to succeed in a bilingual education context, they must master not only English vocabulary and grammar, but also the way English is used in core content classes (Short, 1998). Academic language includes semantic and syntactic knowledge along with functional language use. For example, when using English, students must be able to read and understand expository prose such as that found in textbooks; to write persuasively; to argue points of view; and to take notes from teachers’ lectures. They must also articulate their thinking skills in English, making hypotheses and predictions, express analyses, draw conclusions, and so forth. In content classes, English language learners must pull together their emerging knowledge of the English language with the content knowledge they are studying in order to complete the academic tasks associated with the content area. They must, however, also learn *how to do* these tasks — generate the format of an outline, negotiate roles in cooperative learning groups, interpret charts and maps, and such. The combination of these three knowledge bases — knowledge of English, knowledge of the content topic, and knowledge of how the tasks are to be accomplished — constitutes the major components of academic literacy (Echevarria et al., 1998). These points are also illustrated as features of academic language in Table 3.

Within a European context, Skutnabb-Kangas and Toukomaa (1976) initially brought attention to the fact that Finnish immigrant children in Sweden often appeared to educators to be fluent in both Finnish and Swedish but still showed levels of verbal academic performance in both languages considerably below grade and age expectations. The distinction between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP) introduced by Cummins (1979, 1981a) was intended to draw attention to the very different time periods typically required by immigrant children to acquire conversational fluency in their second language as compared to grade-appropriate academic proficiency in that language. As previously stated, Cummins reports that conversational fluency is often acquired to a functional level within about 2 years of initial exposure to the second language whereas at least 5 years is usually required to catch up to native speakers in academic aspects of the second language, and subsequent research has supported these findings (Collier, 1987, 1984; Cummins, 1981a; Hakuta, et al., 2000).

The terms conversational fluency and academic language proficiency are used interchangeably with BICS and CALP (Cummins, 2000). Cummins in 2008 reported that the distinction between BICS and CALP was never intended as a complete theory about language proficiency. The distinction was meant to demonstrate the underlying reasons for the discrepancies in language performance of bilingual students, when these students are seemingly fluent in their second language (judged by oral interactions with peers) yet cannot cope in school with the language of textbooks and the classroom. When teachers heard children speaking orally to friends, the teachers may have come to consider the student to be “fluent” in the second language. Issues arose when the students’ academic work was analyzed, as the work did not reflect similar “fluent” language use. Cummins (2000) explains the

instructional implications of CALP in terms of three elements. (1) *Cognitive*: instruction should be cognitively challenging using higher-order thinking skills such as evaluating, inferring, generalizing, and classifying. (2) *Academic*: curriculum content should be integrated with language instruction so that students learn the language of specific academic areas. (3) *Language*: critical language awareness should be developed both linguistically (e.g., conventions of each language) and socioculturally (e.g., different language status and use).

Cummins' ideas are important to bilingual education because they relate directly to creating instructional and learning environments that maximize the language and literacy development for bilingual students (Cummins, 2000).

2.7.4 Interaction and Language Learning

Regarding the importance that interaction plays in the language acquisition process, as a result of her research, Kuhl (2002) stated that babies cannot learn initial language skills appropriate to their age (e.g., phonemic awareness) from television or audio recordings, and it is necessary for babies to have abundant face-to-face interaction to learn how to talk. In her study, Kuhl's team exposed 9-month old American babies to Mandarin in various formats, first providing face-to-face interactions with native Mandarin-speaking teachers and then comparing those results to groups of children who received the same instruction provided by audiovisual and audio recordings of the speakers. Kuhl then looked at the impact of this exposure on the babies' ability to make Mandarin phonetic contrasts (not found in English) at 10 to 12 months of age. The process demonstrated that laboratory visits featuring face-to-face interactions with the native Mandarin-speaking teachers were sufficient for the American babies to distinguish the Mandarin sounds as well as Taiwanese babies of the same age whose home language was Mandarin. However,

the same number of laboratory visits featuring the audiovisual or audio recordings made no impact on the phonemic awareness abilities of the children studied. American babies exposed to Mandarin through these technologies performed the same as a control group of American babies exposed to interactions with native English speakers during their lab visits. This study speaks to the importance of meaningful interaction in language learning environments and indicates that without interaction with the speaker, the babies did not acquire the ability to distinguish between basic language sounds. Further research is necessary to determine the impact that interaction plays on learners at a wider range of ages.

Language students need to practice and interact with others using the language, even if that means that the interaction is not always perfect. This language practice can be accomplished through structured and unstructured interaction times (Franco 2006). Students' language development benefits from less teacher talk and more student talk (Kagan, 1994b). That is to say, more student interaction about the subject and topics being learned results in greater English proficiency faster, including more academic English proficiency, for the student (Echevarria et al., 2008; Franco 2006; Kagan 1994a). The opportunity to interact in the second language is central to developing second language proficiency. According to research, learners need opportunities to practice language at their level of English language competency (Gopnik, Meltzoff, & Kuhl, 1999; Krashen, 1982). This practice using English to communicate results in *Comprehensible Output* (Krashen, 1982) which consists of producing utterances made by the second language speaker which are understood by the receiver of the message.

Engaging in cooperative learning activities is one strategy where learners of English receive comprehensible input and produce comprehensible output because

in a small group setting the teacher or classmates modify or adapt the message to the listener's needs (Kagan, 1994b). As Kagan points out, when participating in cooperative groups, speakers can more easily check on the understanding of the listener. There is more opportunity for oral practice and for repetition of content information as peers help other learners of English negotiate meaning. Student talk in a small group is centered on what is actually happening at the moment as the task is completed, and feedback and correction are non-judgmental and immediate. That means if teachers always have students sitting in rows and expect to have quiet classrooms, language is not going to be easily developed.

In situations where the bilingual classroom is made up only of students who all share the same home language (as is the case of the classrooms included in this study) teachers may find it more challenging to encourage children to keep student/peer interactions in the target language. After all, if the dominant language in the classroom is not the target one, and the primary concern of the learner is to *communicate*, students (especially young learners) may naturally resort to the communication system that is most readily available to them: their dominant one. In these situations, language practice is not what the children are thinking about. They just want to get their point across, and they will use whatever language system is *most efficient* to get the job done (Fillmore & Snow, 2000). Therefore, it is natural for a classroom of native Spanish speakers to speak to each other in Spanish, not English.

In order to keep interaction in the target language, second language learners benefit from having to accomplish a task which requires them to communicate with each other in a cooperative, structured activity (Kagan, 1994b). Kagan also points out that it may require less effort for a teacher of older students to keep the language of

the classroom in the target language, because they are more metacognitively aware of learning another language. For younger students, the use of humor and making target language activities fun are good stimuli (Franco, 2006). Playing games that use the content, singing songs using target vocabulary and/or the topics studied, telling jokes, doing experiments, and doing easy craft activities that are step-by-step demonstrations students can see and follow are ideal types of interactive activities for second language content classrooms (Echevarria, et al., 2008). Providing students with a language partner they are required to use the new language with, even an imaginary partner such as a puppet, allows students to see and understand the need to use the target language (Krashen, 1994). Telling the class that the class pet/puppet only speaks the target language and creating activities designed to talk to the pet also is a creative way to increase interaction in English (Franco, 2006). Teachers are the language models in the classrooms and need to provide excellent examples of rich, interesting vocabulary for children at all times (Echevarria, et al., 2008). In addition, they need to know how to structure the classroom day to maximize student interactions (Grognet, Jameson, Franco, & Derrick, 2000).

Students need to interact with each other about the topic and content being taught in order to develop not only language competencies but also thinking and academic language skills (Krashen 1994, Grognet et al., 2000). To accomplish this, teachers should plan *cooperative* rather than other group activities and arrange instruction so that students have to use the vocabulary and academic language of the lesson in their interactions with each other in meaningful ways. There are distinct and important differences between truly cooperative work and group work as is illustrated in Table 4. This is not to say that there is not a role for group work in the classroom. It is just to say that teachers should realize the differences and plan for

them. The two types of activities yield different interactions among students and different end results (Kagan, 1994b).

Table 5: Cooperative Work and Group Work

Cooperative Work and Group Work Are Different and Yield Different Results	
<u>Cooperative Work</u>	<u>Group Work</u>
Students need each other to successfully complete the assigned task.	Any one student could potentially complete the assigned task alone while the others in the group look on.
All group members must participate.	One or a few group members could do well while one or a few group members do not
Public performance is required.	One or a few group members can simply rely on the answers of others; they are not required to overtly participate or their task is primarily symbolic or busy work.
Participation is equal.	
(Adapted from Kagan, 1994)	

2.8 Theoretical Framework Supporting Effective Teaching Strategies to Promote Bilingual Language Acquisition

Since CLIL environments are the newest on the bilingual education scene and since the heterogeneity of both CLIL implementation and research approaches makes it a challenge to draw generalized conclusions about CLIL (Dalton-Puffer & Smit, 2010), program designers and researchers are working to establish guidelines regarding best instructional practices for those programs. Nevertheless, given the common underpinnings of bilingual education models as a whole, and in particular the similar underlying features between CLIL and dual language programs (the development of the second language while also continuing to develop the first) and Canadian Immersion programs (exposure to the new language at an early age), a

picture from research emerges regarding the importance of high-quality instruction and program design in bilingual programs.

Research has provided information about best practices in bilingual program teaching. The quality and quantity of input (Echevarria et al., 2008; Guarino, Echevarria, Short, Shick, Forbes & Rueda, 2001; Larson-Hall, 2008; Marsden & David, 2008; Ojima, Nakamura & Hagiawara, 2011) and the quality of teaching (Echevarria et al., 2008; Guarino et al., 2001; Mihaljević Djigunović, Nikolov & Ottó, 2008) play important roles in determining second language outcomes in bilingual education settings. Within a learner's zone of proximal development (Vygotsky, 1978) language is acquired and mediated in interaction with opportunities for meaningful practice, e.g., comprehensible input and output (Long, 1996; Mackey, 1999). Learners' evolving language proficiency is captured by the notion of interlanguage; as learners build on prior knowledge (schema) they acquire more complex features of language which they refine over time (Smith & Kellerman, 1989; Huebner, 1983).

Effective teaching in bilingual education classrooms is strategically planned and includes specific content and language objectives (Echevarria et al., 2008). Effective instructional strategies in those settings make content highly comprehensible, are interactive (allowing for increased amounts of interaction between teacher and students as well as among students), foster higher-order thinking, and make content relevant to students' daily lives (Echevarria et al., 2008; Grognet et al., 2000; Kuhl, 2002, 2004).

2.8.1 High-Quality Instructional Strategies in Bilingual Programs

There is a wide variety in the way effective bilingual education programs are designed, as discussed in previous sections. Notwithstanding, research demonstrates that there is a common foundation of instructional principles and pedagogies that

support effective bilingual education programs (Guarino et al., 2001; Echevarria et al., 2008; Larson-Hall, 2008; Marsden & David, 2008; Ojima et al., 2011). High-quality instruction utilizes research-based techniques and procedures which encompass elements from the three broad categories of theoretical approaches for second language acquisition: Universal Grammar, Cognitive models, Interactionist/Sociocultural models (Myles, 2002).

Bilingual education is based on the widely accepted notion that in order to acquire a second language, a large amount of input in this second language is crucial (Krashen, 1985). Nevertheless, bombarding learners with input is not sufficient to lead students to acquiring the language. This input also needs to be comprehensible in order to be processed and to lead to acquisition (Krashen, 1985; Swain, 1985). By providing students with a much larger amount of meaningful second language input than in regular education, bilingual programs thus aim to promote the acquisition of the second language (Krashen, 1985). A review of 71 peer-reviewed journal articles studying pre-kindergarten through grade 12 second language learners found that second language learners in an environment providing little outside-the-classroom input in the target language require explicit instruction to master basic syntax (August & Hakuta, 1997). This finding should be of particular note to organizers of CLIL programs, as it describes their educational environments.

Optimal conditions for acquiring a second language for different populations vary according to learning contexts, pedagogical goals, program setup, learner characteristics, and the interactions among these contextual variables (Grossman, 2006). Whereas the definition of optimal conditions for second language acquisition is relative because there is no “one best way” to educate learners, basic principles of

excellent instruction for language learning can be outlined (CREDE, 2014; Grognet et al., 2000) and are described here in the sections that follow.

2.8.2 Explicit Language and Content Objectives

Content objectives define the essential intended knowledge of the discipline; these are typically characterized by facts, concepts and/or skills (Rohwer & Wandberg, 2005). Snow, Met, and Genesee (1989) defined content-obligatory versus content-compatible language objectives, distinguishing between the language skills or structures necessary to learn specific content (content obligatory) and the language that would naturally accompany a topic (content compatible). When content drives instruction, it is recommended that teachers scaffold content instruction in order to make key concepts more accessible for second language learners (Short, 1998). One well-known resource for content-driven classes is the Sheltered Instruction Observation Protocol (SIOP), a model of teaching and an assessment tool used in the research project being reported on in this study. The SIOP model provides guidance and professional development to assist teachers in identifying appropriate content and language objectives.

For effective planning of CLIL lessons, researchers (Llinares, Morton, & Whittaker, 2012) discuss a distinction among the language *of* learning (language needed to express the aspects of content), language *for* learning (language needed to participate in tasks and activities), and language *through* learning (language that emerges when CLIL students have to think about and express meanings related to content). Llinares and Whittaker (2010) performed a comparative study of CLIL and parallel first language classes which reported that students learning content through their native language were more proficient than the CLIL students in their uses of academic language while discussing the subject content they had learned. The study

suggested that some academic language features might require special attention while others might be learned and developed through routine classroom communication. The concept and importance of academic language was discussed in Section 2.7.3.

Although teachers frequently address content objectives while planning their lessons, few are trained in how to address language objectives and are thus less likely to consider them in lesson preparation (Himmel, 2012). Thus, models providing professional development for teachers, such as the SIOP, are greatly needed. Language objectives define the communication skills or uses of the language necessary to make the content of the lesson comprehensible to second language learners (Himmel, 2012; Rohwer & Wantberg, 2005). Language objectives are crucial for second language learners; they help language learners master subject content when teaching practices address the uses of language and incorporate strategies learning the language (Dong, 2005). By building from an understanding of the language demands of the lesson, teachers need to develop content objectives that address not only the learning of vocabulary, but also the development of language skills in reading, writing, listening, or speaking. This is because the second language acquisition process requires opportunities for the language learners to be exposed to, practice with, and then be assessed on their language skills. Well-constructed language objectives articulate for learners the academic language functions and skills that they need to master to fully participate in the lesson and meet the grade-level content standards and cause teachers to thoughtfully plan for the development of language while teaching subject content (Echevarria, Short, & Vogt, 2008). By applying these research findings to classroom instruction, CLIL teachers will benefit greatly from creating content and language objectives when preparing their classes,

and their students will also gain from the teachers' learning to implement these practices.

2.8.3 Standards and Basic Principles for High-Quality Instruction in Second Language Learning

The Center for Research on Excellence and Diversity in Education (CREDE), based at the University of Hawaii, Manoa (formerly at the University of California, Santa Cruz), established five standards for effective pedagogy and learning for second language acquisition in content classes. Their five standards were created through an extensive analysis of the research and development of literature in second language education. The standards are reported by CREDE to represent recommendations upon which the body of existing research is in agreement about how to foster second language development through content learning. It is pointed out that the standards describe the ideal conditions for instruction for all students, but that for students learning a second language through content, effective classroom implementation of the standards is vital to promote not only second language acquisition, but also content comprehension (CREDE, 2014). The CREDE Five Standards for Effective Pedagogy and Learning give guidance for (1) purposeful planning for joint productive activity, (2) language development, (3) contextualization, (4) challenging activities, and (5) instructional conversations.

When a teacher and students produce language together, joint productive activity results, which is CREDE's first standard. The discourse that emerges from joint activity allows the highest level of academic achievement, using formal language and ideas to solve practical, real world problems. Working together allows conversation, which teaches language, meaning, and values in the context of immediate issues. Joint activity between teacher and students helps create a

common context of experience within the school itself. In schools, there is ordinarily little joint activity from which common experiences emerge, and therefore results in no common context that allows students to develop shared systems of understanding with the teacher and with one another. The Andalusian Horizon 2020 plan speaks to this standard in its efforts to promote a move to project-based language learning in its CLIL programs there.

CREDE's second standard addresses the need to develop language and literacy in both languages across the curriculum. The standards encourage teachers to develop language within a wide variety of areas, such as informal, problem-solving, and academic, recommending that teachers foster language through purposeful, deliberate conversation between teacher and students, rather than through drills and decontextualized rules. CREDE's guidance further recommends that reading and writing be taught both as specific curricula and be integrated into each content area.

The third standard for effective pedagogy and learning recommended by CREDE concerns the contextualization of language. It gives teachers guidance to make meaning of language that connects to school and students' lives and considers that "understanding" language means connecting new learning to previous knowledge. Assisting students in making these connections strengthens newly acquired knowledge and increases student engagement with learning activities. Schools typically teach rules, abstractions, and verbal descriptions, and they teach by means of those same rules, abstractions, and verbal descriptions. Effective instruction assists students by providing experiences that show abstract concepts are drawn from and applied to the everyday world.

The fourth of CREDE's standards recommends that teachers provide students with challenging activities that teach complex thinking. Complex thinking is

cognitively challenging; that is, instruction that requires thinking and analysis, rather than rote, repetitive, detail-level drills. This does not mean ignoring phonics rules, or not memorizing the multiplication tables, but it does mean going beyond that level of curriculum into the exploration of the deepest possible reaches of interesting and meaningful materials. Working with a cognitively challenging curriculum requires careful leveling of tasks, so that students are motivated to stretch their learning. It also requires a purposeful match between written materials and students' language proficiency levels.

In its fifth standard, CREDE highlights the importance of instructional conversation. In the Instructional Conversation (IC), the teacher listens carefully, makes guesses about intended meaning, and adjusts responses to assist students' efforts. The teacher connects formal, school knowledge to the student's individual, family, and community knowledge. The IC provides opportunities for the development of the languages of instruction and subject matter. IC is a supportive and collaborative event that builds intersubjectivity and a sense of community. IC achieves individualization of instruction and is best practiced during joint productive activity. It is an ideal setting for language development and allows sensitive contextualization, and precise, stimulating cognitive challenge.

2.8.3.1 Three basic principles

Based on CREDE's five standards, three basic principles to enhance the learning of English as a second language in classrooms were established (Grognet, et al., 2000). Through collaborative training and research interactions performed at the Center for Applied Linguistics in Washington, D.C., these have been incorporated into the SIOP observation tool, which is one of the assessments used in the study reported here.

The first basic principle is to increase the comprehensibility of instruction. The learner must understand the message that is conveyed. *Comprehensible input* is a hypothesis first proposed by Krashen (1981). He purports that second language learners acquire language by hearing and understanding messages that are slightly above their current language level. Krashen considers comprehensible input to be the most important factor for language acquisition, and he regards incomprehensible input as a factor that hinders second language acquisition. He defines the good language teacher as someone who can make input comprehensible to a non-native speaker, and he believes that the best activities for the classroom are those that are natural, interesting and understandable. Similarly, Littlewood (1984) considers the ideal input for acquiring a second language to be similar to the input that young children receive in their first language; comprehensible, relevant to their immediate interests, not too complex, but not strictly graded. The creators of the SIOP model (Echevarria, et al., 2008) describe comprehensible input as instruction that includes appropriately leveled speech, gives clear explanations and modeling of academic tasks, and uses instructional techniques and strategies that provide clues and contexts for meaning.

To make instruction comprehensible, teachers can start lessons by building on the student's prior knowledge. They can begin activities with what students already know and use activities that move students from concrete ideas to abstract thought. By recycling concepts that have already been learned and by building on what the students already know or on what they have already been taught rather than continually presenting new concepts, students are able to make connections to meaning more readily. New vocabulary that is introduced within a meaningful context makes it more comprehensible. When new vocabulary is used repeatedly in

different activities and is recycled in a variety of contexts, its meaning becomes more evident to students. Teachers can work to be certain that the non-verbal clues are clear and straightforwardly unambiguous, representing the target culture associated with the target language, but free of cross-cultural confusions. Four kinds of visuals assist in making the meaning of language more clear: pictures/photographs, props, realia (the use of authentic objects as opposed to simple a picture of the item), and graphic organizers. Increasing and incorporating their use as much as needed to show meaning assists language learners in making sense of the language they are hearing. Demonstrations also show meaning, and hands-on activities allow students to use different learning modalities to interact with the language, providing more opportunities to clarify its meaning. When teachers show the meaning of what they are talking about and make an effort to talk about the content they are showing, students are able to make more connections and understand more. When teachers speak naturally and simplify, but not oversimplify, the language of instruction, speaking at a level of language equivalent to the students' proficiency levels, students are able to comprehend more fully.

Starting lessons with oral and aural activities first assists students not only in comprehending the language of instruction, especially when accompanied by visuals or demonstrations, but also supports literacy development. It allows students to learn to *hear* the sounds of English *first* and later attach them to writing in text-based activities later in the lesson. Written text that is carefully structured and uses graphic organizers and visual clues whenever possible also supports comprehensibility for students. Focusing on key concepts and key vocabulary necessary to learn core objectives of lessons, leaving out extemporaneous language that misdirects student's attention, emphasizes the central information students are

expected to learn (Grognet et al., 2000). Franco (2006) affirms that the items described above by themselves do not increase comprehensibility since teaching is not only performance but requires the skills to appropriately combine strategies to make the meaning of instruction more evident to students.

The second basic principle addresses the need for teachers to create activities that increase interaction and language use among students. This concept was discussed previously in Section 2.7.4, emphasizing the important role human interaction plays in developing language abilities. Connections between students' language learning and using the language to complete meaningful activities in academic contexts also is developed through increased interaction.

Basic principle number three points out that by increasing the use of higher-order thinking skills and by providing direct instruction in learning strategies, teachers assist students in acquiring not only content but also academic language. Students come to school with a need to develop thinking skills and with a need to learn how to learn (Jameson, 2002). It is the responsibility of the educators that teach them to help students develop to their full potential through practice in thinking skills that challenge them to prioritize, make choices, categorize, make inferences, justify their opinions, synthesize ideas, process their thinking, express themselves convincingly, develop organizational skills, and develop study skills that are appropriate to the individual's cognitive ability, age, and learning styles. (CREDE, 2014; Grognet et al., 2000; Jameson, 2002). These skills develop when teachers ask students the right kinds of questions (Grognet et al., 2000). Table 6 provides an illustration of the kinds of questions teachers can ask students learning English as a second language, taking into consideration their limited English skills and using strategies to increase comprehensibility, from lower- to higher-level

thinking order. The table follows Bloom’s Taxonomy of Learning (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). Teachers should remember to make their questions comprehensible by applying the concepts of increasing comprehensibility (Basic Principle #1) when posing questions (Gronet et al., 2000).

Table 6: Asking English Learners Questions for Thinking

Lower Level Thinking	
<i>Remembering:</i> Identification and recall of information	Who, what, when, where, how _____? Describe _____.
<i>Understanding:</i> Organization and selection of facts and ideas	Retell _____ in your own words. What is the main idea of _____?
Higher Level Thinking	
<i>Applying:</i> Use of facts, rules, principles	How is _____ an example of _____? How is _____ related to _____? Why is _____ significant?
<i>Analyzing:</i> Separation of a whole into component parts	What are the parts or features of _____? Classify _____ according to _____. Outline/diagram/web _____. How does _____ compare/contrast with _____? What evidence can you list for _____?
<i>Evaluating:</i> Development of opinions, judgments, or decisions	Do you agree? What do you think about _____? What is the most important _____? Prioritize _____. How would you decide about _____? What criteria would you use to assess _____?
<i>Creating:</i> Combination of ideas to form a new whole	What would you predict/infer from _____? What ideas can you add to _____? How would you create/design a new _____? What might happen if you combined _____ with _____? What solutions would you suggest for _____?

(Adapted from Maryland State Dept. of Education, 1991)

2.8.3.2 The SIOP: Sheltered Instruction Observation Protocol

The Sheltered Instruction Observation Protocol (SIOP), is a model of teaching and a research-based observation instrument that has been shown to be a valid and reliable measure of instruction provided to students learning English as a new language in content classes (Guarino, et al., 2001). It was created to identify the features of instruction for English language learners that can enhance and expand teachers' instructional practice (Echevarria, et al., 2008). The SIOP is the assessment tool used to identify and quantify effective teaching behaviors being employed in the participating CLIL classrooms in the study detailed in this study. Short and Echevarria (1999) developed the SIOP as a research tool for describing effective practice for teachers of second language learners in content classes. By rating teachers using the protocol, Short and Echevarria found that teachers who scored higher on the SIOP scale had a positive effect on students' narrative and expository writing skills (Echevarria et al., 2008; Short, 1991; Short, 1998; Short & Echevarria, 1999).

The first version of SIOP was drafted in the early 1990s. It was used exclusively as a research and supervisory tool to determine if observed teachers incorporated key techniques to facilitate language and subject content learning consistently in their lessons. This early draft, like subsequent ones, pulled together findings and recommendations from the research literature with the professional experiences of the collaborating teachers on effective classroom-based practices (Echevarria et al., 2008). The protocol evolved into a lesson planning and delivery approach, known as the SIOP Model and has become an instructional approach for teachers to integrate content and language instruction to students learning through a new language. A seven-year research study, "The Effects of Sheltered Instruction on the Achievement of Limited

English Proficient Students,” was sponsored by the Center for Research on Education, Diversity & Excellence (CREDE) and funded by the U.S. Department of Education and was conducted beginning in 1996. It involved collaborating with middle school teachers who worked with the researchers to refine the features of the original protocol: distinguishing between effective strategies for beginner, intermediate, and advanced English learners; determining “critical” versus “unique” sheltered teaching strategies; and making the SIOP more user friendly. A substudy confirmed the SIOP to be a valid and reliable measure of sheltered instruction (Guarino et al., 2001).

During four years of field testing, teacher implementation and student effects were analyzed. This CREDE research showed that English learners whose teachers implemented criteria included in the SIOP performed statistically significantly better on an academic writing assessment than a comparison group of English learners whose teachers did not implement those strategies (Echevarria, et al., 2006). From 1999 to 2002, the SIOP Model’s professional development program was field-tested and refined to include professional development institutes, videotapes of exemplary SIOP teachers (Hudec & Short, 2002a, 2002b), facilitator’s guides (Echevarria et al., 2008; Short, Hudec, & Echevarria, 2002a), and other training materials.

Researchers continued to test and refine the SIOP Model in several later studies. From 2004 to 2007, the SIOP research was replicated and scaled up in a quasi-experimental study in two U.S. school districts at the middle and high school levels (Short, Fidelman, & Louguit, 2012). The treatment teachers participated in the professional development program with summer institutes, follow-up workshops, and on-site coaching. Students with SIOP-trained teachers made statistically significant gains in their average mean scores for oral language, writing, and total proficiency on

the state assessment of English language proficiency, compared to the comparison group of English learners. From 2005 to 2011 SIOP researchers conducted a study for the Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE), looking first at the SIOP Model in middle school science classrooms (Himmel, Short, Richards, & Echevarria, 2009) and later at the SIOP Model as the professional development framework for a school-wide intervention (Echevarria & Short, 2011). The results from the experimental investigation showed that students who had teachers who implemented the SIOP with greater fidelity performed better than those who did not implement SIOP to a high degree (Echevarria, Richards-Tutor, Chinn, & Ratleff, 2011). The direct correlation between a greater score by teachers on the SIOP and higher achievement for students learning English as a second language is a clear indication that teachers who use more of the strategies included on the SIOP also more positively affect student language attainment.

The protocol is composed of 30 items grouped into 8 sections with some being subdivided into more categories. The first section of the SIOP focuses on preparation and evaluates content objectives, language objectives, appropriateness of content concepts, supplementary materials, level of content and material adaptations, and meaningful activities. Section 2 focuses on instruction and looks first at how the lesson builds background knowledge for students, evaluating how lesson concepts are explicitly linked to students' prior learning experiences and how key vocabulary concepts are introduced. Section 3 concerns comprehensible input and measures how teachers make themselves more understood to the students by their rate of speech, their clarity of language use, and their use of modeling, visuals, hands-on activities, gestures, graphic organizers, anticipation guides, chunking of written texts and the like. In Section 4,

criteria look at how learning strategies are explicitly taught and practiced, how student comprehension is supported and scaffolded, and how teachers use a variety of questioning strategies, including higher-order-thinking questions. Interaction in the classroom is the focus of Section 5, measuring how frequently teachers foster interaction among students, how teachers encourage elaboration of student responses, grouping configurations, appropriateness of wait time, and opportunities for students to receive clarification in their first language. Attention is given in Section 6 to opportunities provided to students to practice and apply their learning using activity-based lessons, hands-on materials, and an integration of language skills (listening, speaking, reading, and writing). Section 7 looks at how the lesson is delivered overall and measures how the content and language objectives of the lesson were supported, the appropriateness of the pacing of the lesson, and how engaged the students were. Section 8 of the SIOP addresses lesson review and assessment and measures how the teacher included a comprehensive review of vocabulary and content concepts as well as an overall assessment check of student comprehension and learning. Items are scored by the observer using a Likert scale with scores ranging from 0 to 4 (see sample SIOP in Appendix V). A lesson planning tool detailing the elements contained in the SIOP appears in Appendix VI.

2.8.4 Effective Teaching Behaviors in CLIL Programs

Guidance recommending effective instructional delivery in CLIL classrooms directly connects to the standards, principles, and expectations described above in this section. In a number of ways, direction presented by deGraaff, Koopman, and Westhoff (2007) for the implementation of appropriate CLIL lessons relates to the discussion of

comprehensible input presented previously in this section. These authors suggest that CLIL teachers attend to functional communication, form and meaning, and corrective feedback by facilitating students' exposure to lesson content (input) at a level of challenge just beyond the learners' current abilities. They also propose that text should be carefully selected and adapted in advance and needed scaffolding should be provided. They advocate that teachers facilitate meaning-focused processing through assignment of tasks that involve learners in constructing meaning, check for accuracy of meaning, and provide support and feedback if meaning has been insufficiently understood. In addition, these authors suggest that teachers need to facilitate form-focused processing by raising learners' awareness of certain language features and by employing implicit techniques such as clarification requests or recasts, or explicit techniques such as direct teacher correction or peer correction. They also make recommendations that are associated with basic principles described above relating to increased interaction among students. They advocate that teachers facilitate student responses (output) by encouraging peer interaction in the target language and by asking for reactions. Connections to the principle of increasing higher-order thinking skills and teaching learning strategies are also made in their work by encouraging teachers to facilitate the use of receptive and productive compensation strategies to solve problems with language, content, or communication.

Similarly, several aspects of the work of Coyle (1999) connect to the information presented previously regarding standards, basic principles, and lesson planning. She emphasizes that when teachers provide CLIL lessons, they need to facilitate an appropriate progression of knowledge, skills, and understanding related to specific curriculum targets. She further advises that teachers need to actively facilitate students'

use of language for content while learning to use language and that teachers need to develop students' thinking skills that link concept formation (abstract and concrete), comprehension, and language. As an additional point, Coyle suggests that teachers need to provide exposure to alternative perspectives and shared understandings, thus deepening awareness of otherness and self on a cultural and social level.

The work of another researcher in CLIL also connects to the information presented previously regarding standards, basic principles, and lesson planning. Darn (2006) outlines a four-stage framework for CLIL lessons that includes leading students in the processing the text using visuals and text structure markers such as headings, subheadings, and features such as bold or italic text for emphasis and the implementation of graphic organizers such as tree diagrams, timelines, flow charts, and tables. Darn recommends that teachers use language features that help students to reproduce core content knowledge in their own words such as the language of comparison and contrast, cause and effect, and speculation; as well as features such as collocations, subject-specific vocabulary, and academic vocabulary. These elements of Darn's suggestions speak directly to the information presented in section 2.7.3 regarding the need to purposefully and strategically develop academic language in second language lessons. Darn provides an extensive list of suggested appropriate tasks for CLIL students for both receptive and productive skills. He also states that in addition to listening and speaking practice, students need meaningful activities that provide support for reading and writing about content in the target language. He provides several suggestions for strategies to do this, including, but not limited to, the use of anticipation guides (six to eight short statements related to the content students will study, about which students make predictions before reading); blind sequencing

(students work together to sequence a list of elements); clustering in context (students give suggestions to fill in blanks in a reading passage and the teacher writes their words on the board and then reveals the missing word); Directed Reading-Thinking Activity (DR-TA): students make predictions about the text they are given with only the title and parts of the text, and then confirm their predictions when they have the whole text); expository paragraph frames (students complete partial paragraph writing guides targeting specific academic language structures such as cause and effect, classification, or description); jigsaw (each student is assigned one part of a learning task, which they are required to share with others in a structured activity); and think-pair-share (the teacher asks a question, individual students think and process the information for a brief time, and then form pairs to share their ideas). The strategies and activities presented by Darn all include elements of increased comprehensibility, increased interaction, increased higher-order thinking skills and the development of academic language since they recycle information and text in meaningful ways, use visuals and graphics, and required students to analyze and interact about the content they are learning.

The SIOP is one tool that has been recommended for use in developing teacher instructional skills in CLIL classrooms. In its teacher training module, *The Partners, Getting started with Primary CLIL*, a website sponsored by Comenius, details how teachers in CLIL classrooms can use the strategies from the SIOP model to increase the effectiveness of their teaching. The Comenius training module emphasizes the benefits of including in CLIL classroom instruction specific language and content objectives, appropriately adapted instructional materials, supplemental materials, and meaningful activities. The module points to using SIOP as a viable framework for planning CLIL

instruction. At the University of Zaragoza in Spain, Nashatt (2009) drafted an observation tool to measure CLIL strategies used by teachers, which is based directly on the SIOP model (see Appendix VII). Her work demonstrates that CLIL researchers in Spain have recognized the valuable role SIOP research can play in developing CLIL programs.

2.9 Chapter Summary

Chapter 2 has provided a review of research supporting bilingual education as a model of classroom instruction, which has at its core the aim of developing linguistic abilities in two languages. While the term ‘bilingual education’ has become a broad umbrella category encompassing a variety of possible program designs, which may have similar overarching goals or have different ones, they share some common underlying characteristics and outcomes in a number of areas. Bilingual program models expect to affect student proficiency in a second language, and research has found that as a by-product of studying in a new language, the first language may also experience positive effects. Growth and flexibility in cultural knowledge and understanding is also often a result from participating in these kinds of programs.

In addition, a number of program models have been developed which intend to add second language skills while also improving knowledge in content areas by using the target language as a vehicle of instruction. Thus the new language and grade-appropriate content knowledge increase simultaneously. The program model which includes these goals and is often chosen by schools in Spain is CLIL, and research is under way there to determine important factors in making those programs successful. As researchers work to produce such studies, they are also being reminded to ensure

that their work reflects the highest rigor for empirical design, especially since some studies produced on CLIL have been called into question because of their methodologies.

Of particular interest to those currently seeking to implement CLIL programs is training for teachers and their development of effective approaches and techniques to support their program initiatives. Previous research on other program designs with goals similar to CLIL has been conducted on the effects of a set of teaching principles and strategies for student content and language achievement and is highly applicable to CLIL programs. One of these instructional protocols is the SIOP, which includes 30 criteria items focused on enhancing instruction in second language content classrooms. Research on the effects of the SIOP have reliably shown that when teachers apply the criteria to a high degree in their classrooms, student achievement in both language and content knowledge increase.

CHAPTER 3: QUALITY ANALYSIS OF CLIL LESSONS: AIMS, METHOD AND RESULTS

3.1 Introduction

As seen in the previous chapter, CLIL programs throughout Spain are being quickly implemented with increasingly greater frequency. In an effort to support these initiatives, researchers there have recommended that additional investigations be conducted to provide evidence-based results which can be used to guide program design and direct future practice. One of the areas identified as critical to CLIL program success focuses on the need for teachers to integrate appropriate instructional methods and techniques. As Lasagabaster and Ruíz de Zarobe (2010: 287) point out, “High-quality teaching has to be a key element if CLIL programmes are to succeed.”

Research in Spain has concentrated primarily on questions in the affective domain of education (e.g., How do teachers feel about the use of L1 in CLIL classes? How satisfied are teachers with support courses offered to them?) and language acquisition levels, a point which Lasagabaster and Ruíz de Zarobe (2010) attribute to the fact that most of the Spanish research teams have been comprised of linguists. The abundance of attention given to these areas has left other important areas in need of study, particularly regarding the effectiveness of teacher training which measures how much of what teachers learn in professional development sessions is transferred into their practice, teachers’ use of suitable pedagogy and strategies, and subject content attainment by students.

The research study reported in this dissertation focuses on one of those important areas by measuring effective instructional strategies in order to analyze the quality of teaching provided in bilingual education programs being carried out in Seville,

Spain, and then looking for connections between those levels of strategy implementation and student English language proficiency gains. The foundations of the study are based centrally on the research of Echevarria (2010) and Echevarria and Short (2011), in which they developed the Sheltered Instruction Observation Protocol (SIOP) and identified basic successful features of instruction for English as a second language through content. These basic features are shown to enhance and expand instruction provided by teachers. The hypothesis for this investigation is the following: Instructional techniques applied in CLIL programs have an effect on students' listening and speaking skills. As presented in Section 1.3, research questions to be investigated and answered are

- Is best practice for instructional strategies in bilingual programs being employed in participating bilingual classrooms?
- What CLIL instructional best-practices are being employed in the bilingual classrooms studied?
- What are the language acquisition outcomes for students in the bilingual classrooms studied?

The study was conducted from January to May 2013, after a three-month planning phase was completed beginning in October 2012. A timeline and summary of the procedures followed to complete it appear below in Table 7, and details are described in this chapter.

Table 7: Summary Outline of Project Procedures

Planning Period 3 months	<ol style="list-style-type: none"> 1. Design study 2. Submit an outline of the plan of study and solicit permission from the <i>Delegación Territorial de Educación</i> to conduct study in public schools 3. Select schools to participate with the help of the <i>Delegación</i> 4. Conduct initial meetings with school directors and/or chief of studies 5. Select students to participate 6. Send letter to parents at Epsilon School and obtain signed permission for students' participation
Pre-test phase 1 week	<ol style="list-style-type: none"> 1. Administer ELLOPA to all participating students at all centers
Classroom Observation Phase 14 weeks	<ol style="list-style-type: none"> 1. Observe each participating teacher bi-weekly in each class taught in English by that teacher 2. Complete a SIOP for each observation 3. Complete a SOLOM for each teacher 4. Conduct Interviews with all teachers and instructional assistants
Post-test phase 1 week	<ol style="list-style-type: none"> 1. Re-administer the ELLOPA to all participating students at all centers

3.2 Participants and Programs Studied

Throughout this section details describing both teacher and student subjects of the study are provided, along with details about the schools and programs which were examined. Information regarding how subjects were identified and selected, the locations of the schools, how long each program has been operating, how many hours of English instruction students receive, and which content area subjects are included in the bilingual program provides context for comparisons to other groups in future studies which could focus on the amount of effective strategies being applied in bilingual

programs in Andalusia. Similarities among subjects, schools, and programs included in this study are pointed out and differences are also shown in this section of the chapter.

3.2.1 Subjects of the Study

During the planning period, the project was conceived, schools to participate were identified, and permissions from the *Delegación Territorial de Educación, Cultura y Deporte de Sevilla* were solicited and received. A copy of the letter from the *Delegación* giving approval to observe classes in bilingual centers in Seville appears in Appendix VIII. Five Bilingual Centers in Seville were selected (out of 19 possibilities) based on their locations in the city of Seville (middle-class neighborhoods) in order to provide a representative sample of the city's bilingual programs for the study. Initially seven schools were identified and invited to participate. Five accepted, and were included in the study. For the purposes of discussion, the five schools will be referred to as Alpha School, Beta School, Gamma School, Delta School, and Epsilon School.

At participating schools, all teachers who provided instruction in English to second grade students were included in the study: a total of 11 teachers. The classes taught in English by those teachers included English (language development – AKA language arts), art, music, science, and physical education (PE), although the same selection of classes was not taught at each school. The specific classes taught at each school varied depending on how individual schools had chosen to set up their CLIL program. In addition, the number of hours of English instruction received by students at each school varied although all 149 of the students in the study were in the second grade in the bilingual program studied at the schools. The names of the schools, number of

students participating at each school, number of teachers participating at each school, and classes taught in English at each school appear below in Table 8.

Table 8: Data on Participating Schools

Name of School	Number of Students Participating	Number of Teachers	Classes Taught in English	Additional Information
Alpha School	43 (2 class sections) Group 1 = 22 Group 2 = 21	2	English Language Science Art	2 teachers teach English to 2 entirely different groups of students; teachers do not share students
Beta School	20	3	English Language Science Physical Education	3 teachers teach different content subjects to the same group of students; teachers share students
Gamma School	20	2	English Language Science Art	2 teachers teach different content subjects to the same group of students; teachers share students
Delta School	21	1	English Language Science Art	One teacher teaches all subjects to all students in the group
Epsilon School	45 (2 class sections) Group 1 = 22 Group 2 = 23	3	English Language Science Art Music	3 teachers teach different content subjects to two different groups of students; teachers share students
TOTALS	149 total students 7 total classes	11		

As shown in the table, a total of 7 second grade classes in 5 different schools participated in the study, with the number of students in each class ranging from 21 to

23. At some schools, different teachers provided instruction to a single group of students or to two groups at the same school. At other schools, a single teacher provided all the instruction to a group of students. All second grade classrooms at each participating school were included in the study, with the exception of Beta School, where the entire group in a second class in the target grade was composed of students identified as being in need of special education services for cognitive, learning or behavioral issues. The director there requested to have that classroom excluded, and, therefore, only one of the second grade classes at Beta School was included in the study, so all students in that category were excluded at all schools. Three schools had only one classroom of students in the second grade, and the remaining two schools had two each. Students who live in a home where a language other than Spanish is spoken were identified and participated in the study (n=12). One student who receives a one-hour per week intervention for Spanish as a second language assistance (*ATAL: Aulas temporales de adaptación lingüística*) was also identified and included in the study. Another group of students was identified and also included in the study: children who attended additional English classes at private language academies (n=20). These three variables were accounted for through data disaggregations when analyzing the study information collected.

3.2.2 Schools, Classroom Materials, and Resources

The five participating schools in this project had many commonalities and many differences, the characteristics of which are explained throughout this chapter. All schools included in this study were designated as Bilingual Centers and were located in middle-class neighborhoods in the city of Seville, Spain. Total school populations ranged from 315 students to 566. Two of the five schools made electronic whiteboards available

in the classrooms; however, on the occasions when they were used, the purpose was for other than increasing comprehensibility of content or language. Pages of the textbook or handouts were projected, or music was playing while an image was shown. These electronic boards have a much greater potential in supporting language development, since they can readily show what the teacher is talking about, using visuals and picture-based vocabulary items and their relationships. They can also provide manipulative activities since they have touch screen capabilities. All the teachers who had access to an electronic board reported through an interview session (see Appendix IX) that they had received little or no training in how to use them. They also reported that they had spent no time on their own researching or trying to figure out their use or application in the classroom.

All five schools had a native-speaking instructional aide (IA) assisting teachers in classrooms twice a week. These IAs came to the schools through the British Council. When interviewed (See the list of interview questions in Appendix X), all IAs reported that they had no previous teaching experience and that they had received a one-day presentation of activities to use at their assigned locations before being placed. They said their only knowledge about what to do in a classroom in their support positions came from being directed by a classroom teacher. All 11 teachers reported in summary interviews that they had never had any training in how a native speaker in the classroom can be used to enhance their instruction. Consequently, this observer saw that in classrooms, IAs were underutilized, and numerous opportunities to take advantage of having a model of a native English speaker assist during lessons were overlooked. For example, it was observed that over 50% of the IAs' time was spent doing nothing more in classes than observing teachers, waiting to be directed to interact in some way with

the students. The remainder of their time was spent circulating in the classroom while students were completing written seat work. IAs then spoke in English to read to the students and assist them in completing their tasks. Occasions were rare when an IA presented to the class or led them in an activity. Both teachers and IAs reported in their interviews with this observer that they had no scheduled common planning time, and IAs provided assistance in 5 to 6 different grades a day. Consequently, IAs entered classrooms on a daily basis with no concrete assignments given to them ahead of time. For instance, it was observed that IAs performed random tasks in the classrooms rather than being scheduled in classes at times when regular tasks were being presented which they would be prepared to routinely lead, an underutilization of their native speaking abilities and an indication that no concrete plan for how to use these IAs had been planned out.

All schools and classes based instruction on a state-approved curriculum and used books adopted on a city-wide basis. The textbooks in English presented written language without modifications to support second language comprehension. Materials, content, and instruction were directed at only one level of knowledge and language proficiency. Supplemental materials were seldom used and then consisted of only paper, scissors, glue, flashcards, CD players, and crayons. It was rare to see teacher-made materials being used in these classrooms. In music class, the textbook was in Spanish, and the teacher provided no supplemental materials in English, yet lessons were given by the teacher in English.

All schools had a written bilingual program plan available. According to the director at one school, no norms or requirements were made available that would provide them with guidance in creating the school's bilingual program. That director

reported that he felt that the plan they had submitted had been reviewed only with an eye to ensuring that the school had sufficient resources to implement a program (e.g., number of English-speaking teachers). A teacher shared during the interview step of the study that in order for their plan to be approved by *Delegación Territorial de Educación*, it had to first receive teacher and parent approval, and after 2014 all participating teachers had to demonstrate a minimum of a (CEFR) B2 level of English. The schools' plans all included a required professional development component for teachers, stipulating that every 6 years teachers must receive a minimum of 60 hours of professional development in education, but the plans did not require a specific topic for that training nor stipulated that it needed to be CLIL-oriented. Any topic of study met this requirement. At all schools the bilingual program had been initiated without any group training or meetings where the participating teachers could discuss pedagogy, develop strategies, establish a common understanding or vision for the program, or review curriculum. Additionally, at no school were regular or on-going meetings scheduled or required among the teachers in the bilingual programs in order to discuss pedagogy, student achievement, teaching strategies or program development. Teachers reported they were provided with a curriculum for the subjects they were teaching and books in English and told to teach the grade-level content in English. Only one of the 11 participating teachers reported ever having had any training in how to teach content in English. In face-to-face interviews providing more open-ended study information, all teachers stated that they were unaware of any training being offered to teachers in bilingual programs other than English classes. They did not know of any initiatives to support them in developing teaching strategies for their bilingual classes.

One difference identified among schools was the design of their bilingual programs, which varied widely. The least number of hours of instruction provided in the second grade in English classes was 4.5 hours a week; the greatest number was over twice that: 10 hours. One of the reasons for this wide variability in program hours is due to the fact that schools are not provided by the overseeing agency, *Delegación Territorial de Educación*, with norms nor requirements that call for a consistent number of hours of English instruction to create programs across schools. Schools that wish to implement a program prepare a plan based on their capacities to provide English instruction and submit it to the *Delegación* office, which reviews the plan for approval based on its feasibility. Despite the differences of the programs, schools, and resources available to teachers, student performance in English showed no statistically significant differences (see Section 3.6.1 below).

3.2.3 School #1 Alpha School

The bilingual program at Alpha School was in its fourth year of implementation at the time this study was conducted and included students up to the second grade, although they had a plan in place for the program to grow in the coming years to include up to grade 8. Both participating teachers at this school had 4 years of experience teaching in a CLIL program. The students who participated at this school in this study had received some English instruction for 4 years: two years of pre-bilingual (*anticipación bilingüe*) during their pre-kindergarten years and then bilingual classes in first and second grades. Two second grade classes and two teachers from this school participated in the study, each providing all the English instruction to one of the two different groups of second graders.

TABLE 9: Alpha School Bilingual Program Overview

Grade/Age	Classes and how often English is provided during a week	Total hours in English per week
Pre-K Ages 3, 4 & 5	English: 30 minutes 2 times a week	1 hour per week
Grades 1-3 Ages 6, 7 & 8	English: 2 hours a week Science: 2.5 hours a week Art: 2 hours a week	6.5 hours per week

3.2.4 School #2 Beta School

At different times in different subjects, two teachers provided instruction in English to the single group of second graders who participated in this study at Beta School. The CLIL program at this school was in its sixth year of implementation at the time the study was conducted, and the participating teachers each reported that they had 6 years of experience teaching in bilingual classrooms. Students included in the study were participating in bilingual education for their second year, having had the program in first grade. Although English was being included in pre-kindergarten classrooms on a pre-bilingual basis at the time of this study, it had not been available to the group of second graders when they were at that age. The classroom used by teachers participating at this school had an electronic white board available for them to use.

TABLE 10: Beta School Bilingual Program Overview

Grade/Age	Classes and how often English is provided during a week	Total hours in English per week
Pre-K Ages 3, 4 & 5	English: 30 minutes twice a week	1 hour per week
Grades 1-3 Ages 6, 7 & 8	English: 2 hours a week Science: 2 hours a week Art: 1 hour a week	5 hours per week
Grades 4-6 Ages 9, 10 & 11	English: 3 hours a week Science: 2 hours a week Art: 1 hour a week	6 hours per week

3.2.5 School #3 Gamma School

The bilingual education program at this school had grown over its six-year existence to include up to the third grade when this study was conducted, although as with each of the other schools, only second grade classrooms were included in this study. A single teacher provided all the instruction in English to the second graders who participated in this study. Participating students were in their fifth year of classes including English instruction, since they had English classes during 3 years at the pre-kindergarten level (pre-bilingual) and during 2 years in CLIL classes in first and second grades.

TABLE 11: Gamma School Bilingual Program Overview

Grade/Age	Classes and how often English is provided during a week	Total hours in English per week
Pre-K Ages 3,4&5	English: 30 minutes 2 times a week	1 hour
Grades 1-3 Ages 6,7&8	English: 1.5 hours a week Science: 4.75 hours a week Art: 2 hours a week	9.75 hours per week

Unlike the other four schools who participated in this study, which are located in typical Seville middle-class neighborhoods predominantly populated by native Spanish speakers, the demography of the community served by Gamma School has changed significantly during the past 15 years, reflecting a great deal of ethnic diversity, and the population of the school reflects an impact of those changes. Of the total 400 students at this school, 200 are from countries other than Spain with 34 countries being represented by the school's population. Though most of these students arrive at school with a basic knowledge of Spanish, *Aulas Temporales de Adaptación Lingüística* (ATAL) classes are provided to approximately 50 students. The school only keeps

records on the number of students who qualify for ATAL classes and does not keep records on the numbers of students who speak a language other than Spanish at home if they do not qualify for that specialized instruction. Therefore, the schoolwide number of students living in a home where the primary language is not Spanish is unknown. This includes homes where English is the primary language of the household. Nevertheless, no subjects at this school who spoke English at home were included in this study. Since no records were kept regarding the number of students in the school who spoke a language other than Spanish at home, and no records were kept regarding students' language and literacy proficiency in their other language (e.g., previous school records), the instructor was asked to provide that number for the purposes of this study. Unfortunately, since the teacher did not know, he and this observer had to resort to asking second graders to self-report in cases where he did not know the parents personally. The findings were that 75% of the class spoke a language other than English at home (but not English), and one student attended ATL classes. Not alerting teachers when a student attends a class – CLIL or otherwise – and speaks a language other than the target language (or languages) of the classroom represents many missed opportunities, especially at a school with such high needs emerging, since it is information that can be leveraged by teachers who are trained in language acquisition to promote new language development.

3.2.6 School #4 Delta School

This school's bilingual program had been functioning for 6 years. At the time of this study, it included pre-kindergarten through grade 6 students. Three different teachers provided instruction in English in the two different second grade classrooms

participating in this research study. The students included had received 5 years of instruction in English with 3 years in a pre-bilingual program plus first and second grades in CLIL classrooms. All the participating classrooms in this study had the use of an electronic white board available.

TABLE 12: Delta School Bilingual Program Summary

Grade/Age	Classes and how often English is provided during a week	Total hours in English per week
Pre-K Ages 3,4&5	English: 30 minutes 4 times a week	2 hours
Grades 1-6 Ages 6-11	English: 3 hours a week Science: 4 hours a week Art: 2 hours a week Music: 1 hour a week	10 hours per week

3.2.7 School #5 Epsilon School

At this school, three different teachers provided instruction in English to the second graders who participated in this study. They each reported having two years of experience teaching in this setting. Although their education plan included having the program grow to include from pre-kindergarten classes up to grade 8 in the coming years, at the time the second graders studied were at that age, the pre-kindergarten instruction in English had not yet been initiated. The program at this school was in its second year of implementation at the time this study was conducted, with the participating students having studied in a bilingual classroom in the first and second grades. This was the only school who required signed permission from parents for their children to participate in the study.

TABLE 13: Epsilon School Bilingual Program Overview

Grade/Age	Classes and how often English is provided during a week	Total hours in English per week
Pre-K Ages 3,4&5	English: 30 minutes 3 times a week	1.5 hours
Grades 1-2 Ages 6&7	English: 1 hours a week Science: 2 hours a week PE: 1.5 hours a week	4.5 hours per week
Grades 3-6 Ages 8-11	English: 2.5 hours a week Science: 2 hours a week PE: 1.5 hours a week	6 hours per week

3.3 The programs in the study

The bilingual programs at the 5 schools, included similarities as well as notable differences. All students in the second grade at the 5 schools received instruction in the target language, English, and in the subject areas of English (language arts) and science, although the total number of hours of English instruction students received varied as did the subject areas chosen to be included in the program. Four of the five schools included art instruction in English, one included music instruction in English, and one included PE instruction in English. Upon examining the hours per week that second grade students were exposed to instruction in English (see all tables in Section 3.2), it is noteworthy that the total number of hours ranged from as few as 4.5 to more than double that: 10. Additionally, the number of years students had been participating in bilingual education varied from program to program. At one school, students had been exposed to English for two years; at two schools for four years; and at two schools for five years. Regardless of these differences, all students at all these schools were performing in English at the same low levels (see data presented in Section 3.6.2). This indicates that the variables of how many years students had participated in a bilingual program, how long the program had been implemented at a school, and how many

hours students spent studying in English during a week had no impact on students' English language performance: they were all performing at the lowest level of proficiency on the CEFR and ELLOPA scales. Since the number of years teachers had in teaching in a bilingual program equaled the number of years a program existed at a school, that variable also had no effect on student performance levels in English. Data, details, and further discussion supporting these findings are presented in Section 3.6.5.

3.4 The Assessment Tools Used in This Study

Three assessment tools, all previously discussed in Chapter 2, were employed in this research study: the ELLOPA, the SIOP, and the SOLOM. Descriptions of the implementation procedures used to gather data for this study are included in the subsections below. Data collected and a reporting of the results of the administration of these measures are discussed in upcoming Sections 3.5 and 3.6. Explanations of how the results connect and relate to each other are included in section 3.7.

3.4.1 ELLOPA

The research-based Early Language Listening and Oral Proficiency Assessment (ELLOPA) was used as a pre-test and a post-test to measure the aural/oral language proficiency levels of all second grade students (8 and 9 year olds) who participated in this study. During a one-week period at the beginning of the study, in order to establish a baseline of student language proficiency levels, the ELLOPA was administered and students were rated in four skill areas: oral fluency, grammar, vocabulary, and listening comprehension. The scores students achieved in the four individual skills areas were averaged into one final score. Upon completion of all classroom/teacher SIOP observations, administration of the ELLOPA was repeated as a post-test with the same

groups of second grade students who participated in the assessment process at the beginning of the project. This provided a set of data to compare with the initial data achieved, showing levels of language acquisition growth. Details of the ELLOPA scoring rubric, ratings levels, and equivalents to CEFR levels were described in Chapter 2 Section 2.7.2.3 and copies of ELLOPA documents are included in Appendices I and II.

Students receiving a rating of 1 (the lowest rating on a scale of 1 to 4) in oral fluency were those who could produce only isolated words and/or high frequency expressions (such as “good morning” and “thank you”) and tended to attempt to communicate exclusively in the native language. Students rated at the highest level of oral fluency on the ELLOPA scale (a rating of 4) can participate in simple conversations by creating statements in English at a sentence level, although in a limited manner. These students can interact orally about social and academic topics. In the category of listening comprehension, students rated at the lowest level (a rating of 1) recognize only isolated words and high-frequency expressions (e.g., Hello? How are you?), and at the next level can understand predictable questions, statements and commands in familiar topic areas, but need strong contextual support (e.g., gestures, visuals) to successfully comprehend. At the highest rated level of listening comprehension tasks (a rating of 4), students demonstrate comprehension of familiar and new questions and commands at a sentence level within content topics they have studied. They can follow a conversation at a fairly normal rate.

The validity testing of the ELLOPA took place in 2001–2002 (Thompson et al., 2006). Overall, results from the data analyzed provided support for the validity of the ELLOPA's claim to assess listening comprehension and speaking proficiency in a second language for young learners across languages. During validity sampling, in general,

teachers tended to rate their students slightly higher for all skills than the outside trained evaluators who administered the ELLOPA. Correlations were reported as moderately significant, ranging from 0.48 to 0.61 between the ELLOPA ratings and the teacher ratings.

3.4.2 SIOP

After several years of field-testing the Sheltered Instruction Observation Protocol (SIOP), a study was conducted to establish the validity and reliability of the instrument (Guarino, et al., 2001). Findings indicated that the SIOP is a highly reliable and valid measure of sheltered instruction. Additional information describing the SIOP was included in Section 2.8.3.2.

In order to gather data on the quantity of effective teaching strategies teachers employed during a continuous 14-week period, instruction was observed by the author of this study during 108 school visits to the 5 participating schools using the SIOP. In total, 160 hours of classroom instruction was observed during bi-weekly 20-minute classroom observations of the 11 participating teachers. These included a minimum of one observation every other week for each participating teacher in each class taught in English by that teacher. A complete schedule of observations conducted for this study is included in Appendix XI.

3.4.3 The SOLOM

Also during the phase of SIOP data collection, participating teachers' levels of English language proficiency were rated using the Student Oral Language Observation Matrix (SOLOM). Casual interactions between the teacher and the author of this study, along with a brief interview of the teachers (see Appendix IX), allowed the author to

collect this information. Details regarding the SOLOM were presented and discussed in Section 2.7.2.4., and a copy can be seen in Appendix IV. No reliability or validity information about this tool is available.

3.5 SIOP and SOLOM Data

SIOP data for this project were collected and analyzed in four areas:

1. Overall mean SIOP scores by schools
2. Years of bilingual education program implementation and SIOP scores
 - i. correlated to mean school SIOP scores
3. SIOP and SOLOM scores by teacher
4. SIOP scores by subject area
 - i. Mean SIOP scores in each subject area
 - ii. SIOP scores of individual teachers by subject area

For this study, correlated data are analyzed by applying quantitative research methods (i.e., Pearson Product Moment Correlation, coefficient r or “*Pearson r*”) to make bivariate associations to measure how strong the relationships are between these variables. The Pearson r is used to confirm a hypothesis that when one action, event, or behavior occurs, we are likely to see a consistent response where

- *A perfect correlation* 1.0
- *High correlation* .5 to 1.0 or -0.5 to 1.0
- *Medium correlation* .3 to .5 or -0.3 to .5
- *Low correlation* 1.0 to .3 or -0.1 to -0.3
- *No correlation at all exists* = 0

These correlation coefficients help to determine how strong the linear association is between the different variables.

3.5.1 Overall Mean SIOP Scores

SIOP data was gathered through 160 hours of classroom observation. Each of the 30 criteria observed on the SIOP is scored on a scale of 0 through 4; thus the highest mean score possible is 4 (highly evident) and the lowest possible score is 0 (not evident). The descriptor for a score of 2 is “somewhat evident”. A score of 1 falls halfway between “somewhat evident” and “not evident”. (See sample SIOP, Appendix V). As the mean SIOP scores by school show in Table 14 below, only one school achieved a mean score above 1: Delta School at 1.09. All other mean scores for all other schools fall between 0.5 and 0.87. The average of all schools was 0.75.

Table 14: Overall Mean SIOP Scores by School

SCHOOL NAME	MEAN SIOP SCORE
Alpha School	0.87
Beta School	0.50
Gamma School	0.69
Delta School	1.09
Epsilon School	0.60
AVERAGE OF ALL SCHOOLS	0.75

Tables showing the mean scores by subject area for each of the 30 SIOP criterion for all 5 schools are displayed in Appendix XII. Tables showing criterion mean scores by teacher in the content areas they taught appear in Appendix XIII. These were the data used to achieve the mean SIOP scores shown in Table 14, above.

The mean SIOP scores for each school are consistently low on a scale of 0 to 4 as all are less than 1.1. This data leads to this question: Because all mean scores fall between 0.5 and 1.09 on a scale of 0 to 4, does any single school in the study employ strategies to promote subject content and language learning in a second language at a level that has a statistically significant difference from the other schools? To test the significance of the difference between these low scores, a null hypothesis was used: *There is no statistically significant relationship when comparing these SIOP scores for all schools on a scale of 0 to 4.* Next, an exact contingency table test was performed (see Appendix XV), which showed that there is a probability of 4.8E-92 ($p < .001$), indicating a very low probability that the differences between the low scores were statistically significant. The null hypothesis was proven. This indicates that the results found were consistent and applied to all teachers in all schools: *all* teachers were routinely observed to be at a level described as halfway between “somewhat evident” and “not evident” in employing strategies to simultaneously promote language development and content area knowledge, a qualification that would be considered in need of significant improvement.

Table 15 below illustrates mean scores achieved in the 30 SIOP criteria by all 11 teachers observed as part of this study. The table also shows the standard deviations for the scores by individual criteria.

Table 15: SIOP Mean Criterion Scores and Their Standard Deviations

SIOP CRITERIA #	MEAN SCORE OF ALL TEACHERS	STANDARD DEVIATION
1	0	0
2	0	0
3	2.7	0.43
4	1	1.10
5	0.31	0.57
6	1.13	0.77
7	0.16	0.31
8	0.24	0.68
9	1.12	0.73
10	1.74	0.56
11	1.12	0.55
12	1	1.05
13	0.26	0.35
14	0.18	0.30
15	0	0
16	0	0
17	0	0
18	1.62	0.57
19	2.68	0.68
20	0.65	0.64
21	0.70	0.66
22	0.70	0.85
23	0.32	0.77
24	0.22	0.63
25	1.44	0.95
26	1.30	0.80
27	0.06	0.30
28	0.06	0.30
29	1	1.02
30	0.22	0.71

As the data shows, the greatest standard deviation was 1.10 for criterion #4, which had a mean score of 1. This indicates that some teachers may have achieved as much as a 2.1 (somewhat evident) mean score (but no higher) for this criterion in a particular subject area, and others may have achieved as little as 0 (not evident). Only 3 criteria have a standard deviation of greater than 1. They are

- #4 (discussed in the paragraph above) with a mean of 1 and a standard deviation of 1.10
- #12 with a mean of 1 and a standard deviation of 1.05
- #29 with a mean of 1 and a standard deviation of 1.02

The remaining 27 criteria have a standard deviation of less than 1. Since 5 of the criteria have means of 0, then 22 criteria have a standard deviation between 0.1 and 1. This finding is consistent with the findings supporting the null hypothesis tested above, indicating that on all 160 observations made, for all criteria, SIOP scores were consistently low with a low probability of statistically significant deviations. There were not any lessons taught by teachers on days where scores were significantly higher. Upon examining the two highest mean scores, both above 2.0, #3 had a mean of 2.70 and a standard deviation of 0.43; and #19 had a mean of 2.68 and a standard deviation of 0.68. This indicates that some teachers did perform at a level between “somewhat evident” (SIOP score of 2) and “highly evident” (SIOP score of 4) in these criterion on some occasions in a given subject area. However, the examination of all standard deviations of mean scores indicates that teacher performance of SIOP criteria was consistent and deviated very little from lesson to lesson, meaning that even the highest mean scores had no statistical significance. Teachers were routinely scoring low on all items measured by the SIOP with no differences that were statistically significant.

Following CLIL tenets, teachers were expected to modify their teaching strategies to accommodate the needs of second language learners in content classes, including simplifying written text. Lesson presentations and educational materials, including textbooks, should have reflected the CLIL approach which is more than simply presenting the native-language curriculum in a foreign language (Graddol, 2006).

However, the instruction, curriculum, and materials used in the classes observed for this study consistently did not reflect a CLIL approach: they were designed as instruction would be presented to native English speakers with no differentiation evident. This is reflected through the resulting scores from direct observations of the 30 SIOP criteria, which were shown in Table 15. Teacher behavior descriptions for each criterion targeted, what a score of 4 (highly evident) looks like in the classroom, and a description of what was actually observed in classrooms appear below. Scores listed reflect the overall mean from all teachers in each criterion, as reported in Table 15. Again, a score of 4 means “highly evident”; 2 means “somewhat evident”; and a score of 0 means “not evident”.

SIOP Section 1: Lesson Preparation. Effective lesson preparation ensures instructional rigor and relevance. It thoughtfully identifies instructional goals and objectives for both language learning and content learning, taking into account the level of language proficiency that the students have. Content and language objectives are given equal importance and reflect content concepts, use of supplementary materials, adaptation of content, and application of meaningful classroom activities.

#1 Criterion: Content objectives are clearly defined, displayed, and reviewed with students.

What does a score of 4 (highly evident) look like?

Content objectives should be presented to students in comprehensible ways at the beginning of a lesson. The content objectives should be presented orally and in writing and should be tied to a specific grade-level content standard. They are for the students so they have a picture of what they will be expected to know and be able to do at the end of the lesson.

Mean score achieved by teachers in this study: **0.0**

What was observed:

Content objectives were neither stated nor emphasized by teachers in any lesson observed. Since the participating teachers had little or no training in how to teach their respective content areas through English as a second language, it is logical that the content objectives would not be given specific attention, which reflects that the teachers were not aware of the benefits of doing this comprehensibly, which would simultaneously develop lesson vocabulary, activate background knowledge, create interest for the lesson, etc.

#2 Criterion: Language Objectives are clearly defined, displayed, and reviewed with students.

What does a score of 4 (highly evident) look like?

Language objectives should be presented to students in comprehensible ways at the beginning of the lesson. They should be presented orally and in writing and should be tied to a specific grade-level content standard. They are for the students so they have a picture of what they will be expected to do in the target language in listening, speaking, reading and writing. The language objectives should reflect the students' varying levels of language proficiency.

Mean score achieved by teachers in this study: **0.0**

What was observed:

Language objectives were not addressed by any teacher in any way in any lesson observed. Since the participating teachers had little or no training in how to teach their respective content areas through English as a second language, it is logical that they were unaware of the benefits of pointing out to

students what they would be expected to do through listening, speaking, reading, and writing in English by the end of a given lesson.

#3 Criterion: Content concepts are appropriate for the age and educational background level of students.

What does a score of 4 (highly evident) look like?

The content of the lesson is appropriate for study in the students' first language, the students' literacy and proficiency levels in the target language (listening, speaking, reading, writing, comprehension), their home culture, their age, and their educational background.

Mean score achieved by teachers in this study: **2.7**

What was observed:

In general, appropriate content concepts were evident.

#4 Criterion: Supplementary materials are used (e.g., computer programs, graphs, models, visuals, demonstrations, manipulatives).

What does a score of 4 (highly evident) look like?

Materials used in the lesson go beyond the textbook. They support the curriculum and make content concepts more concrete, tangible, visible and understandable. They put the content and language of the lesson in a context that is identifiable for the student. They support a variety of learning styles.

Mean score achieved by teachers in this study: **1.0**

What was observed:

Supplementary materials were seldom used. Classes where electronic boards were available were used scarcely, and then, rather than be used to increase

comprehensibility by connecting language to visuals, they only projected pages from a book or an image while music was playing.

#5 Criterion: Content is adapted to all levels of student proficiency (e.g., text, assignments)

What does a score of 4 (highly evident) look like?

Adapted content recognizes that the students comprise more than a single level of content ability and language proficiency. It teaches to the entire “bell curve” as opposed to only the middle of it. Delivery of adapted content takes into account the language proficiency levels of the students using strategies such as graphic organizers, outlines, labeling of pictures, study guides, adapted text, anticipation guides and use of demonstrations and highlighted text.

Mean score achieved by teachers in this study: **0.3**

What was observed:

Differentiation of materials was barely evident. Content presented and materials used were directed at one level of knowledge and language proficiency.

#6 Criterion: Meaningful activities connect to students’ lives and integrate lesson concepts (e.g., surveys, letter writing simulations, constructing models) with language practice opportunities for reading, writing, listening, and/or speaking.

What does a score of 4 (highly evident) look like?

Activities are included which provide opportunities for students to experience and apply what they are learning about. They allow students to more successfully relate classroom experiences to their own lives. These activities

show students *an application for* what they are learning. These activities incorporate all language skill areas (listening, speaking, reading, writing, and comprehension).

Mean score achieved by teachers in this study: **1.13**

What was observed:

Content was rarely applied to real-life contexts or students lives. When an application was made, it consisted of letter writing.

SIOP Section 2: Building Background. Effective teachers of English as a second language make connections between new concepts and past learning and between concepts and students' personal experiences. These connections help students organize new information as part of their cognitive processing. Furthermore, teachers must explicitly teach and emphasize the key academic vocabulary of the concepts and provide opportunities for language learners to use this vocabulary in meaningful ways.

#7 Criterion: Concepts are explicitly linked to students' background experiences.

What does a score of 4 (highly evident) look like?

Instruction makes overt personal, cultural or academic connections to students' background experiences in and out of the classroom.

Mean score achieved by teachers in this study: **0.16**

What was observed:

No schema-building activities were observed. No questions were asked to see if students had prior experience with the content (e.g., Have you ever seen a salamander?) When questions were specifically asked, they consisted of "Do you remember last week when we talked about..." Although this question may have drawn the student's thinking to what they had previously studied, it

might be considered a rhetorical device more than a way to connect to background knowledge, since the intention of the teacher when asking this question may not have been to make a specific connection to students' prior learning. It may just have been a way to get the students' attention onto the topic.

#8 Criterion: Links are explicitly made between past learning and new concepts.

What does a score of 4 (highly evident) look like?

Lesson activities serve as a bridge between past learning and new concepts. The connections between what students have previously learned and the new concepts presented are overtly pointed out.

Mean score achieved by teachers in this study: **0.24**

What was observed:

Links made to past learning consisted of statements such as “Do you remember we studied this last week?” No cyclical teaching was evident, which would reuse learned concepts in new ways to build on previous lessons. Concepts were approached singularly and independently, often by units, with no overt connections made between units of learning. No connections to background knowledge were attempted.

#9 Criterion: Key vocabulary is emphasized (i.e., introduced, written, repeated, and highlighted) for students to see.

What does a score of 4 (highly evident) look like?

Vocabulary which is essential to learning and comprehension is specifically presented, in context, orally and in writing. The vocabulary is highlighted and repeated throughout the lesson. The number of vocabulary items is limited.

Mean score achieved by teachers in this study: **1.12**

What was observed:

Vocabulary was a concept that received significant attention during classes, but most often without context. Discrete lexical items, most often consisting of concrete nouns and action verbs, were a primary focus. Vocabulary was solicited orally, written, read, and placed on flashcards (with no accompanying illustrations), and connections between visual representations and oral or written vocabulary were seldom made. Vocabulary was frequently translated from one language to the other, and occasionally lexical phrases were a focus; however, they were not presented systematically nor cyclically. They were not emphasized nor highlighted during use. Their use was often limited to book-based activities.

SIOP Section 3: Comprehensible Input. Accomplished English as a second language teachers modulate their rate of speech, word choice, and sentence structure complexity according to the proficiency level of their students. They make the content comprehensible through scaffolding techniques. English as a new language teachers must also explain academic tasks clearly, both orally and in writing, providing models and examples wherever possible.

#10 Criterion: Speech is appropriate for students' proficiency levels (i.e., slower rate, enunciation, and simple sentence structure for beginners).

What does a score of 4 (highly evident) look like?

Teacher's use and presentation of the target language takes into consideration the language proficiency levels of the students. Language use is dynamic and is connected to meaning. Language presentation for all levels goes beyond

one-word examples. Sentence level language input is provided for all language proficiency levels, though for lower proficiency levels, simple language structures are emphasized, repeated, and highlighted.

Mean score achieved by teachers in this study: **1.74**

What was observed:

The rate of speech used by teachers was somewhat appropriate to the level of the students although the quantity of it overwhelmed them. Lectures were long and frequent and sometimes contained language forms too complex for the students' levels. Few non-verbal cues were present (body language, gestures, repetition) to assist students in comprehension.

#11 Criterion: Clear explanations of academic tasks are given.

What does a score of 4 (highly evident) look like?

The teacher ensures that task assignments, instructions, and expectations are understood by students using a variety of techniques including demonstrations, modeling, translation to the first language, and student's paraphrasing the task.

Mean score achieved by teachers in this study: **1.12**

What was observed:

No modeling or demonstration of how to accomplish tasks using English occurred. Visual representations that would illustrate the meaning of instructions were not present. Even when bilingual assistants were present, it was the teacher who gave instructions or directions, mostly with little comprehensibility. When clarification did happen, it consisted of translating into Spanish.

#12 Criterion: A variety of techniques are used to make content concepts clear (e.g., modeling, visuals, hands-on activities, demonstrations, gestures, body language).

What does a score of 4 (highly evident) look like?

The teacher ensures that all students know what they are expected to know and be able to do in a content area using a variety of techniques including demonstrations, modeling, translation to the first language, and student's paraphrasing the task.

Mean score achieved by teachers in this study: **1.0**

What was observed:

With little variation, the most prevalent teaching techniques employed in the classes observed were lecture and translation. Instruction in English seldom contained modeling, hands-on activities, demonstrations, or visuals connected to the meaning of the English used in class. Some gestures were used on occasion by teachers to increase comprehension, and students were occasionally allowed to use a limited array of manipulatives though teachers rarely led activities connecting the manipulatives to any language or content in English.

SIOP Section 4: Strategies. Teachers and students need to use specific language and content learning strategies in lessons. Teachers must scaffold instruction, beginning at a level that encourages student success and providing support to move the students to a higher level of understanding and accomplishment. Teachers highlight study skills and learning strategies for students and create tasks and ask higher-order questions that require students to use the strategies and talk about them.

#13 Criterion: Ample opportunities are provided for students to use learning strategies.

What does a score of 4 (highly evident) look like?

Tasks throughout the lesson frequently require students to use thinking skills beyond simple knowledge and comprehension. The tasks also require students to apply, analyze, synthesize, evaluate, and make judgments about the material presented.

Mean score achieved by teachers in this study: **0.26**

What was observed:

Students were encouraged to learn through memorization of vocabulary items or language chunks rather than through applying, analyzing, or creating with the language. They completed worksheet after worksheet of basic knowledge and comprehension tasks. They were not given opportunities to create utterances on their own in English. No instruction leading students in their development of learning strategies were present.

#14 Criterion: Scaffolding techniques are consistently used, assisting and supporting student understanding.

What does a score of 4 (highly evident) look like?

Instruction includes frequent presentation, teaching, and reuse of learning strategies that support student comprehension. Students are overtly taught to learn how to learn through use of strategies such as think-alouds, graphic organizers, highlighting key concepts and ideas, note taking skills, etc.

Mean score achieved by teachers in this study: **0.18**

What was observed:

Supports for comprehension of meaning were not evident. Language meaning was consistently achieved through translations rather than through scaffolded presentations. Some use of visuals was occasionally observed.

#15 Criterion: A variety of questions or tasks that promote higher-order thinking skills (e.g., literal, analytical, and interpretive questions) are provided.

What does a score of 4 (highly evident) look like?

Tasks throughout the lesson require students to use thinking skills beyond simple knowledge and comprehension. The tasks also require students to apply, analyze, synthesize, evaluate, and make judgments about the material presented.

Mean score achieved by teachers in this study: **0.0**

What was observed:

Question types and tasks wholly lacked variation. Questions and tasks required students to use basic knowledge through memorization. In content classes, such as science, lower-thinking-level comprehension questions were most often asked (e.g., Is a snake a vertebrate or an invertebrate?), but not higher-order thinking questions or tasks were assigned which would require students to apply English practiced, analyze content in English, express opinions about what they learned, or create with the language in any way.

SIOP Section 5 Interaction. High quality language learning classes provide frequent opportunities for interaction and discussion between teacher and students, and among students. It is through discussion with classmates and with the teacher that ELLs practice important skills like elaborating, negotiating meaning, clarifying and confirming information, persuading, disagreeing, and evaluating.

#16 Criterion: Frequent opportunities are allowed for interaction and discussion between teacher and student and among students, encouraging elaborated responses about the lesson concepts.

What does a score of 4 (highly evident) look like?

Students are allowed structured and unstructured interaction times to practice the content they are learning in the new language. There is less teacher talk and more student talk, that is, more student interaction about the subject and topics being learned. Students are strategically provided with opportunities to practice language at their level of language competency.

Mean score achieved by teachers in this study: **0.0**

What was observed:

The teacher voice was the one most present in the class. Interaction among students was specifically discouraged as opposed to organizing interaction – structured or unstructured – as a learning strategy during instruction. Opportunities for student-to-student or small-group practice was absent. When students did interact with each other, they did so in Spanish and as an off-task behavior.

#17 Criterion: Grouping configurations support language and content objectives of the lesson.

What does a score of 4 (highly evident) look like?

The classroom is set up in a way that facilitates easy communication among students.

Mean score achieved by teachers in this study: **0**

What was observed:

There was no strategic or purposeful placement of student desks to facilitate student interaction. Desks were separated and placed in rows. Some students were even set apart from the rest of the group all together prompted by discipline issues.

#18 Criterion: Sufficient wait time for student responses are consistently provided.

What does a score of 4 (highly evident) look like?

After students are prompted to respond by the teacher, there is time allowed for students to think, formulate an answer, and produce the language.

Mean score achieved by teachers in this study: **1.62**

What was observed:

In general, teachers allowed sufficient time for students to think and answer questions posed to them, but not in amounts to encourage or support second language processing and production. There were numerous occasions when students were expected to produce language on demand, without processing time.

#19 Criterion: Ample opportunities are provided for students to clarify key concepts in their first language as needed with aide, peer or first language text.

What does a score of 4 (highly evident) look like?

Students are allowed time and occasions as needed to ask clarifying questions of each other, a language assistant, or the teacher in the home language.

Mean score achieved by teachers in this study: **2.68**

What was observed:

This criteria was the one which achieved the highest mean score, at a level between “somewhat evident” and “highly evident”. Key concepts, indeed all

concepts, were clarified with the teacher through translation into the mother tongue.

SIOP Section 6 Practice and Application. Effective language learning lessons include activities that encourage students to practice and apply the content they are learning *and* practice and apply the language skills they are learning, too. These activities are most beneficial when they include visual, hands-on, and other kinesthetic tasks.

#20 Criterion: Hands-on materials and/or manipulatives are provided for students to practice using new content knowledge.

What does a score of 4 (highly evident) look like?

Students are allowed to explore meaning and content using tactile, kinesthetic, and/or authentic materials. Opportunities are provided to students to become familiar with, analyze and/or experiment with content and language topics.

Mean score achieved by teachers in this study: **0.65**

What was observed:

Manipulatives used consisted exclusively of paper, scissors, glue, crayons, and flashcards. No actual touching opportunities (e.g., Frogs have damp skin. What does ‘damp’ feel like? This sponge is damp. Touch this damp sponge.) or looking opportunities (e.g., How is the skin of a reptile different from the skin of an amphibian? Look at this picture and tell me.) or manipulatives were used (e.g., Here are pictures of many animals. Separate them into categories according to reptiles, amphibians, and mammals.)

#21 Criterion: Activities are provided for students to apply content and language knowledge in the classroom.

What does a score of 4 (highly evident) look like?

Students are provided opportunities to apply what they have learned in different contexts or situations.

Mean score achieved by teachers in this study: **0.70**

What was observed:

In general, questions were limited to basic knowledge and comprehension.

Application activities were limited to letter writing.

#22 Criterion: Activities integrate all language skills (i.e., reading, writing, listening, and speaking).

What does a score of 4 (highly evident) look like?

Students are required to participate in appropriate reading, writing, listening, and speaking tasks. Students produce original meaningful oral utterances to communicate a message (speaking), interpret aural language and appropriately respond or perform a task (listening), produce the language in written form to communicate a message (writing), or attach a meaning to written text and then respond orally or in writing.

Mean score achieved by teachers in this study: **0.78**

What was observed:

Language use in English was primarily limited to listening to lectures without responding in any way (no oral responses; no simultaneous written task to show comprehension) repeating what was said, copying words or short sentences, identifying written words by translating them into Spanish, writing a single word in a blank to complete a sentence, or drawing a line from a written sentence to a picture that corresponded to it. Students were not asked

to create with the target language nor listen or read with an accompanying task that would attach meaning to that language.

SIOP Section 7 Lesson Delivery. Successful delivery of a language learning lesson means that and the students had a high level of engagement throughout the class period. All students must have opportunities to practice their language skills within the context of the academic tasks.

#23 Criterion: Content objectives are clearly supported by lesson delivery.

What does a score of 4 (highly evident) look like?

Strategies, activities, and tasks used in the lesson are designed to reinforce the teaching and learning of content in the lesson.

Mean score achieved by teachers in this study: **0.32**

What was observed:

Since content objectives were not presented as part of the lesson content, the degree to which they were supported was sometimes a challenge to identify and affected the score of this criterion item. Nevertheless, the content objectives of the lesson were often made evident to the observer through the instruction provided, though they remained obscure to the students.

#24 Criterion: Language objectives are clearly supported by lesson delivery.

What does a score of 4 (highly evident) look like?

Strategies, activities, and tasks used in the lesson are designed to reinforce language acquisition.

Mean score achieved by teachers in this study: **0.22**

What was observed:

Since language objectives were not defined nor clarified at the start of the lesson content, how well they were supported was left to the experience of the observer to evaluate and affected the score of this criterion item. While language objectives of the lesson were sometimes made evident to the observer through the instruction provided, students were not given guidance to know what they were expected to do with the language.

#25 Criterion: Students are engaged in instructional activities approximately 90% to 100% of the period.

What does a score of 4 (highly evident) look like?

Students participate in learning activities and stay on task without teacher intervention. Students concentrate on tasks and show effort to understand and complete the task. Students are actively involved in learning.

Mean score achieved by teachers in this study: **1.44**

What was observed:

Percentage of student engagement varied by lesson and teacher. Particularly during the frequent class lectures given, engagement was observed to be very low (less than 20%). Students remained more engaged and on task when completing worksheets, but upon finishing those assignments, a good deal of off-task behaviors occurred during the excessive wait time before a new activity began. Students spent long amounts of time waiting in line at the teacher's desk while all work was reviewed by the teacher. On these frequent occasions, very little academic engagement was going in in the class.

#26 Criterion: Pacing of the lesson is appropriate to students' ability level.

What does a score of 4 (highly evident) look like?

The teacher deliberately slows or hastens the speed that teaching happens to accommodate student's ability levels. Lesson pacing occurs as part of a planned strategy to teach certain material or students in the best way, or as a response to how well students are receiving instruction. Pacing is adjusted in the moment as well as while planning each lesson.

Mean score achieved by teachers in this study: **1.3**

What was observed:

Lessons were generally presented at a pace accessible to students given their age and English level, with the exception of the frequent lectures.

SIOP Section 8 Review/Assessment. Students learning English a second language need to review key vocabulary and concepts, and teachers need to assess how well students retain the information—through frequent feedback to students and informal assessments throughout the lesson. Language teachers should offer multiple pathways for students to demonstrate their understanding of the content.

#27 Criterion: A comprehensive review of key vocabulary is provided.

What does a score of 4 (highly evident) look like?

A planned activity is provided that presents a review of terminology essential to the lesson. The activity is more than a simple list of vocabulary: it requires students to use or apply the vocabulary in meaningful ways.

Mean score achieved by teachers in this study: **0.06**

What was observed:

A comprehensive review of lesson vocabulary was very rarely observed. When they were, they consisted of the children reading or repeating a list of vocabulary. No activities were observed to wrap up a lesson that would

provide the teacher with an overall picture of how much language students had processed or retained during a lesson.

#28 Criterion: A comprehensive review of key content concepts is provided.

What does a score of 4 (highly evident) look like?

A planned activity is provided to review key content concepts and understandings at the end of a lesson. A review might involve students summarizing with partners, writing in a journal, or listing key points on the board.

Mean score achieved by teachers in this study: **0.06**

What was observed:

Purposeful activities to review content learning were rarely observed. On the occasions when they were, they consisted of the teaching writing on the board. No actions were observed that would provide the teacher with an overall picture of how much content information students had learned during a lesson.

#29 Criterion: Regular feedback is provided to students on their output (e.g., language, content, work).

What does a score of 4 (highly evident) look like?

Specific feedback is generally given orally or in writing, but teachers can also provide it through facial expressions and body language. Students can also provide feedback for each other. Appropriate feedback is supportive and validating.

Mean score achieved by teachers in this study: **1.0**

What was observed:

When teachers were observed providing feedback, it was done either orally or through a facial gesture. Affirming feedback was not observed to be regular nor frequent. Students were not engaged in any activities to provide feedback to each other in any form.

#30 Criterion: An assessment of student comprehension and learning of all lesson objectives (e.g., spot checking, group response) is provided throughout the lesson.

What does a score of 4 (highly evident) look like?

The teacher gathers and synthesizes information concerning students' learning and makes judgments about students' learning. Students' progress is assessed to see whether it is appropriate to move on or whether it is necessary to review and reteach. The teacher achieves this through on-the-spot, ongoing opportunities for determining student learning, teacher observations, anecdotal reports, teacher-to-student or student-to-student conversations, quick-writes, brain-storming activities, etc.

Mean score achieved by teachers in this study: **0.22**

What was observed:

Lessons were rarely wrapped up by activities to assess how much information was captured by students either in content or language. When it was, the action was limited to the teacher collecting student work.

Further analysis of the individual SIOP criterion scores yields noteworthy information. In five criteria, a mean score of zero was achieved, meaning that at no time, in any of the 160 hours of observed classroom instruction provided by any of the teachers in any

subject, were these five criteria addressed at even the slightest discernable level in any class taught. These five criteria were:

1. #1: Content objectives were clearly defined, displayed and reviewed with students.
2. #2: Language objectives were clearly defined, displayed, and reviewed with students.
3. #15: A variety of questions or tasks that promote higher-order thinking skills (e.g., literal, analytical, and interpretive questions) are provided.
4. #16: Frequent opportunities are allowed for interaction and discussion between teacher/student and among students, encouraging elaborated responses about the lesson concepts.
5. #17: Grouping configurations support language and content objectives of the lesson.

In addition, there were only two criteria which received a mean score higher than 2.0, which is “somewhat evident”: criterion #3 and criterion #19. These two criteria were:

1. #3, Score 2.7: Content concepts are appropriate for the age and educational background level of students.
2. #19, Score 2.68: Ample opportunities are provided for students to clarify key concepts in their first language as needed with aide, peer or first language text.

These two scores were the two highest mean criterion scores achieved, with a description of “somewhat evident”. This indicates that the teachers observed somewhat knew how to plan for instruction that contained content material in the target language that was at a cognitive level consistent with the needs of children in the grade being taught (second grade. In addition, they somewhat appropriately integrated

opportunities for students to clarify key concepts in their first language. It was observed that teachers frequently used the home language (Spanish) to clarify tasks for the students, rather than using visuals and modeling in the target language. This shows that, following CLIL tenets, students were asking questions of the teacher in their first language, Spanish, on a regular basis, and teachers were routinely translating into Spanish their instructions and responses to questions rather than using these opportunities to develop the second language through demonstrations, visuals, and repetition. Nevertheless, as presented earlier in this section, these scores were not found to be statistically significant when compared to all other SIOP scores. That is, it cannot be said that these two points were better implemented than any of the other criteria on the SIOP.

3.5.2 Years of Program Implementation and SIOP Scores

A notable variable which needs to be taken into consideration when looking at the SIOP data is the number of years the program has been implemented at each school. All teachers had the same number of years of experience teaching in a bilingual program as the number of years of program implementation at their school. Table 16 below further explains how this also affects the number of years the students have participated in the program. As the information in the table indicates, in three schools (Beta School, Gamma School, and Delta School) the teachers were in their sixth year of experience in bilingual education program implementation while participating in this study, but the *students* at one of those schools had only been part of the bilingual program for two years and had been part for only five years at the other two schools. At the remaining

two schools, students and teachers were in their fourth year of the program (Alpha School) and second year (Epsilon School).

Table 16: Length of Bilingual Program Implementation

School	Teachers' Years of Experience and Number of Years the Program Has Been Implemented	Number of Years the Study Group of Second Graders has Been in English Classes (pre-bilingual and bilingual)	Other information
Alpha School	4	4	2 pre-K years + 1 st grade + second grade
Epsilon School	2	2	1 st + 2 nd grades
Beta School	6	2	This school has no pre-K bilingual program, so second graders have only had the program in 1 st and 2 nd grades
Gamma School	6	5	3 pre-K years + 1 st grade + second grade
Delta School	6	5	3 pre-K years + 1 st grade + second grade

In order to investigate whether there is a relationship between SIOP results and the number of years teachers had been providing instruction in a bilingual program, covariance calculations of the mean SIOP scores of schools and their years of program implementation were made and are displayed in the table below. A low correspondence was found, as is illustrated in the table below (see Appendix XVI for covariance calculation data).

Table 17: Covariance Between Years of Program Existence and SIOP Scores

SCHOOL	YEARS PROGRAM HAS EXISTED AND NUMBER OF YEARS OF TEACHER EXPERIENCE	SIOP AVERAGE SCORE	COVARIANCE
Alpha School	4	0.87	0.792 (low correspondence)
Beta School	6	0.50	
Gamma School	6	0.69	
Delta School	6	1.09	
Epsilon School	2	0.60	

The data indicates that there is no relationship between teacher SIOP scores and how long a program has been implemented. Having had a bilingual program in place for a greater number of years did not equate to teachers there applying more strategies to simultaneously develop students' abilities in English and their content knowledge. There was no correlation between the two points. In addition, all teachers had been implementing the program for all the years it had been in place at their school. Therefore, this covariance data also indicates that the number of years of experience a teacher had teaching in a bilingual program did not mean they were observed to be applying a greater level of language and content development strategies.

Another notable point the covariance data showed was in comparing the three schools where teachers have six years of experience teaching in the bilingual programs there. As the data indicates, when the overall mean SIOP scores of all 5 schools are compared, there is no statistically significant difference found. However, as the results of a series of *t*-tests performed indicate (see Table 18 below), when comparing the single school with the lowest mean SIOP score to the school with the highest mean score (Beta

School compared to Delta School) a very statistically significant difference was found. Curiously, both these schools had been implementing the program for six years, and the teachers had the same six years of experience. However, when comparing the score for Delta School to the other two schools where the bilingual program had been implemented for six years, no statistically significant difference was found.

The other school where a statistically significant difference was found when compared to Delta School is Epsilon School, where the program had been implemented for only two years, and the teachers had a corresponding two years of experience implementing a bilingual program. These were the only statistically significant differences found in comparing the schools' SIOP scores. The mean SIOP scores of schools, which were used in performing the *t*-tests described in Table 18 below, were presented in Table 14. This data supports the finding that the years of experience teachers possessed in teaching in a bilingual education setting had no effect on the level of application of appropriate second language teaching strategies. Since only one of the 11 teachers included in this study reported having ever participated in training on how to incorporate language learning and content instruction simultaneously, these findings suggest that teachers are not finding ways to get better at using strategies in class as they gain years of experience teaching in bilingual programs. These would include participating in collegial work and/or share groups, online trainings, and self-study as professional development.

Table 18: t-Tests Comparing the SIOP Mean Scores of Schools
(see Appendix XVII for information on how t-tests are calculated)

t-test #	Schools Being Compared	# Program Years	Mean of School's SIOP Scores	Standard Deviation	Statistically Significant?
#1	Delta School	6	1.09	0.1653	P Value = 0.0023 Very statistically significant
	Beta School	6	0.50	0.1915	
#2	Delta School	6	1.09	0.1653	P Value = 0.2191 Not statistically significant
	Gamma School	6	0.6867	0.5590	
#3	Delta School	6	1.09	0.1653	P Value = 0.025 Statistically Significant
	Epsilon School	2	0.6	0.2364	
#4	Delta School	6	1.09	0.1653	P Value = 0.5568 Not statistically significant
	Alpha School	4	0.8733	0.6805	
#5	Beta School	6	0.50	0.1915	P Value = 0.4557 Not statistically significant
	Gamma School	6	0.6867	0.5590	
#6	Beta School	6	0.50	0.1915	P Value = 0.3939 Not statistically significant
	Epsilon School	2	0.6	0.2364	
#7	Beta School	6	0.50	0.1915	P Value = 0.2678 Not statistically significant
	Alpha School	4	0.8733	0.6805	
#8	Gamma School	6	0.6867	0.5590	P Value = 0.8168 Not statistically significant
	Epsilon School	2	0.6	0.2364	
#9	Gamma School	6	0.6867	0.5590	P Value = 0.6960 Not statistically significant
	Alpha School	4	0.8733	0.6805	
#10	Epsilon School	2	0.6	0.2364	P Value = 0.5325 Not statistically significant
	Alpha School	4	0.8733	0.6805	

3.5.3 SIOP and SOLOM Scores of Individual Teachers

Table 19 below shows the mean SIOP scores of individual teachers and their score on the SOLOM. The SOLOM recommends that non-native speakers should have a minimum score of 4 in order to provide instruction in the language being assessed. (See Section 2.7.2.4 for more details on the SOLOM.) The two teachers who have a score of 3 on the SOLOM also received the two lowest average SIOP scores of all teachers (Alpha School teacher #2, 0.26 SIOP score; Beta School teacher #2, 0.33). An application of a Pearson's r correlation coefficient formula (see Appendix XVIII for calculation data) was performed for the 11 teachers to determine if any relationship exists between having a low SOLOM score and a low SIOP mean score. The calculation yields a 0.557 correlation between SOLOM score and SIOP score: a positive high correlation. In other words, there is a positive, high probability of teachers having a minimum SOLOM score of 4 and their achieving higher SIOP scores. There is also a positive, high probability of teachers having less than a SOLOM score of 4 and their receiving lower SIOP scores. This finding serves to support efforts by the *Consejería de Educación* in Andalusia to promote teachers' attendance at language development courses, as outlined in the Horizon 2020 plan, as it shows that the higher a teacher's proficiency in the language is, the more appropriate strategies they apply in class. This supposition should be considered with caution, however, given how low the SIOP scores were overall.

Table 19: Teachers' SOLOM Scores and SIOP Scores

School Name	Teacher #	SOLOM Score	Mean SIOP Score for this Teacher	Mean School SIOP Score
Alpha School	TEACHER #1 ENGLISH, SCIENCE AND ARTS	4	1.49	0.87
	TEACHER #2 ENGLISH, SCIENCE AND ARTS	3	0.26	
Beta School	TEACHER #1 MUSIC	4	0.70	0.50
	TEACHER #2 ENGLISH AND SCIENCE	3	0.30	
Gamma School	TEACHER #1 SCIENCE, LANGUAGE, ART	4	0.69	0.69
Delta School	TEACHER #1 MUSIC	4	1.32	1.09
	TEACHER #2 ARTS AND SCIENCE	4	1.04	
	TEACHER #3 ENGLISH	4	0.96	
Epsilon School	TEACHER #1 SCIENCE	4	0.43	0.60
	TEACHER #2 LANGUAGE	4	0.50	
	TEACHER #3 PHYSICAL EDUCATION	4	0.87	

3.5.4 SIOP Scores by Subject Area

In order to determine whether teaching a particular content area class affected the amount of appropriate strategies teachers used to simultaneously develop English language abilities and content area attainment, SIOP data was disaggregated into subject areas. The graph in Figure 1 below shows that data by school. That is, the mean SIOP score for all science classes taught in the 5 schools, the mean for art, etc., can be seen below.

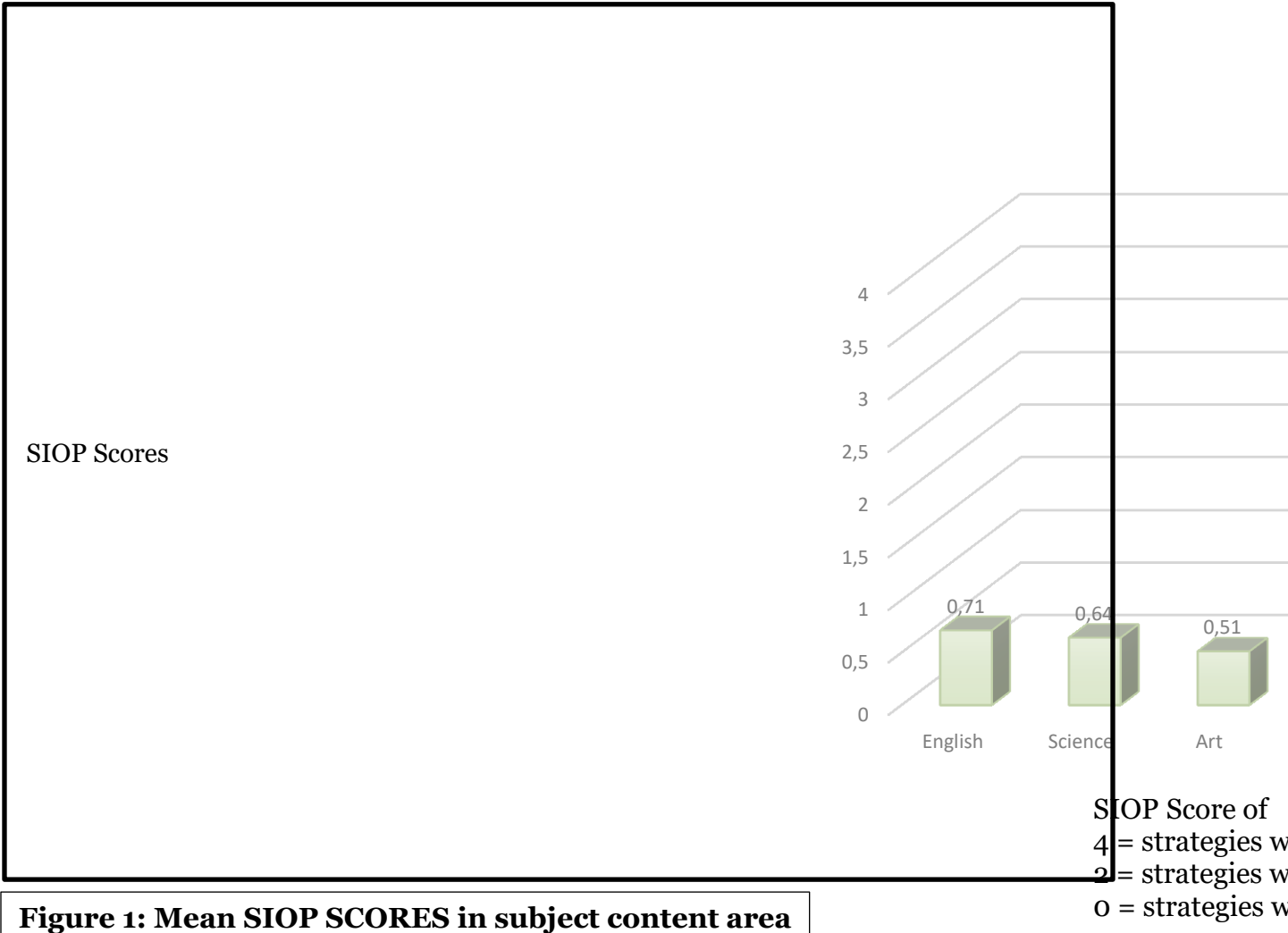


Figure 1: Mean SIOP SCORES in subject content area

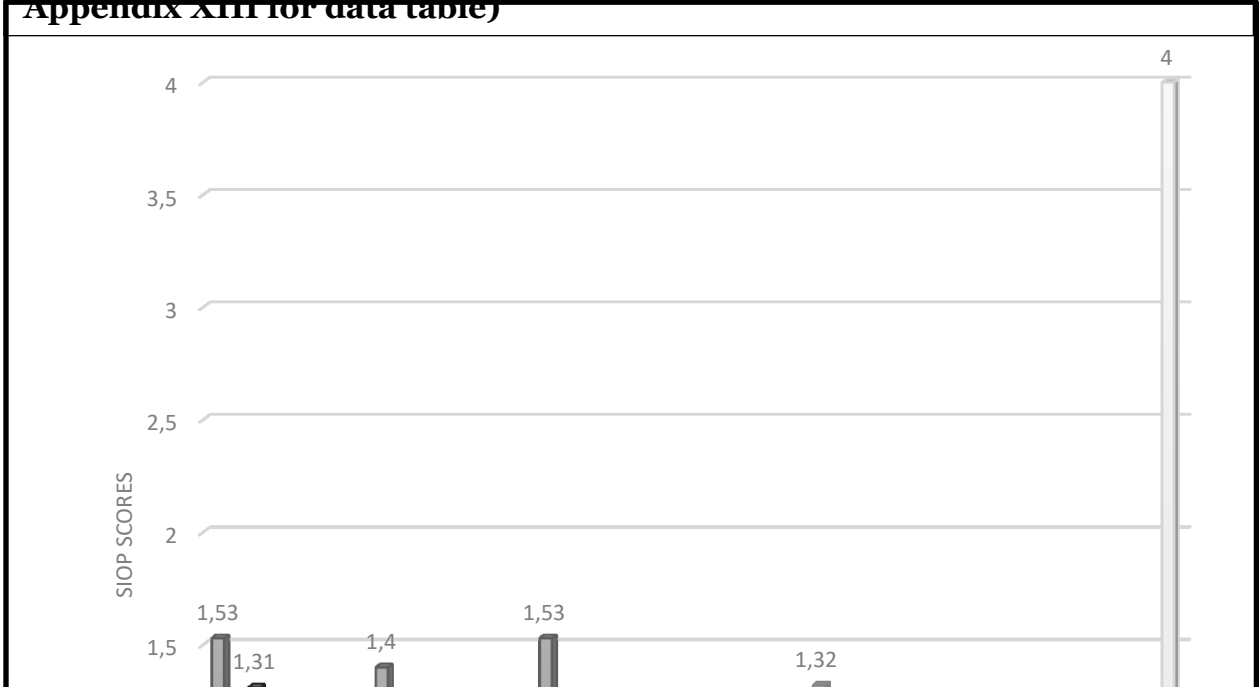
As illustrated by the table, the teachers in the content area of music achieved the highest SIOP scores (n=2) and those teaching art achieved the lowest (n=3). While scores in each content area were low, it is still surprising that art achieved the lowest score. Art is a class which includes many opportunities to increase comprehensibility of language by using demonstrations and actions, naturally lending itself to the application of comprehensible strategies such as using visuals, allowing hands-on activities, vivid descriptions, demonstration of understanding through physical responses, and the like

(Welle, 2014). Nevertheless, these strategies were rarely observed in art classes where students spent copious amounts of time coloring black-line images rather than combining language and a teacher-led activity. Physical education would be another content area where observers might expect to see an application of more language development strategies, given the physical nature of PE and the ample opportunities teachers have to use Total Physical Response (TPR), a well-known technique which capitalizes on environments where teachers give input in the form of polite commands, and students can demonstrate their comprehension of the second language through physical responses (e.g., a teachers says, “Bring me the ball,” or “Put the ball on your knees,” or “Give the ball to Paula,” or “Run and touch the wall with your left hand,” and students show they understand by performing the act as directed) (Asher, 2009). Instead, students in these classes were observed playing independently rather than being directed by the teacher in an activity that incorporated English and movement.

Given that certain content areas naturally lend themselves to the application of second language strategies, the overall low scores in every content area studied indicate that the variable of which content area is using English was not a critical factor. This suggests that what did affect the outcomes of the observations were the teachers’ lack of knowledge of the strategies, since occasions to use these were plentiful. Observations showed that they routinely missed abundant logical opportunities to encourage and support language development. It seems unlikely that teachers would purposefully overlook chances to plan and carry out lessons applying strategies known to them, leading to the conclusion that they just did not know how.

Figure 2 shows SIOP scores in each content area indicating individual teacher mean scores in those areas.

Figure 2: SIOP Scores by Content Subject and Individual Teacher (see Appendix XIII for data table)



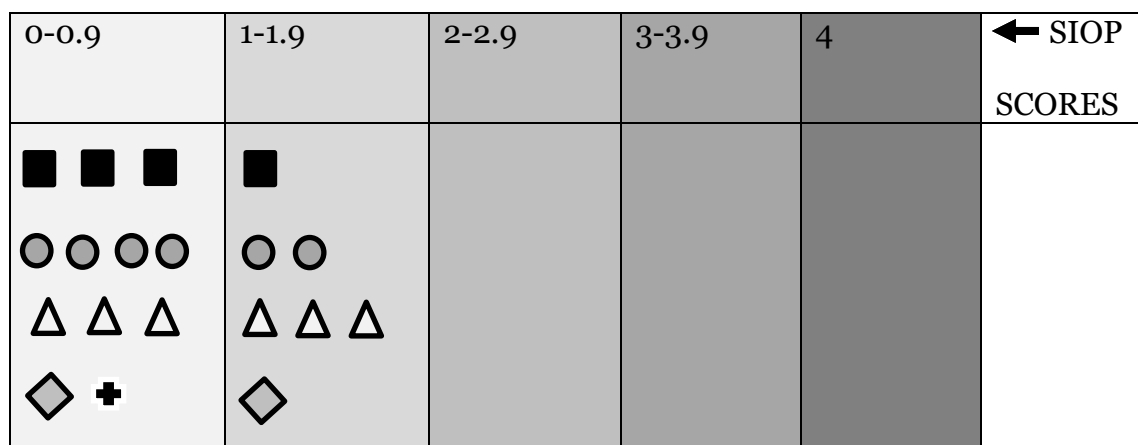
The individual SIOP criterion scores of teachers which were used to calculate the totals represented in Figure 2 appear in Appx XIII, and results of an exact contingency table test performed between content subjects (see Appendix XIX) showed that there is a very low probability of relationship between content subject area taught and SIOP scores achieved by teachers. A series of t-tests, shown below (Table 22), produced the same results.

Table 20: *t*-Tests Comparing SIOP Scores by Subject Content Classes

<i>t</i>-test #	Subject Content Areas being Compared	Mean of Teachers' SIOP Scores	Standard Deviation	Statistically Significant? (SS)
#1	English	0.84	0.5070	P Value = 0.4965 Not SS
	Science	0.64	0.4569	
#2	English	0.84	0.5070	P Value = 0.8138 Not SS
	Art	0.75	0.6796	
#3	English	0.84	0.5070	P Value = 0.687 Not SS
	Music	1.01	0.4384	
#4	English	0.84	0.5070	P Value = 0.9360 Not SS
	Physical Ed.	0.87	0	
#5	Science	0.64	0.4569	P Value = 0.7736 Not SS
	Art	0.75	0.6796	
#6	Science	0.64	0.4569	P Value = 0.3586 Not SS
	Music	1.01	0.4384	

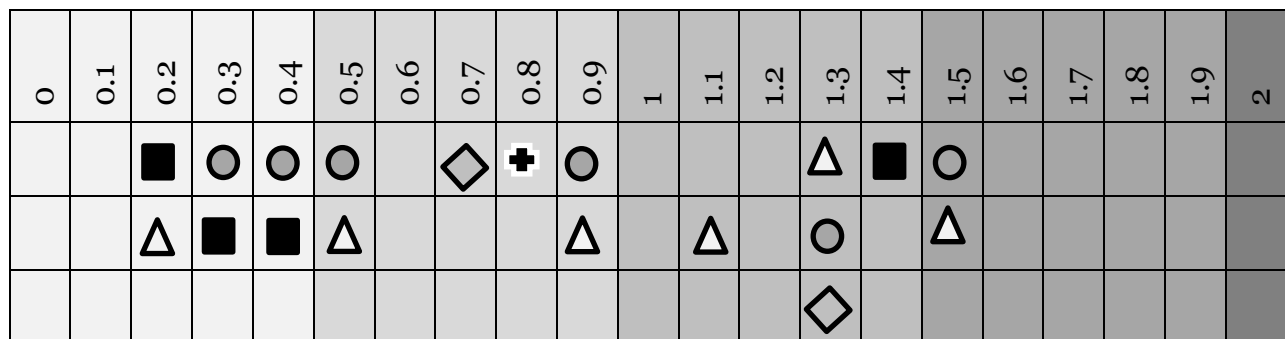
To further illustrate this point, two cluster graphs appear below. (Figure 3 and Figure 4). Figure 3 was constructed on a scale of 0 to 4 with intervals of 1 point. At first glance, it is obvious that all scores fall at the bottom of the scale; the majority (12) of the 19 different classes observed falling below 2. However, by further minimizing the scale

of the graph to tenths of a point, as in Figure 4, less clustering of data by content area is seen. Again, taking into account that no statistically significant difference among overall SIOP scores achieved by teacher was found (see Section 3.5.1) these cluster graphs serve to further show that there is no relationship between the subjects taught by these teachers and their use of strategies that support language learning in a content class since no clustering of data for any content area occurs.



Legend for Figure 3
 Art ■ science ○ English △ music ◇ PE +

FIGURE 3 Cluster Graph I of SIOP Scores by Content Area



Legend for Figure 3
 Art △ science ■ English ○ music ◇ PE +

FIGURE 4 Cluster Graph II of SIOP Scores by Content Area

In Figure 5 below, the SIOP scores are disaggregated for each of the 11 participating teachers showing their scores as individuals in each content area they taught.

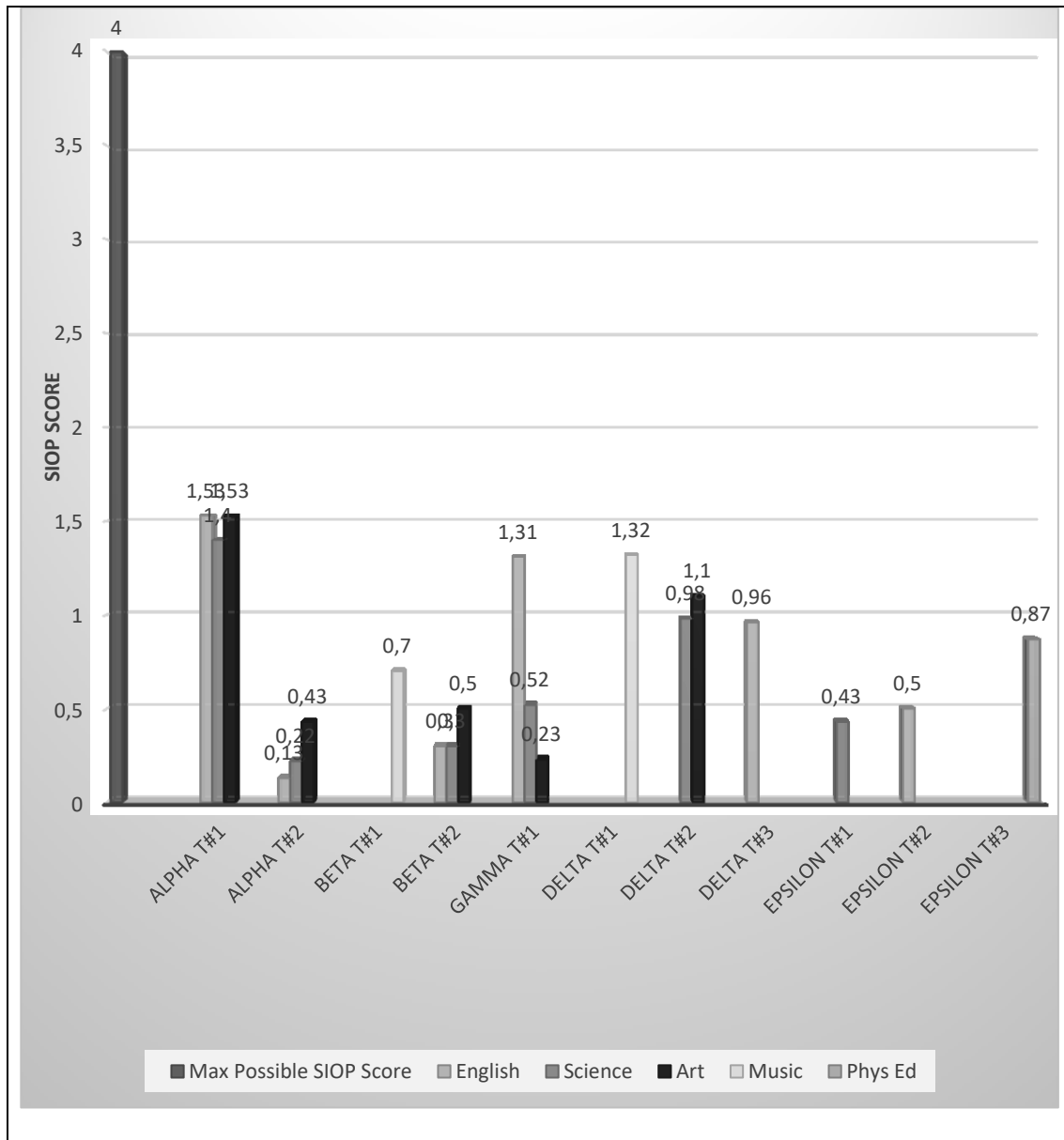


FIGURE 5: SIOP Scores of Individual Teachers shown in All Content Areas They Taught (See Appendix X for Data Table)

As discussed earlier in this section, a statistical analysis of subject content scores showed no statistically significant differences among them when all schools were compared. However, from the graph above, it can be seen that Alpha School Teacher #1 (mean SIOP score = 1.49; standard deviation = 0.0751) achieved over a half-point more (0.57) on mean SIOP scores than her counterpart at the same school did (Alpha School Teacher #2 mean SIOP score = 0.18; standard deviation = 0.0636). A *t*-test comparing these two sets of data found a statistically significant difference between the scores (two-tailed P value = 0.0003). Since each teacher provides instruction to a different class at that same school, one class therefore is receiving instruction that is higher to a statistically significant rate when comparing strategies implementation to promote content and language learning. A question to be answered here is: Since both scores are so low on the overall scale of 0 to 4, will a statistically significant difference in Alpha School Teacher #1's SIOP score make a statistical difference in the language development measured by the ELLOPA? The null hypothesis generated by this question will be addressed later in this chapter in Section 3.6.4: Although there is a statistically significant difference between the SIOP scores achieved by Teacher #1 and Teacher #2 at Alpha School, because the scores are so low on a scale of 0 to 4, no statistically significant differences will be found between the language development of the students in their two classes.

3.5.5 Reliability and Validity of SIOP Data

The SIOP is a measure that has been proven reliable and valid (see Section 3.4.2) when administered by trained personnel. In the instance of this study, there was only one administrator of the SIOP, and she was trained at the Center for Applied Linguistics in Washington, D.C., by the creator of the SIOP. In addition, she has extensive experience working on SIOP projects with its creator. Therefore, interrater and internal reliability of the SIOP data is very high.

External validity, or the generalizability of the findings of these data, appears to be moderate, since the sample of 5 middle-class schools (out of the possible 19 urban and suburban bilingual centers in Seville offering content classes taught in English) is just above 25% of the total of programs there. The external validity is restricted to the second grade at these centers, however, since only second grade students and their teachers of English were included. In spite of the fact that all these teachers provide instruction at other grade levels, no data was collected or considered about what those different classes were. Therefore, no generalizations about the instruction provided to other grade levels can be reliably made. The external validity seems high for adequacy and appropriateness since 14 continuous weeks of classes were observed.

3.5.6 Summary analysis of SIOP and SOLOM DATA: Making Connections

Teachers reported having between 2 and 6 years of experience teaching in a bilingual program. However, a calculation of covariance between SIOP scores and years that a program had been in effect showed a low rate of correspondence. Therefore, when looking at the data from all five schools together, it indicates that having a program in existence for more years did not mean that teachers were using more language

development strategies in their instruction. Additionally, upon further analysis, when the scores of the program with the fewest years of implementation (2) were compared individually with the three schools with the most years of implementation (all had 6) two of the three comparisons yielded no statistically significant difference. This further supports the finding that having a program in place for a greater number of years did not mean that teachers were employing effective strategies to a higher degree in their instruction. Since the number of years that a program had been in place corresponded exactly to the teachers' number of years of experience teaching in a bilingual program, an analysis of that data showed the same result as reported above: teachers who had been teaching more years in a bilingual program did not employ more language development strategies in their teaching than teachers with fewer years of experience.

Notable data about teachers concerns their English proficiency levels. Eight of the eleven teachers were rated at a level of 4 or 5 on the SOLOM, a level the SOLOM recommends a teacher of that language to have. Mathematical calculations performed show that there is a positive, high statistical correlation between teachers in this study having a minimum SOLOM score of 4 and their achievement of higher SIOP scores. That is, teachers in this study who had a SOLOM score of 4 or higher were more likely to be applying more appropriate strategies to promote language acquisition than those who did not. Given the limited sample size in this study and the low SIOP scores all teachers achieved, this data cannot necessarily be considered an indicator of whether or not all teachers with higher English proficiency would employ more language development strategies in their teaching. SIOP research (Echevarria & Short, 2004) demonstrates that when teachers participated in strategies training, their subsequent instruction yielded higher SIOP scores; however, that research was conducted in an ESL

setting rather than the EFL/CLIL setting of this project. Therefore, further research is needed to prove whether in an EFL/CLIL setting higher language proficiency is enough to promote more appropriate teaching strategies or if additional strategies training is a critical factor. Nevertheless, since in the EFL settings where SIOP has been researched the teachers were *native* English speakers, and it was proven that without strategies training those groups employed less strategies than those who had the training, this would seem to indicate that it was not the level of English proficiency that was the critical factor in using a greater quantity of appropriate language and content development strategies: it was completing training that was the important element, and there is a strong likelihood that this finding reliably transfers to the EFL/CLIL environment due to the strong similarities and connections that exist between it and the settings where the SIOP was validated.

The 11 participating teachers led instruction in a variety of subject areas. At three schools one teacher was responsible for all the instruction in English that was provided to students in all assigned subject areas for that group. At the other two schools, teachers shared the responsibility of providing instruction in English to a class throughout the day; they were part of a team of teachers who taught a variety of subjects to the same groups of students in English. When the data examining SIOP scores achieved in individual subject areas was analyzed, the most outstanding finding was that for all 5 classes observed (English, science, art, music, and PE) in all schools, the overall SIOP scores were very low and varied little. They all fell somewhere between “not evident” and “somewhat evident”. This indicates that overall, regardless of the subjects taught, teachers used few strategies that are known to promote the learning of subject content while developing a new language at the same time.

The number of zeros achieved on SIOP criteria was striking. Since the scores reported on Table 15 represent an average of all the class observations made, a zero indicates that at no time during the observations was that criterion observed to any degree at all in any class, by any teacher at any school. Five of the 30 SIOP criteria were reported as zero for all five of the content areas observed. This indicates that 16.6% of the criteria on the SIOP represented content and strategies that teachers did not know how to (or did not choose to) include in their instruction at all. Since teachers achieved very low SIOP scores in the other 25 criteria, it seems that rather than being a choice, it was that teachers had little command of strategies to meet the expectation of highly appropriate instruction in a classroom where content knowledge and language development were twin goals. This is in spite of the fact that the SIOP was reviewed with them at the initiation of the study, and they were provided with a copy. They were encouraged to ask questions they might have about any of the criteria (but no training on them was provided). It was explained to them what the purpose of the SIOP is and that the observer would be looking for evidence of the criteria on it.

Two of the five criteria that received zeros in all subject areas might seem predictable: knowing how to create and share content and language objectives with students. Those are two criteria that teachers in bilingual classes require abundant training to master (Echevarria and Short 2004; Short, et al., 2011) although knowing how to do this has direct benefits to increasing the comprehensibility of the overall lesson (ie.: building vocabulary, activating background knowledge, creating interest in the topic). However, the remaining three criteria which each received an overall score of zero might be considered more basic to language instruction in general: asking a variety of kinds of questions, encouraging frequent interactions in the target language (student

to student / student to teacher / and teacher to student), and using grouping configurations to promote target language use.

It is possible that these three criteria in particular may be affected by cultural differences since SIOP research has primarily been performed in ESL settings and in Anglo-centric cultures, and classroom behavioral expectations may play a part in why these three criterion were absent all together from the observations performed. In Anglo-centric cultures, students are more likely to be encouraged to work in collaborative groups with a common goal. Teachers tend to be trained to create a safe and controlled learning environment where student movement and quiet talking is promoted. The classes observed, however, were decidedly teacher-centered and teacher-directed, with the teacher providing the majority of the language input and little opportunity for student language practice. Students were expected to sit at their desks quietly and *not* interact with others. This basic cultural difference produces an environment where the three criteria that were wholly absent from all observations cannot thrive. This suggests, perhaps, that for CLIL classes in Seville, there needs to be a shift in classroom culture and expectations or possibly that a modified version of the SIOP might be better suited to evaluating CLIL instruction there. CLIL is considered to be distinct from other models of bilingual education in that it integrates language and content along a continuum, in a flexible and dynamic way, without an implied preference for either language (Coyle 2006, 2007), and in its use of abridged rather than authentic materials. It does, however, advocate for instruction to include strategies represented by the three criteria that received zero scores on the SIOP observations.

Additionally, the remaining 25 SIOP criteria also yielded low scores, and they represent basic language development strategies (inherent to CLIL) such as using

visuals, demonstrations, modeling, linking to prior learning, adapting written materials, using hands-on activities and manipulatives, etc. This indicates that the teachers in the study would all benefit greatly from training in how to teach a second language and supports the conclusion that the participating teachers did not possess a command of strategies to promote both content and language learning. SIOP research further demonstrates this point since it indicates that when teachers use instructional strategies connected to each of 30 the criterion, or components, of the SIOP, teachers are better able to design and deliver lessons that address the academic and linguistic needs of students learning English as a new language. Therefore, since SIOP is an established and research-based instrument, using it to promote a shift to CLIL instruction tenets which also include the intentional application of strategies and techniques, modification of materials, and modification of curriculum incorporating language development expectations along a set continuum, seems appropriate and expeditious, rather than recreating a new instrument specifically for CLIL environments.

SIOP criteria #3 and #19 were the only two of the 30 SIOP criteria which received an overall average score above 2.0, “somewhat evident”. This means that the average scores for all other criteria fall between “not evident” and “somewhat evident” – both deficient determinations. This indicates that in the CLIL classrooms observed, students’ use of their first language was abundant, and the subject matter was appropriate for them; however, other strategies essential to content attainment through the use of a second language and second language development were sparse. Nevertheless, the scores in these two criteria did not indicate that these components were being implemented in instruction at a level high enough to have statistical significance.

Again regarding subject area instruction, in general, the data shows that there is little probability that a teacher of a given subject area is likely to use language development strategies in that class more than any other class. Although not statistically significant, the data shows that SIOP scores for music class were the highest and for art class were the lowest. However, music class was only taught at two schools by two teachers who taught nothing else besides that class. This suggests that the data for the music class was positively impacted by the teaching ability of individual teachers. Art classes were taught in English at 4 of the 5 schools observed. It is striking that this should be the class that achieved the lowest SIOP scores, since it might seem to be a natural place to employ such techniques as modeling, linking to prior learning, increased use of visuals, hands-on materials, and so on. Indeed, SIOP research indicates that art is an ideal class in which to promote content learning and second language development when teachers employ appropriate strategies as measured by SIOP (Welle, 2014). Nevertheless, those strategies were observed little in the classes of this study. Since art classes usually present a useful environment for language strategies, this again supports the conclusion that the teachers in the study simply did not possess the knowledge about what strategies to use to encourage content learning at the same time students are developing a new language. This was also evident in science classes where teachers used books with visuals but did not bring students' attention to them and make connections between the language they were speaking and the visuals. They did not create hands-on demonstrations to illustrate the meaning of the language they were speaking. Training and connections between SIOP and CLIL science instruction is present in Spain (Eguren, 2012), although in the study reported here, in the science, art, music, and PE classes, it was evident from the interviews with teachers and in the

instruction observed that the teachers are not aware of these instructional innovations. Their main goals were to teach the content of the subject. They did not see themselves as language teachers, promoting language development as well as content knowledge. Although they themselves were bilinguals, they did not exhibit or articulate an awareness of how to develop a second language. Particularly noteworthy was the absence of language development strategies in the English language arts classes, where the attainment of English skills was the primary goal.

3.6 ELLOPA Data

ELLOPA Data for this project were collected and analysed in four areas, taking into account student variables:

1. ELLOPA equivalency to the CEFR scale
2. ELLOPA Ratings Scores by Proficiency Areas
3. Mean pre- and post-test ELLOPA scores
 - t*-tests to look for significance of gains overall
 - t*-tests to look for significance of gains by school
4. Comparisons of years of program implementation as they relate to ELLOPA scores
 - t*-tests to look for significance of differences

3.6.1 ELLOPA Scores

The ELLOPA is scored by rubrics in 5 categories:

- (1) oral fluency
- (2) language control (spoken grammar)
- (3) vocabulary (speaking)
- (4) listening comprehension and

(5) communication strategies.

Within the 5 categories, rubric descriptors are used to rate the student into one of 4 language proficiency levels:

(1) Junior Novice-Low

(2) Junior Novice-Mid

(3) Junior Novice-High

(4) Junior Intermediate-Low.

For the purposes of achieving a statistical analysis, the 4 language proficiency levels were converted numerically as shown in Table 23 below along with their CEFR equivalencies presented previously in Chapter 2, Section 2.7.2.3.

Table 21: Score Conversions for ELLOPA and CEFR Level Equivalencies

SCORE CONVERSION	ELLOPA LEVEL	CEFR LEVEL EQUIVALENCY (See Chapter 2 Table 1
1	Junior Novice-Low	<A1
2	Junior Novice-Mid	<A1
3	Junior Novice-High	A1
4	Junior Intermediate-Low	A2

Thus, the possible numerical scores achieved by students on the ELLOPA fell on a scale of 1 to 4 (as opposed to giving the student an overall rating of “Junior Novice-Mid” or “Junior Novice-Low”). For example, a score of 2.1 or 2.5 or 2.9 would all mean the student falls between two proficiency levels: Junior Novice-Mid and Junior Novice-High, and this would be equivalent to entering an A1 level on the CEFR scale. It is important to note here that students achieving both ELLOPA scores of 1 and 2 (Junior Novice-Low and Junior Novice-Mid) therefore score an equivalent CEFR score of <A1.

To further analyze ELLOPA data, two student variables needed to be accounted for:

1. students who received additional English classes outside of school
2. students who live in a home where a language other than Spanish (but not English) is spoken.

Data will be presented disaggregating these variables. These variables are significant in looking at an overall class score, because it was found that 20 out of the 149 students in the study (12.75%) received additional English classes outside of school. Eighteen of those 20 (90%) attended the same school, Delta School, and accounted for 75% of the student sample at that school. Furthermore, 12 students out of the 149 in the study (8%) live in a home where a language other than Spanish (but not English) is spoken. Ten of those 12 (83.33%) attended the same school, Gamma School, and accounted for 46.61% of the student sample at that school. Only one of those 12 students received ATAL instruction.

Another variable which needs to be taken into consideration when looking at the student ELLOPA data by overall school performance is the number of years that the students had participated in a bilingual program. This was discussed in 3.5.2 and illustrated in Table 16 in relation to SIOP data. As the information indicates, in two schools, the students were in their fifth year of program implementation while participating in this study. At two other schools the students were only in their second year of bilingual study, and at the remaining school, students were in their fourth year of the program. The numbers of years the students have participated in the program varies because of program design or because of the number of years that the program has

existed. In addition, some of the students had participated in pre-bilingual instruction, whereas others did not.

3.6.2 Overall ELLOPA Rating Scores

The ELLOPA rating scores are displayed below in Table 22 by the class sections observed: two classes each at Alpha School and Delta School, and one class each at the remaining three schools. As can be seen in the tables, data is presented for all students and then is disaggregated, removing variables. Studywide, the ELLOPA data showed students to be at the “Junior Novice-Low” proficiency level of English *both in the pre-test administration and in the post-test administration*, the lowest rating possible. Those scores equate to a CEFR rating of <A1 and demonstrate that the students studied are working in English at a level where they can name known objects or actions using one or two words. They can use common phrases, but are not yet creating authentic utterances in English on their own. These students are not yet orally communicating in English at the simple sentence level by putting verbs and subjects together in meaningful strings of language. In addition, based on comparisons between pre-test and post-test performance, once all variables were removed, negligible improvement in oral language ability was made by students at any of the 5 schools. Given that the ELLOPA is specifically designed to be sensitive enough to measure second language improvements in children learning a second language, this finding is notable, striking, and concerning, given the potential of bilingual programs as proven by previous research (e.g., Collier & Thomas, 2009a) and the length of time the students in this study had been participating in a bilingual program.

The one school (Delta School) where 40% of the student sample received additional English language classes outside of school, scored at a “Junior Novice-Mid” (also CEFR <A1) level *before* the data for students receiving those additional classes was disaggregated both on the pre- and post-ELLOPA administrations. After excluding that data in both pre- and post-testing, the ELLOPA scores for that school fell into the same range as the rest of the study sample: Junior Novice-Low, which is the very beginning level of language proficiency described. This is also a notable finding, since it suggests that the instruction students are receiving at private language academies outside their public school CLIL classes could be a critical factor in a student’s language advances. This is striking considering that students spend 3 hours a week at these private classes, where they are expected to make measurable increases at the end of 15- to 16-week sessions and move to a higher class level, but they spend between 4 and 10 hours a week in English in the CLIL environments studied here.

Table 22: ELLOPA Scores For Schools

Legend for Table 22

LOS: Language other than Spanish is spoken at home

COS: Student has classes in English outside of school

ATAL: *Aulas temporales de adaptación lingüística* (Spanish as a second language assistance classes)

SCHOOL NAME AND VARIABLES		SCORES IN ELLOPA PROFICIENCY AREAS					
Alpha School Class A n=22 COS=1		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre-test	All students	1.08	1.17	2.08	2	1.25	1.52
	Without COS	1	1	2	2	1.09	1.42
Post-test	All students	1.17	1.08	1.08	1.08	1.08	1.13
	Without COS	1	1	1	1.09	1	1.18
SCHOOL NAME AND VARIABLES		SCORES IN ELLOPA PROFICIENCY AREAS					
Alpha School Class B n=22		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE ↓
Pre-test	All students	1	1	2	2	1	1.4
Post-test	All students	1.2	1.2	2.2	2.2	1	1.56

TABLE 22 (continued)

SCHOOL NAME AND VARIABLES		SCORES IN ELLOPA PROFICIENCY AREAS					
Epsilon School n=18 COS=1 LOS=1		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE ↓
Pre- test	All students	1.16	1.16	1.16	1.16	1.16	1.16
	Without COS	1.06	1.06	1.06	1.06	1.06	1.06
	Without LOS	1.12	1.12	1.12	1.12	1.12	1.12
	Without LOS/COS	1	1	1	1	1	1
post -test	All students	1.16	1.16	1.16	1.16	1.16	1.16
	Without COS	1.06	1.06	1.06	1.06	1.06	1.06
	Without LOS	1.12	1.12	1.12	1.12	1.12	1.12
	Without LOS/COS	1	1	1	1	1	1

TABLE 22 (continued)

SCHOOL NAME AND VARIABLES		SCORES IN ELLOPA PROFICIENCY AREAS					
		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE ↓
Pre-test	All students	1	1	1	1	1	1
	Without ATAL	1	1	1	1	1	1
	Without LOS	1	1	1	1	1	1
	Without LOS/ATAL	1	1	1	1	1	1
Post-test	All students	1	1	1	1	1	1
	Without ATL	1	1	1	1	1	1
	Without LOS	1	1	1	1	1	1
	Without ATAL/LOS	1	1	1	1	1	1

TABLE 22 (continued)

SCHOOL NAME AND VARIABLES		SCORES IN ELLOPA PROFICIENCY AREAS					
Pre-test	Delta School Class A n=22 COS=12 LOS=1	ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE ↓
	All students	1.55	1.73	1.91	1.73	1.36	1.66
	Without COS	2	2	2	2	1.5	1.9
	Without LOS	1.4	1.4	1.8	1.45	1.09	1.17
	Without LOS/COS	1.67	1.67	1.67	1.67	1	1.54
Post-test	All students	2.3	2.3	2.2	2.3	1.8	2.18
	Without COS	2	2	2	2.3	1.67	1.99
	Without LOS	1.5	2.2	2.1	2.2	1.67	1.93
	Without LOS/COS	1.5	1.5	1.5	2	1	1.50
Pre-test	SCHOOL NAME AND VARIABLES	SCORES IN ELLOPA PROFICIENCY AREAS					
Post-test	Delta School Class B n=23 COS=6	ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre-test	All students	1.92	2.08	2.08	2.15	1.92	2.01
	Without COS	1.9	2	2	2.1	1.9	1.98
Post-test	All students	1.7	1.9	1.9	2.2	1.7	1.88
	Without COS	1.57	1.72	1.72	2.14	1.57	1.74

TABLE 22 (continued)

Pre-test	SCHOOL NAME AND VARIABLES	SCORES IN ELLOPA PROFICIENCY AREAS					
Post-test	Beta School n=19 LOS=1	ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre-test	All students	1.05	1	1.05	1	1.05	1.03
	Without LOS	1	1	1	1	1	1
Post-test	All students	1.05	1	1.05	1	1.05	1.03
	Without LOS	1	1	1	1	1	1

All mean scores achieved equate to a CEFR rating of <A1. No schools achieved any mean scores of 3, which would be equivalent to a CEFR rating of A1.

3.6.3 ELLOPA Rating Scores by Proficiency Areas

The results reported in the previous section are also true of individual language proficiency categories: no mean scores reached 3 in any of the areas assessed and are generally consistent at between scores of 1 and 2. These results demonstrate that students have low levels of English language proficiency abilities orally, grammatically, in vocabulary knowledge, in listening comprehension, as well as in strategies they can use to enhance their communication. Table 23 below shows the mean ELLOPA scores of all classes at all schools in each of the language use categories.

Table 23: Mean ELLOPA Scores By Proficiency Area

	SCHOOL	SCORES IN ELLOPA PROFICIENCY AREAS (with all variables removed)					
		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre - test	Alpha School Class A	1	1	2	2	1.09	1.42
	Alpha School Class B	1	1	2	2	1	1.40
	Epsilon School	1	1	1	1	1	1
	Gamma School	1	1	1	1	1	1
	Delta School Class A	1.67	1.67	1.67	1.67	1	1.54
	Delta School Class B	1.9	2	2	2.1	1.9	1.98
	Beta School	1	1	1	1	1	1
	MEAN TOTALS	1.22	1.24	1.52	1.54	1.14	1.33
Post - test	Alpha School Class A	1	1	1	1.9	1	1.18
	Alpha School Class B	1.2	1.2	2.2	2.2	1	1.56
	Epsilon School	1	1	1	1	1	1
	Gamma School	1	1	1	1	1	1
	Delta School Class A	1.5	1.5	1.5	2	1	1.50
	Delta School Class B	1.57	1.72	1.72	2.14	1.57	1.74
	Beta School	1	1	1	1	1	1
MEAN TOTALS	1.18	1.20	1.35	1.61	1.08	1.28	
Amount increased or decreased between pre- and post-tests		-0.04	-0.04	-0.17	+0.07	-0.06	-0.05

All mean scores in each language proficiency category for all schools showed only differences of hundredths of a point between the administration of the pre- and post-tests with the greatest (and only) increase being 0.07 and the greatest decrease being 0.17. This is a range of 0.24 on a scale of 0 to 4. The variance in scores for the pre-test is 0.0273, with a standard deviation of 0.1652. The variance for scores on the post-test is 0.0449, with a standard deviation of 0.2118. To test the significance of the difference between these low mean scores, a *t*-test was performed (See Appendix XX). The results demonstrate that the differences between ELLOPA mean pre- and post-test scores are not statistically significant. The decreases in performance can be attributed to the sensitivity of the ELLOPA instrument and day-to-day variances in individual student performance.

3.6.4 Pre- and Post-Test ELLOPA Rating Scores

In addition to looking at the overall ELLOPA student performance, the pre- and post-test data for each class were also analyzed to see if within the group as a whole there were individual classes where statistically significant progress was made by students between the administration of the pre- and post-tests. No significant differences between pre- and post-test scores were found for any of the schools. A *t*-test was used for this analysis, and the results appear below, in Table 24. This indicates that students in all classes were performing at levels consistent with each other. Additionally, no statistically significant changes in scores were found between language ability categories (oral fluency, grammar, vocabulary, listening comprehension and use of communication strategies) for any school.

Table 24: *t*-Test Results for Significance Between Pre- and Post-Tests

School/Class	MEAN	STANDARD DEVIATION	TWO-TAILED P VALUE	STATISTICALLY SIGNIFICANT DIFFERENCE?
Alpha School Class A Pre-test	1.4180	0.5326	0.4483	No
Alpha School Class A Post-test	1.180	0.4025		
Alpha School Class B Pre-test	1.400	0.548	0.6685	No
Alpha School Class B Post-test	1.560	0.590		
Epsilon School Pre-test	No <i>t</i> -test data can be achieved when data is all the same score (in this case, all 1).			
Epsilon School Post-test				
Gamma School Pre-test	No <i>t</i> -test data can be achieved when data is all the same score (in this case, all 1).			
Gamma School Post-test				
Beta School Pre-test	No <i>t</i> -test data can be achieved when data is all the same score (in this case, all 1).			
Beta School Post-test				
Delta School Class A Pre-test	1.5360	0.2996	0.8664	No
Delta School Class A Post-test	1.5000	0.3536		
Delta School Class B Pre-test	1.9800	0.0837	0.0660	No
Delta School Class B Post-test	1.742	0.2356		

Furthermore, the above information serves to provide a response to the null hypothesis posed previously in Section 3.5.4: Although there is an extremely statistically significant difference between the SIOP scores achieved by Teacher #1 and Teacher #2 at Alpha School, because the scores are so low on a scale of 0 to 4, no statistically significant differences will be found between the language development of the students in their two classes. The null hypothesis was proven: there is no statistically significant difference between the ELLOPA scores of the students in these two classes. The

ELLOPA scores of Alpha Teacher #1's students did not show significant increases in their language development when compared to other students in the study. This can be attributed to the fact that, although found to be statistically higher than other teachers, since Alpha teacher #1's SIOP scores were so low (1.49 on a scale of 4), her instruction did not result in statistically significant higher ELLOPA scores for students than other teachers' instruction did. This indicates that no single teacher in the study is applying language development strategies at a level that has a greater effect on student achievement in English than any other teacher. All teachers are applying few appropriate language and content learning strategies, and all students are making very little progress in their achievement of English.

3.6.5 ELLOPA Scores and Number of Years in the Program

Since students at two pairs of schools had been participating in the bilingual programs there for the same number of years with each pair representing a different number of years (see Table 25 below) this data was disaggregated and compared. Given that the two schools where students were in their second year of the bilingual program, both scored 1 in all categories in both the pre- and post-tests, no analyses could be performed. Obviously, both schools are performing at the same (low) level.

Table 25: Pre- and Post-Test Results for the Two Schools Where Students Had Been in the Program Two Years

SCHOOLS		SCORES IN ELLOPA PROFICIENCY AREAS (with all variables removed)					
STUDENTS AT THESE SCHOOLS IN YEAR 2 OF BILINGUAL EDUCATION		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre-test	Epsilon School	1	1	1	1	1	1
	Beta School	1	1	1	1	1	1
Post-test	Epsilon School	1	1	1	1	1	1
	Beta School	1	1	1	1	1	1

However, for the two schools where students were in their fifth year of bilingual education (see Table 26 below), *t*-tests were performed comparing the pre- and post-test scores of those schools (with all variables removed) to determine whether any statistically significant differences existed between them. Since the scores between the two classes at Delta School were found to be have no statistically significant difference, their mean was used for comparison to Gamma School.

Table 26: Pre- and Post-Test Data for Two Schools Where Students Had Been in the Program for Five Years

	SCHOOL	SCORES IN ELLOPA PROFICIENCY AREAS (with all variables removed)					
		ORAL FLUENCY	LANGUAGE CONTROL (SPOKEN GRAMMAR)	VOCABULARY (SPOKEN)	LISTENING COMPREHENSION	COMMUNICATION STRATEGIES	MEAN SCORE
Pre- test	Gamma School	1	1	1	1	1	1
	Delta School	1.79	1.84	1.84	1.89	1.45	1.76
Post- test	Gamma School	1	1	1	1	1	1
	Delta School Class A	1.54	1.61	1.61	2.07	1.29	1.62

The results of the *t*-test showed a two-tailed P value of less than 0.0001 indicating that the differences between the scores of these two schools were extremely statistically significant. After five years of participation in the bilingual program at the school, the students at Delta School are performing at a statistically significant higher level than the students at Gamma School. It is interesting to note that these two schools were the two which were most affected by student variables:

- 75% (n=18) of Delta School’s students attend English classes outside of school
- 0.042% (n=1) of Delta School’s students speak a language other than Spanish in the home
- No students at Gamma School attend English classes outside of school

- 46.61% (n=10) of Gamma School's students speak a language other than Spanish in the home

Because this statistical difference was identified, the ELLOPA data for all schools were further disaggregated to compare overall student achievement (with all variables removed) to examine the achievement of the group of 20 students in the project who were identified as participating in English classes outside of school. *t*-tests were performed on both the pre- and post-test performances of these two groups, and it was found that in both test administrations, the group of students who participate in English classes outside of school performed at statistically significant higher levels on the ELLOPA than did their classmates who did not have these outside English classes. Table 27 below displays these findings.

Table 27: Pre- and Post-Test Data Comparison: Entire Group vs. Students Who Participate in Additional English Classes Outside of School

Legend: COS = Students who Participate in Additional English Classes Outside of School

ELLOPA PROFICIENCY CATEGORY	PRE-TEST MEAN (w/o variables) All Students	PRE-TEST MEAN COS	POST-TEST MEAN (w/o variables) All Students	POST-TEST MEAN COS
ORAL FLUENCY	1.22	1.83	1.18	2.56
LANGUAGE CONTROL (ORAL GRAMMAR)	1.24	2.08	1.20	2.50
VOCABULARY (SPOKEN)	1.52	2.25	1.35	2.42
LISTENING COMPREHENSION	1.54	2.08	1.61	2.58
COMMUNICATION STRATEGIES	1.14	1.92	1.08	2.08
MEAN	1.33	2.03	1.28	2.43
STANDARD DEVIATION	0.1847	0.1624	0.2062	0.2043
TWO-TAILED P VALUE	0.0002		0.0001	
STATISTICAL SIGNIFICANCE	Extremely high		Extremely High	

The data were further analyzed to determine whether the pre/post-test performance of the COS (students taking additional English classes outside of school) showed statistically significant gains in English ability. Indeed, this group did make those gains, at a “very significant” rate, as illustrated in Table 28. This seems to be a significant finding: Regardless of the number of years of program implementation (or years of teacher experience, since the numbers are the same), students are not making statistically significant advancements in their knowledge of English, unless they are attending private English classes outside the public school.

Table 28: Comparison of ELLOPA Pre- and Post- Test Results of Students Who Participate in Additional English Classes Outside of School

Legend: COS = Students who Participate in Additional English Classes Outside of School

ELLOPA PROFICIENCY CATEGORY	PRE-TEST MEAN COS	POST-TEST MEAN COS
ORAL FLUENCY	1.83	2.56
LANGUAGE CONTROL (ORAL GRAMMAR)	2.08	2.50
VOCABULARY (SPOKEN)	2.25	2.42
LISTENING COMPREHENSION	2.08	2.58
COMMUNICATION STRATEGIES	1.92	2.08
<hr/>		
MEAN	2.03	2.43
STANDARD DEVIATION	0.1624	0.2043
<hr/>		
TWO-TAILED P VALUE	0.0095	
STATISTICAL SIGNIFICANCE	Very Significant	

3.6.6 Reliability and Validity of ELLOPA Rating Scores

The ELLOPA is a measure that has been proven reliable and valid (Section 3.4.1) when administered by trained personnel. In the instance of this study, there was only one administrator of the ELLOPA, both on the pre- and post-test administrations, and she was trained at the Center for Applied Linguistics in Washington, D.C., by the creators of the ELLOPA. In addition, she has extensive experience working on ELLOPA projects with its creators and researchers. External validity, or the generalizability of the findings of the ELLOPA data, appears to be moderate, since the sample of 5 middle-class schools (out of the possible 19 urban and suburban bilingual centers in Seville

offering content classes in English) is just above 25% of the total of programs available. The external validity is restricted to the second grade at these centers, however, since only second grade students and their teachers of English were included. Therefore, no generalizations about the language proficiency levels of students in other grades at these schools can be reliably made. The external validity seems high for adequacy and appropriateness since 16 weeks of classes were observed.

3.6.7 Teacher SIOP Scores and Student ELLOPA Rating Scores: Making connections

Certainly the findings in this study are correlational and cannot be interpreted as causal effects. Given the scope of the study and the overall similarities of the data (consistently low SIOP scores and low ELLOPA scores), there is not enough information to make definite causal assumptions about how the teaching is affecting the learning in these classrooms. Nevertheless, we can see clearly from the data that teachers in the study are not employing to a great degree strategies to enhance the second language learning of students. We can also see that the students in these programs are functioning at a very low level of oral/aural English language proficiency. Students at all five schools studied were functioning at English proficiency levels below expectations, the lowest ELLOPA rating and less than an A1 (CEFR) level in English, indicating that students have not progressed in their English production beyond the use of single words, known vocabulary, and common word phrases. These students were not creating language strings on their own and were not even producing their own simple sentences with subjects and verbs. Research on second language acquisition attained by students attending a variety of bilingual education programs indicates that after five to seven years of instruction in a second language at school students can – and should – be at

grade level in their second language, whether in full-day immersion or dual language classes (Collier, 1987, 1989; Cummins, 2000a; Thomas and Collier, 2002), with oral language developing sooner, often in as few as three years. This same research points to students being at the sentence-level in oral/aural English usage after two years of such instruction. Additionally, SIOP research shows that learners' performance increases in the areas of academics and language acquisition when teachers fully implement instruction that addresses the 30 SIOP criteria (Echevarria, et al., 2004). Given these program potentials, it seems reasonable to state that in this study, there is a relationship between the students' low English proficiency and the teachers' lack of strategies use, though the nature and type of relationship remains unidentified.

3.7 Results of SIOP and ELLOPA Findings as Related to Research Questions

The results of this study demonstrate that the teachers in the five participating bilingual centers were not employing to a great extent strategies to enhance second language learning. These results included all subjects taught: language arts and classes considered to be non-linguistic subject areas. These findings clearly answer the first research question for this study: Is best practice for instruction strategies in bilingual programs being employed in participating bilingual classrooms? The answer is no. Additionally, this study showed that when variables were removed, the students, who had participated in bilingual programs between 2 and 5 years in those bilingual centers, were performing below the (CEFR) A1 level of language proficiency and that they made no gains in language development during the 16 weeks of the study (1 week pre-tests + 14 weeks classroom observations + 1 week post-tests = 16 weeks) .

The second research question for this study (What CLIL instructional best practices are being employed in the bilingual classrooms studied) can be answered by the analysis of SIOP strategies observed in participating classes and detailed in Section 3.5.1 of this chapter. No statistically significant practices, either concerning instruction or program design, are being applied in the programs that were studied.

The results regarding language proficiency levels were consistently low for students in schools where they had been participating in bilingual education classes for two years, four years, and five years. The number of years the students had received instruction in bilingual classes had no effect on their proficiency outcomes. The hours of English instruction received per week had no effect on their proficiency outcomes. Whether or not the students had engaged in bilingual education beginning in a pre-kindergarten environment had no effect on their proficiency outcomes. In addition, the number of years of experience that the teachers had in providing instruction in a bilingual program had no effect on the student outcomes. These findings answer the third, and last research question posed for this study: What are the language acquisition outcomes for students in the bilingual classrooms studied?

One student variable which *did* affect student language proficiency outcomes was whether or not students had the opportunity to participate in additional, private English language instruction outside of school. Children who did performed at levels of English proficiency that, statistically, were significantly higher at the outset of the project compared to their peers in the study, and they also made statistically significant gains in language attainment during the weeks between the pre- and post-tests. They also, therefore, had statistically significant higher post-test scores than their peers. This finding suggests a series of questions for future research: Compared to bilingual

programs in public schools, what is being done at private language academies in 3 hours of instruction in English per week that results in higher language proficiency outcomes for students that 4 to 10 hours of CLIL instruction in public schools does not do? What are the critical factors there? Is it teacher proficiency in the target language? Strategies or materials being used? Is there a contributing motivational factor present among the students who attend private classes after school? These are questions whose answers could prove insightful for educators who are implementing CLIL programs as well as for those who seek to provide training for teachers of bilingual programs in public schools.

3.8 Additional Research Findings and Summary

The findings of this study speak most plainly and directly to the need for teachers in bilingual programs to receive practical, high-quality professional development and training to increase the amount and quality of strategies they routinely employ during instruction, in order to improve student achievement. SIOP research indicates that training on these skills increases how much and how well teachers implement them, and that their implementation increases student knowledge of content as well as language attainment (Echevarria & Short, 2004). Information gleaned from teacher interviews showed that of the 11 teachers included in this study in Seville, 10 reported that they had never received any training in how to develop second language skills while at the same time increasing content knowledge. They had never received any instruction themselves in how to teach subject area information in English. They were using materials, curriculum, and first language techniques to teach in a second language, which is not CLIL instruction (Graddol, 2006). In the majority of lessons observed, teachers were

just delivering a traditional subject lesson in English, which does not in and of itself amount to effective teaching in the CLIL classroom (Graddol, 2006).

Again, regarding teacher training and knowledge, of the 11 teachers in the study, 6 had never heard of the term “CLIL”. One teacher who had a degree in ESL education reported that she had never received instruction in how to teach subject content and language at the same time. These findings are significant because the teachers participating were all part of a program at centers designated as “bilingual”, yet they lacked training to make that program successful. It seems the program was initiated assuming that just because teachers were at a minimum of a (CEFR) B1 (after 2014 a B2) level of English proficiency, that those teachers would know how to teach subject content and develop English skills at the same time. The results of this study indicate that assumption is false.

A second significant finding of this study concerns the importance of purposeful development of academic language proficiency in both first and second language (see Section 2.7.3). As discussed in Chapter 2, researchers in bilingual education have recently given an increased focus on the features of the language students need to succeed in academic classes while simultaneously acquiring a second language in those same classes. Researchers note that in different content areas, students need to learn to make use of specialized vocabulary, grammar, text types, language functions and related discourse structures. None of the teachers participating in this study reported having any knowledge of the concept of academic language. They were unaware of the differences between and importance of social language (BICS: Basic Interpersonal Communications Skills) and academic language (CALP: Cognitive Academic Language Proficiency). This is a highly significant finding since students in bilingual education

programs must master not only English vocabulary and grammar, but also the way English is used in subject areas in order to succeed (Short, 1998). That is to say, in order for a bilingual program to be successful, it is essential that teachers know how academic language impacts the attainment of subject area knowledge while simultaneously acquiring proficiency in a second language.

In summary, this research study identifies two significant findings. First, the conspicuous need for the participating teachers to receive training in basic teaching pedagogy, techniques, and strategies for simultaneously teaching content knowledge and second language. Second, also related to teacher training, the need for teachers to purposefully develop proficiency in the academic language of subject content areas.

Regarding the implementation of CLIL programs in Andalusia, Lasagabaster and Ruíz de Zarobe (2010) identify two immediate challenges: (1) a lack of language proficiency by teachers and (2) the absence of CLIL-related training for teachers. Additionally, they point out that it is very difficult to imagine teachers who are not trained in CLIL strategies having a role in implementing a bilingual program. The findings of the study reported here support the researchers' identification of the two challenges facing CLIL programs in Andalusia. Additionally, according to information presented in the Andalusian Horizon 2020 Plan, the number of schools and teachers involved in bilingual projects in Andalusia has steadily increased from 519 in 2008 to 1260 in 2015 – in that same time period the number of teachers working in CLIL programs has grown from 871 to 9735. Nevertheless, in spite of the reporting of extensive efforts to offer professional development for teachers in bilingual programs, all 11 of the teachers participating in this study reported that they were unaware of any professional development available to them in support of their bilingual programs. Two

of those eleven teachers held the position of “Bilingual Program Coordinator” at their school. Ten of the eleven reported that they had never taken part in any professional development to support the bilingual program (such as language development, methodologies or strategies development, etc.). The one teacher who reported that she did participate in one professional development course for bilingual classes (Curso de Actualización Lingüística del Profesorado – CAL) said she did so outside of Seville, but within Andalusia, in the province of Granada. This teacher was the program coordinator at her school, and she said her participation in the CAL course was “years ago”. Curiously enough, this teacher achieved a mean SIOP score of 0.50: the fourth lowest score of the eleven. She may have attended a CAL workshop, but she showed little evidence of applying strategies to support the language development of her students in the English language class she taught.

The Andalusian Horizon 2020 plan is making an effort to provide support for bilingual programs through the CAL and other initiatives, as have been present since 2005, but it seems that improvements need to be made in spreading the word about course availability and in getting more teachers involved. For example, according to information published by the *Consejería de Educación* (Salaberri Ramiro, 2010), from 2008 to 2009, 5500 teachers participated in professional development functions for bilingual programs in Andalusia. This figure represented almost four times the number in 2005. Still, none of the teachers participating in this study were aware of any training efforts targeting them.

It seems, therefore, that teachers, at least the ones who participated in this project, are left without easily accessible, commonly available information about what types of professional development are available to them regarding opportunities for

learning new teaching strategies to support their bilingual programs. This lack of communication is highly significant: first, teachers *need – and deserve –* these training opportunities, and second, the information about them needs to be more clearly and broadly made available to classroom teachers. Changing one's teaching methods is challenging and not easy (Cohen and Ball, 1990). It is unfair to put teachers in a situation where the success of a program depends on their modifying their teaching methods (August and Hakuta, 1997; Cummins, 1984; Echevarria and Short, 2008; Genesee, 1994; Thomas and Collier, 2002) and then not provide them with a variety of readily available opportunities to support and encourage them in learning *how* to make those changes to their lesson delivery. It is unfair to the teachers, the students, and the parents.

CHAPTER 4: INTERPRETATION AND SIGNIFICANCE OF PROJECT DATA

Data doesn't speak for itself.
Thomas C. Redman (2014)

4.1 Interpretation of the SIOP and ELLOPA Data

The research study detailed here demonstrates that in the second grade at five bilingual centers in Seville, all teachers who provide instruction in English are employing few strategies to enhance the development of the second language while at the same time increasing subject content knowledge. The report also demonstrates that the students in those classes are at a lower level of English language proficiency than that which research indicates would be a common outcome for students who have participated in bilingual programs for the number of years that these students have. Further studies are necessary to determine whether this lack of teacher knowledge about effective teaching strategies for the bilingual program in which they teach is endemic to the city and region and whether it is a causal component to students' progress in their new language. In addition, further studies are needed to determine the effect this low level of strategy application may have on content knowledge achievement.

All the teachers who participated in this study were highly professional at all times, inside their classrooms with the children, as well as outside with the researcher. These were obviously well-meaning, hard-working, conscientious teachers striving to provide the best instruction they could. Nevertheless, their instruction failed to apply basic research-based best practices for subject classes taught through a second language, and the students they were teaching failed to make progress in English proficiency during the study.

4.2 Discussion of the Key Findings

All scores on the SIOP criteria were consistently low and deviated little during the 160 observations conducted. There were not any lessons taught by any teacher who sometimes achieved significantly higher SIOP scores. This indicates that it was not that the teachers knew how to implement these strategies but simply chose not to; it shows they *did not know how*. Especially in light of the fact that they were provided with a copy of the SIOP at the outset of the project, and that the criteria were reviewed with them, the finding that few, if any, of the criteria on the SIOP were seen to be present in their teaching is further indication that *they did not know how* to use these strategies in their classes. The SIOP encompasses many, if not most, of the core teaching strategies promoted for CLIL classes (AKA AICLE, *Aprendizaje Integrado de Contenidos y Lenguas Extranjeras*, in Andalusia). Indeed, many CLIL websites refer to SIOP as a resource (e.g., The Partners; Getting Started with Primary CLIL, Module 2). It is not just that the teachers were not employing the criterion listed on the SIOP; they were not employing any general or specific CLIL strategies recommended by European websites to a great degree either. The teachers were providing instruction in English using the same methodologies as they would in the native language: teacher lecture, teacher talk, students copy, students fill out worksheets – all very “traditional” class activities rather than “collaborative” or “student centered”, as is how activities in CLIL classes function normally.

In the CLIL environment, teachers are expected to adjust their methodology to ensure that the students comprehend the content of the lesson as well as the language. Teachers do not simply present the content and assume that their audience understands it. They must employ a wide array other means which increase the comprehensibility of

the subject matter (such as group work, task-based learning, concrete examples, increased use of visuals, etc.). Lesson materials must be adapted for CLIL (textbooks, worksheets, assignments) to reflect a language-rich environment of instruction and the role that language plays in the students' comprehension of the subject (Cohen and Ball, 1990). Assignments and classroom expectations (reading/writing/speaking/listening tasks) must be adjusted to students' language proficiency levels. They should reflect the variety of students' learning styles. Educational materials, including textbooks, need to reflect an overall CLIL approach (Graddol, 2006). CLIL is considered to be distinct from other models of bilingual education in that it integrates language, linguistic structures, and content along a continuum, in a flexible and dynamic way, without an implied preference for either language (Coyle 2006, 2007). Systematically increasing the presence of the target language in the curriculum by incorporating a number of subjects taught through it for at least four years is another common characteristic when appropriate CLIL instruction is being applied (Fortanet-Gómez & Ruiz-Garrido 2009; Marsh 2002). Nevertheless, none of these program attributes were present in the programs studied for this project, nor did teachers exhibit an awareness of them.

Program stakeholders for the instruction observed in this study had no meetings, no purposeful conversations about developing modified curriculum or teaching strategies, no evidence of teacher collaboration at all. Teacher collaboration is a critical component to creating an environment of success for CLIL programs (Pavón Vázquez, 2014), and the decision to design and implement CLIL programs needs to reflect more than teaching a curriculum that already exists in two languages, because strategic increases in second language structures need to be included (Myles, 2002). CLIL is intended to be more than simply presenting the native-language curriculum in a foreign

language, but that is precisely what this researcher observed happening on a regular basis.

Researchers point out that just because a school presents content instruction in a foreign language, it does not mean it is employing CLIL (Cohen and Ball, 1990). Therefore, it seems clear that at the five bilingual centers where instruction was observed, CLIL instruction was not present. Swain (1988) pointed out that “not all content teaching is necessarily good language teaching”. She elaborates by saying that in an attempt to make themselves more comprehensible to students, teachers in a second-language-through-content setting may not model a wide variety of linguistic functions. This was certainly a factor in the instruction observed in the study conducted for this report.

For subject area and simultaneous linguistic development in bilingual programs, students cannot simply be instructed as if they were native speakers using the same types of lesson delivery and strategies appropriate for native-speaking students. Yet that is precisely what was going on in the classrooms observed for this study. Because teachers did not have a command of appropriate second language teaching techniques, they resorted to what they were familiar with: teaching using strategies that fit the traditional culture of the teaching environment at their schools and classrooms where the students’ native language was the language of instruction. They overlooked the distinction between using the language *of* learning (language needed to express the aspects of content), language *for* learning (language needed to participate in tasks and activities) and language *through* learning (language that emerges when CLIL students are being stretched to think about and express meanings related to content) (Llinares et al., 2012). Llinares et al. performed a comparative study of CLIL and parallel first

language classes which reported that first language students were more proficient than the CLIL students in their uses of academic language while discussing the subject content they had learned. The study suggested that some academic language features might require special attention while others might be learned and developed through routine classroom communication.

Although teachers frequently address content objectives while planning their lessons, few are trained in how to address language objectives and are thus less likely to consider them in lesson preparation (Himmel, 2012). Language objectives define the communication skills or uses of the language necessary to make the content of the lesson comprehensible to second language learners (Rohwer & Wantberg, 2005). Language objectives are crucial for second language learners. They help language learners master subject content when teaching practices address the uses of language and incorporate strategies to learn the new language (Dong, 2005). As discussed in Section 3.5.1, identifying content and language objectives were two of five SIOP criteria that all teachers failed to include in the instruction observed. Also as discussed in Section 3.5.1, teachers were unaware of academic language distinctions and did not give them attention as the Llinares (et al., 2012) research indicates is warranted.

Bilingual education is based on the widely accepted notion that in order to acquire a second language, a large amount of input in this second language is crucial (Krashen, 1985). Nevertheless, providing learners with an overabundance of language input is not sufficient to lead students to acquiring the language. This input also needs to be comprehensible in order to be processed and to lead to acquisition (Krashen, 1985; Swain, 1985). However, as the SIOP data in this project indicated, teachers in this study were not routinely or effectively making the input they provided comprehensible to their

students, nor were they employing other appropriate strategies to support language comprehension.

As an experienced ESL/EFL/bilingual education program evaluator, in the classrooms observed for this study, the author identified a number of noteworthy instructional characteristics which influence the success (or lack of success) of a bilingual program. Each area reflects the significant and immediate need for these teachers to receive high-quality professional development in a number of areas.

1. Teachers had little or no CLIL training

The lack of CLIL-related training has been reported as one of the main challenges to successfully implementing a bilingual program (Lasagabaster & Zarobe, 2010). As discussed in Chapter 3, 10 of the 11 teachers who participated in this study reported that they had never received any training in how to develop second language skills while at the same time increasing content knowledge. The one teacher who reported that she had participated in a CLIL training, however, had the eighth lowest SIOP score (0.50), indicating that she was not implementing strategies appropriate for the program. Even teachers who are highly proficient in English reported that they had no training in how to deliver their content in a second language. For example, one music teacher in the study had a very high level of conversational English and kept instruction in his class in the target language over 90% of the time. Nevertheless, this teacher reported that he had *no* training in how to teach content through a second language and had never heard of CLIL nor AICLE. His SIOP scores fell exactly in the middle of all scores (0.70; sixth out of the 11 participating teachers). The book he was given to use in class was in Spanish, he was provided with no modified materials, and he designed none to use himself.

2. Teachers demonstrated a general lack of awareness of common modern language teaching pedagogies

Comprehensible input was wholly lacking. Comprehension was achieved primarily through translation. Given that extended lectures were presented in English using strategies for native learners, the pacing of the lessons was often too quick to be comprehended by the second language learners. There was no use of realia or other visuals, and very few supplemental materials were used to support understanding. The vast majority of instruction was based on the book and handouts only. These are seriously missed opportunities to teach content and language simultaneously. For example, a series of science lessons was about reptiles, mammals and amphibians, but no class had a single real animal so students could observe it in a real-life environment to connect the English they were hearing with the characteristics of these three animal classifications. Some classes used pictures, but most relied only on verbal descriptions and did not make connections through visuals for the students so they could make better sense of that language-based instruction. Not even videos of animals in their natural habitats were used to provide a visual representation and give context to the topic. This deficiency was repeated over and over in class after class in subject after subject. Hands-on materials included paper, scissors, glue, crayons, and flashcards. No actual touching (What does the damp skin of a frog feel like? What does 'damp' feel like? Compare it to 'dry' and 'wet'.) or looking (Describe the characteristics you see. How is the skin of a reptile different from the skin of an amphibian?) or manipulatives were used (move pictures of reptiles, amphibians, mammals into categories). Instruments were used in one music class, but then there were not enough to go around. Students

had to stand around, wait and watch rather than participate. The music they were hearing was lovely, but it did not provide them with additional language input.

In addition, building schema (background knowledge) and recycling vocabulary and previously learned content increases comprehensibility of instruction in a second language classroom. However, activities to create and build on students' prior knowledge about a subject or topic were not present. No cyclical teaching was evident which would reuse previously taught content and vocabulary in new contexts. Concepts were approached singularly and independently, often by units, with no overt connections made between units of learning. No connection to schema was attempted. In an instance when teachers did refer to prior learning, they would say something like: "Remember we talked about?" No connections between students' lives and what they were learning were made – a strategy that also helps to develop schema.

Time for students to think and answer questions posed was rarely extended to accommodate their need to formulate answers in English. It was the same as would be expected for think time in their native language. No lessons were wrapped up by activities to assess in any way how much information was captured by students during the lesson. Spot checking during the lesson to see if students were comprehending was achieved through translation. Simple language structures were most evident, as would be expected when providing instruction to second graders. However, a great deal of the language modeled contained lexical and syntactic irregularities.

3. General classroom management did not support language learning

Classroom management did not reflect an environment conducive to language learning. For example: Students were expected to stay in their seats at all times while working. Interaction among students, in any language, was discouraged (further

discussed below). Teachers did not exhibit any familiarity with ways to structure interactive activities for students or to recognize the value of this. Classes were set up in the same fashion as a first language classroom: in straight lines and rows. Desks and chairs were arranged in a way that better suited a traditional classroom where students are encouraged to work alone and keep silent unless called upon. Few visuals or teacher-made materials were employed, and instruction was text-based.

In addition, for most classes, the teachers provided instruction while sitting at a desk in the front of the room during and after providing instruction, unless they got up to write on the board. This was observed to seriously affect the dynamics of the instruction. When teachers walk and circulate throughout the room during instruction, they can use a variety of techniques to keep students on task (eye contact; gestures; voice volume), see who is paying attention and who is not, develop student interest, direct students' attention, and maintain discipline. By sitting in one spot in the class, the teacher cannot take advantage of any of those benefits. Furthermore, when students in the classes completed whatever task they were assigned, invariably paper-based activities, they formed a line at the desk and stood there waiting for the teacher to go over their papers, one at a time. This represented copious amounts of instructional time lost. A good deal of instructional class time was spent coloring, waiting in line at the teacher's desk, or waiting to be engaged in an activity (waiting for a "turn" with no assigned task during this time). Student engagement in instruction or learning activities was not taken into consideration and was observed to be low overall and is further discussed below.

4. Teachers did not show an understanding of the relationships between oral/aural language and the development of literacy skills

First, teachers demonstrated no awareness of modern pedagogies or research-based activities to support reading and writing development in English as a second language. This would include a systematic approach to teaching sound-spelling patterns (phonics), word families, and phonemic awareness (August & Shanahan, 2006). Words were presented as a whole unit, with no integration of phonics-based instruction attempted. A synthesis of research (August & Shanahan, 2006) reported that the absence of these critical components in second language literacy instruction is a serious deficit, as it leads to poor reading and poor comprehension skills. There are important differences between learning to read in English and learning to read in Spanish. Of particular note, Spanish is a syllabic-based language and English is a phonemic-based one. Additionally, Spanish has a shallow orthography (high sound/symbol correspondence) whereas English has a deep orthography (low sound/symbol correspondence). These two basic differences do not preclude literacy transfer, but they do necessitate different literacy teaching methodologies, strategies, and activities. To facilitate literacy transfer, teachers need to know about how to teach reading and writing in each language, which elements of the different systems will most readily transfer, and which elements will need specific attention to develop. Teachers who participated in the study reported here may have been fluent enough to qualify as teachers in a bilingual center, but they exhibited no knowledge about these important differences in literacy development needs.

Next, in order for what is read to make sense, a solid base of listening and speaking supports those literacy skills. With regard to language development in general, but specifically for young children learning a second language, Tabors (2008) states that *spoken language must occur before written language*. Lasagabaster and Ruiz de Zarobe (2010) echo this argument by pointing out that first language literacy skills must be well

developed to facilitate the transfer of those skills into the second language. Young children must learn that it is possible to communicate in writing as well as orally. Only later, when children can read at a third- or fourth-grade level in their native language does written language help advance their oral language development in the new language (Snow, Burns, & Griffin, 1998). In the programs at the bilingual centers observed, ideally, this solid base of listening and speaking would have been developed during the years previous to the second grade.

Following guidance about implementing CLIL, language development activities should be taking place in classrooms to introduce the new vocabulary and practice syntactic structures through aural/oral activities which would prepare students for what they are expected to read. Those literacy activities would use adapted and modified text and, in turn, be recycled to support oral/aural skills. None of these things were evident in the classrooms observed. Instead, the teacher was the only model of English in the classroom, except on occasion when the bilingual aide (from the British Council) was asked to repeat words in English, or when recorded songs were played, and unmodified text was the base of instruction.

The students were *never* asked to speak to each other in English. The teachers felt they were providing oral/aural development because *they* were delivering their instruction in English. However, they were using the same kinds of teaching strategies they would use to deliver the lesson in the native language. They made no adjustments in their delivery in the second language. Just because the teacher is speaking in English does not mean that language instruction is happening. Without comprehensible input, students are not acquiring language beyond individual vocabulary words, as the ELLOPA data indicates in this study. The students' oral production is limited to

repeating, chanting, singing, and being called on one at a time. Reading and writing at the sentence level is being expected *before* the students have the solid base of listening/speaking. This decreases the comprehensibility of the literacy activities, and necessitates dependence on translation. In order for students to develop the oral/aural skills necessary to make literacy skills more comprehensible, the teacher needs to model language purposefully at the sentence level. However, at the schools observed, 6 of the 11 teachers regularly modeled language at the sentence level, but 5 of 11 did not. Although using text to develop oral skills is stated as a tenet of CLIL philosophy, this needs to be done strategically and become part of the curriculum expectations. No intentionality was evident when using text to develop second language proficiency in the classes observed.

Classes like art and PE and music are ideal opportunities for oral language development *if they are designed that way* and if teachers regularly meet and collaborate to set common targets for lexicon and syntax structures. The classes deemed as “non-linguistic” can be used to further oral language production including application of the target lexicon and syntax when these are known to the teachers to be clear objectives. However, oral language was not central to the instruction in these classes. Neither was literacy development. There were no intentional connections made between classes related to lexicon or semantics. Curiously, art was the class where language development strategies were *least* used. Art classes can provide rich environments for oral language development through the use of visuals, hands-on activities, Total Physical Response activities, pair activities involving descriptions and questioning, and so on. Instead, art was used as a “time filler” rather than instructional time.

5. Student interaction was not a component of classes

Interaction in most activities was not stimulated and was even discouraged. Young students will not learn English as a new language by just listening to a teacher talk or a CD play. Language is learned by practicing it and by interacting with others, even if that means that the interaction is not always perfect. Students need to be allowed structured and unstructured interaction times to practice with the English language. Less teacher talk and more student talk, that is, more student interaction *about the subject and topics being learned*, develops higher levels of English proficiency, including more academic English proficiency. That means if teachers always have students in neat rows expecting quiet classrooms, language is not going to be developed. Language is dynamic. Humans learn to speak by speaking and interacting. In situations such as the ones observed in this study, where the classroom is made up of students whose language proficiency is dominant in a language other than the target language (English), teachers may find it more challenging to encourage children to keep peer conversations in English. After all, if their dominant language is other than English, and their primary concern is to *communicate*, keeping the language practice in English is not what the children are thinking about. They just want to get their point across, and they will use whatever language system is *most efficient* to get the job done. That is the natural thing to do – whatever the child’s age. Therefore, it is natural for a classroom of native Spanish speakers to speak to each other in Spanish, not English, no matter how much the teacher wants them to learn English.

As in the model of bilingual education observed for this study, when there are no student native English speaking models, the teacher needs to use EFL techniques. Since in an EFL context the teacher is the primary source of language input, the teacher needs to create abundant, motivating language practice opportunities, especially oral ones.

The teacher needs to create real reasons for the students to learn English so that the language does not seem to them to be merely a set of arbitrary rules, vocabulary lists, and theoretical conjugations. This fact, however, seemed to get lost when teachers tried to do some group activities, such as games or art-based activities. There needed to be a more systematic, repetitive, and structured model of English, but it was lacking. Games, crafts, etc., need to be organized in a way which *requires* students to have to use English.

In the classes observed, on the rare occasion when students were allowed to work together, they began to chat and call things out in Spanish because of habit and lack of language models, and the activity inevitably ended by being completed in Spanish. In an EFL environment, the teacher has to give students a *really good and convincing reason* to use English. Tasks created with information gaps (things students need to figure out on their own, with one student having some pieces of needed information and another student having other pieces) are critical to students' remaining in the target language. In addition, teachers need to see themselves as the language models in the classrooms, but not overdominate language activities. Teachers need to provide abundant, excellent examples of rich, interesting language models that use target vocabulary for children. Furthermore, they need to know how to structure the classroom day to maximize student-to-student and teacher-to-student interactions.

In order to allow students to interact with each other about what is being taught, teachers need to know how to plan cooperative rather than merely group activities where students must apply the vocabulary of the lesson in their interactions with each other in meaningful ways in order to be successful with their task. Truly cooperative activities are designed to make sure all students need each other to complete the

interactive tasks and that all students have an equal role to play. There must be accountability for all students in a cooperative task. These take training and practice on the part of the teacher to master, but are essential to higher levels of language acquisition, especially in a foreign language environment, such as a CLIL classroom. Additionally, interactive activities can be structured through the use of sentence frames and word banks, to ensure that students at all proficiency levels can participate. Instructional outcomes benefit from learning to organize interactive activities.

6. Instruction incorporated few higher-order thinking and question types

Questions and tasks assigned to students primarily required lower-level thinking: giving definitions in Spanish, matching words to definitions, translating single vocabulary items into Spanish, copying words, and the like. Few opportunities were provided to students to *do things* or *create with the language*, which would demonstrate both their comprehension of English and the content task. They were not asked to synthesize or apply content knowledge using the target language. According to deGraaf, Koopman, and Westhoof (2007), effective CLIL teachers facilitate meaning-focused processing through assignment of tasks that involve learners in constructing meaning, checking for accuracy of meaning, and providing support and feedback if meaning has not been sufficiently understood. Nevertheless, in this study, language modeled by the teachers did not require students to *demonstrate* their comprehension in English by creating, synthesizing, analyzing or evaluating the content concepts they were expected to master at a level appropriate to their age and grade. Students instead were encouraged to learn through memorization. They completed worksheet after worksheet of basic knowledge and comprehension tasks and were not given opportunities to create novel utterances in English. There were very few expectations for

them to figure out how to approach a task, which would have required them to use higher-order thinking and expand their use of English. They just repeated memorized words or language chunks, and these habits of language use were evident in the overall results of the ELLOPA assessment.

7. Teachers used materials and curriculum that were unmodified for the students' levels of language proficiency

The design and implementation of a curriculum and materials to support a language and content integrated program is one of the most important goals to be achieved in a bilingual school (Salaberri Ramiro, 2010). Nevertheless, all schools observed for the study reported here used subject texts that were designed for native English speakers rather than English as a second language learners, with the exception of the book for English language arts. Teachers observed in this study seldom used materials they themselves had modified for English as a second language learners. The materials and presentation used were as if the students receiving instruction were native speakers and were primarily those provided by the textbook publisher. Additionally, regarding the use of visuals to support understanding and increase comprehensibility, only one teacher incorporated teacher-made visuals that connected to her lesson objectives on some occasions (in science class). Only two teachers regularly used visuals that accompanied the textbooks, but when they did, they simply displayed them rather than use them to support comprehension by making connections between what they were saying in English and what the picture contained. Instruction provided by the remaining eight teachers never included visuals beyond what was in the textbooks and made no evident reference to those illustrations. This group routinely provided instruction accompanied by *no* visuals at all to connect their words to meaning. They simply lectured to the

second graders in English, expecting them to comprehend through their verbal presentations alone. When working with text in a foreign language, learners need structural markers in texts to help them follow along and comprehend the content. These markers may be linguistic (headings and subheadings) or visual. Nevertheless, whereas many of these markers were present in materials being used in the classes observed, teachers showed no attempts to make connections to those markers. Instruction targeted one level of English language proficiency and provided no differentiation for a variety of language or cognitive competencies.

8. Student engagement time was low

Students were observed to be engaged in learning less than 50% of the time overall at all schools. Students occupied themselves doing other things during “lectures”, which were frequent and long. These “lectures” consisted of teachers talking on and on in English “at” students and were followed by a book-based writing assignment. Students were encouraged to color when finished with their work earlier than other students, and then teachers had difficulty getting them to stop and return to the task when they were ready to go over work with the class. This resulted in less learning time for students. Students also spent copious amounts of time waiting: waiting in line at the desk for the teacher to go over their papers, waiting for other students to complete an assignment; and so on. The time spent in English needs to represent effective learning time (Genesee, 2008).

9. Vocabulary teaching strategies were sparse

Vocabulary was a concept that received significant attention during classes as discrete lexical items, most often concrete nouns and action verbs. They were solicited orally, written, read, placed on flash cards, translated to Spanish (and vice versa). They

were not presented systematically nor cyclically. They were not emphasized nor highlighted during applications. Their use was most often limited to their occurrence in book-based activities and did not overlap between classes. In some English classes, lexical phrases were given attention (e.g., she is silly, what a mess, come here). Nevertheless, there is more to learning a language than merely knowing random vocabulary words. One needs to know how to combine that vocabulary into utterances that carry meaning (syntax). One needs to know the appropriate context for the words used. One needs to be able to transform and manipulate vocabulary into appropriate forms (e.g., face, faced, facing). There is an abundance of research about the importance of vocabulary teaching in second language classrooms, as well as a wealth of suggestions about how to make vocabulary instruction varied, interesting, and productive (Folse, 2004). In order to promote vocabulary acquisition, activities need to be designed so that students see and use targets over and over in different situations. This recycling of vocabulary allows students multiple opportunities to interact with and retain it. Nevertheless, with very little variation, in classes observed, students' interaction with vocabulary was limited to copying lists and translating definitions.

10. Teachers were unaware of whether a student speaks or hears another language at home.

Several schools had students who live in a home where another language is spoken. Nevertheless, in all instances, teachers only investigated the issue when this researcher asked them about it. Schools did not provide teachers with information about which of their students lived in a home where another language was spoken, whether or not the child spoke or interacted in that language in any way, the level of proficiency that the child had in that language, whether the student had ever received education in the other

language, or whether the student had developed literacy skills in the other language. These factors influence instruction in a number of ways. First, for some of these students Spanish AND English were new languages. Learning two new languages during the school day has an important impact on learning overall. Next, knowing the language background of your students should influence how you teach and the types of strategies you employ. Indeed, CLIL instruction purports to support the development of second language literacy skills based on first language ones. Extensive research from around the world has found that children who are learning to read in a second language are able to transfer many skills and knowledge from their first language to facilitate their acquisition of reading skills in the second language. The best evidence of this comes from studies showing that students with strong reading skills in the home language also have strong reading skills in their second language. (August & Shanahan, 2006; Bialystok, 2006; Goldenberg, 2008; Lindholm & Aclan, 1991; Riches & Genesee, 2006). In one school included in the study reported here, where 75% of the class was comprised of students who spoke a language other than Spanish at home (but not English), the teacher had no awareness of the impact that other language proficiency and literacy skills could have on learning a new language or that those skills could transfer. This seems a serious lost opportunity on the school's part.

11. Teachers' levels of English was low

Nine of the eleven teachers met the minimum level of English proficiency recommended by the SOLOM to provide instruction in English. Still, those levels seemed very low, and this researcher observed that almost half of the teachers (5 of the 11) provided instruction using complete sentences less than 50% of the time. All teachers met language requirements in Andalusia to teach in a bilingual program,

however. The Horizon 2020 Plan released in January 2016 is promoting achievement of even higher levels of proficiency to participate in bilingual programs: CEFR C1. Some practitioners are pushing back on instituting this requirement, however, since given the structure of public schools in Spain, new staff cannot be recruited and hired. They must rely on existing employees to instruct in their bilingual programs, and a higher proficiency requirement would tax their possibilities to create bilingual programs. In this study, as previously discussed, teachers with higher English proficiency were more likely to be implementing language and content strategies (see Section 3.5.3), although it is noted that in general, all teachers in the study were using few of those strategies and that the sample size of teachers is too small to make sweeping generalizations about how higher target language proficiency may affect the likelihood of using more strategies appropriate to language and content learning.

12. Thinking about “non linguistic areas”

A notable point of the schools’ bilingual education plans was the use of the term “non-linguistic areas” (“*áreas no lingüísticas*”) to refer to all classes other than English language arts (e.g., science, art, music, PE). Since the point of having classes other than English language arts instructed in English is that a second language can be developed through subject instruction, this implies that those subjects then become “linguistic areas”, from an instructional point of view. That is, knowledge of the subject area and second language are being taught simultaneously. Any class where a second language is being taught therefore *becomes* a “linguistic” class. The use of the term by a bilingual program seems to indicate a lack of understanding, or a lack of recognition, that the areas they designate as “non-linguistic” need specific attention to linguistic development. Correspondingly, the term “non-linguistic,” teachers – particularly those

who have not had the benefit of training in CLIL – may lead to the incorrect association that these classes need no particular attention to linguistic features. According to deGraaff, Koopman, and Westhoff (2007), effective CLIL teachers attend to functional communication, form and meaning, with corrective feedback and facilitation of form-focused processing, raising learners’ awareness of certain language features and employing implicit techniques to draw students’ attention to language features and functions, such as clarification requests, restating, or retelling. They should also facilitate student response (output) by encouraging peer interaction in the target language, by asking for reactions, and by assigning written practice. Teachers need to give specific attention to receptive and productive compensation strategies to solve problems with language, content, or communication. Similarly, Coyle (1999) emphasizes the importance for teachers to facilitate a strategic progression in knowledge, skills, and understanding related to curriculum targets and language abilities. If teachers think of certain classes as “non-linguistic,” they may also tend to pay little attention to any of the needs described above. It is noted that this term is used nationwide; however, it should also be considered that its use may send an unintended message to teachers that classes deemed “non-linguistic” require less attention to language development. This simple term could in itself be damaging to efforts to implement CLIL programs.

4.3 Significance of the Findings

The evidence cited throughout this chapter provides abundant indications that the teachers participating in the 5 bilingual centers in Seville are in significant need of training to improve their delivery of instruction in the programs where they are

working. Bilingual programs are proven to generate positive results in learning a second language and in making gains in content knowledge as well *when the program is designed to apply core characteristics and when teachers are implementing a research-based set of strategies* (i.e., SIOP). Direct classroom observations made as part of this study suggest that teachers at schools in the CLIL programs are struggling with the inherent changes in traditional teaching expectations that CLIL requires, particularly allowing and structuring student interaction, modification of materials to accommodate a variety of language proficiency levels, modification of content delivery to make it comprehensible in a second language, increased student productivity in content and a second language, and thinking differently about objectives to deliver content through a second language. Teachers seem unclear in general about their new roles in the classroom as language model and content information provider. They are used to being the center of classroom activity and the most common voice present in the classroom. They have not yet grasped the idea of the changes necessary to take them out of that lead role: rather than being the sage who imparts information, they need to become comfortable with the new role of being a guide leading students to use more language in their learning through investigations, group projects, and interactive activities.

In addition, information obtained for this study through teacher interviews indicates that at the outset of the creation of the CLIL programs studied, important elements and decisions that would enhance and support the change process required within the education system were overlooked from the beginning (i.e., ongoing joint decision making, setting a vision for the program, articulating goals, creating an assessment system to measure the success of the program). This leads to the concern

that, in its haste and desire to increase the number of bilingual programs present throughout Andalusia, sharing information about effective practices to promote an environment of change and innovation, which are critical to having a new program of any kind be successful, may have been omitted. A discussion of research that supports the implementation of efficacious change is presented in the upcoming chapter and is applied to the CLIL programs studied.

CHAPTER 5: CONCLUSION

5.1 Need for High Quality Training

High-quality teaching is fundamental to the success of CLIL programs. Throughout CLIL programs in Spain, minimum levels of language proficiency are frequently set for teachers to participate in these initiatives, but no further CLIL-related professional development is required (Lasagabaster & Ruiz de Zarobe, 2010). Clearly, this needs to change, as the results of the study reported here indicate that teachers at the bilingual centers in Seville are in need of training to help them learn how to teach using more CLIL strategies. Beyond the necessity for teachers to have adequate levels of proficiency in the language of instruction, research shows that teachers who are trained to implement strategies that support subject matter learning simultaneously with second language development affect positive outcomes for students in both areas (Echevarria & Short, 2004; Short, et al., 2011). This training needs to be high quality, strategic, and research-based, however, to produce the best results and reflect a positive ratio of money spent to outcomes yielded.

In Andalusia in 2002, Teacher Centers were put in charge of organizing classroom-based training initiatives and designing an annual teacher training plan. The results of initial training efforts brought to light a number of needs determined to be initial priorities, however, and these centered around teachers' proficiency in English. Other areas of focus which received more limited attention were also identified and included the creation of training courses at Teacher Centers related to language teaching practices and subject area teaching methodologies (Salaberri Ramiro, 2010). The main goal of these Andalusian training initiatives is reported to be to provide teachers with resources and basic strategies to start a bilingual program at their school, and distance

learning was a principle format for training. Teacher Centers were charged with creating work groups within bilingual schools and then following up and evaluating teacher-learning activities. As a follow up to these efforts, the Horizon 2020 plan has recognized the critical need for teachers to increase their knowledge not only in the target language of the bilingual program, but also in communicative teaching techniques. In spite of these efforts and stated goals reported within Andalusia, at the 11 bilingual centers in Seville which participated in the study reported here, *not a single stakeholder was aware of any initiatives* in Andalusia to support their bilingual programs. No school directors were informed of these efforts. No program coordinators were. No teachers were. Clearly well-intentioned efforts are under way in Andalusia, but communication with designated bilingual centers needs improvement.

In addition to making their initiatives more widely known among bilingual center stakeholders, designated Training Centers in Andalusia need to redirect their efforts from the present focus on program startup into supporting existing programs with high-quality professional development. Certainly the number of programs is important; but the quality of existing programs is equally, if not more, important. Education leaders in Andalusia can look to other successful efforts in other regions of Spain and throughout Europe for guidance. Those initiatives, like those most researchers and teacher trainers advocate for, provide examples of professional development where teachers take an active role. In Andalusia for guidance they can also look to the abundant studies related to successful professional development for teachers (e.g., Darling-Hammond, 1997; Darling-Hammond, 1999; Gersten, Chard, & Baker, 2000; IASA, 1996; Joyce & Showers, 2002; Showers, Joyce, & Bennett, 1987; Sparks, 1983; Sparks & Hirsch, 1997).

In summary, this research identifies four critical components to help teachers learn *and apply* new strategies and skills:

- presentation of theory,
- demonstration of the strategy or skill,
- initial practice in the workshop, and
- prompt feedback about their teaching.

In addition, research indicates that in order for teachers to retain and apply new strategies, skills, and concepts, they must receive coaching while applying what they are learning and receiving feedback. To this regard, and since funding is always a critical factor in education, research by Joyce and Showers (2002) provides important direction. Their studies show that teachers who participate in professional development which presents theory alone, gain only 10% of the knowledge and 5% of the skills presented and transfer 0% of it to their teaching. In sessions where demonstrations are added to the theory-based presentations, teachers gain 30% of the knowledge and 20% of the skills, but they still transfer 0% of the material presented to their teaching. When an element of opportunities for teachers to practice is added to training sessions, teachers gain 60% of the knowledge and 60% of the skills presented, but still transfer only 5% of the material from the training to their teaching. When an element of ongoing coaching is added to the presentation of theory, demonstrations, and practice, however, teachers gain 95% of the knowledge presented, 95% of the skills presented, and transfer 95% of the material in the training into their practice.

The research of Joyce and Showers has a critical importance to those controlling money for education funding: professional development initiatives that do not include coaching as ongoing follow up to training have little to no impact on what happens in a

classroom. Therefore, it has little to no impact on student achievement. It is clearly, then, a complete waste of funds to invest mainly in trainings such as one-day workshops, meetings, and seminars, which by design put teachers in a situation where 0% of what is presented will be transferred to classroom practice. In educational environments with limited funding, it is imperative that resources be used wisely. This includes monetary funds as well as human capital. In a recent four-year SIOP research project (Short, et al., 2016), it was found that when teachers followed the format studied by Joyce and Showers (theory + demonstrations + practice + coaching) it led to a higher level of teachers implementing strategies as well as more statistically significant results on measures of student academic achievements. In other words, when using SIOP, their results showed that teachers improved their practice and students gained more language and content knowledge. Considering the results found in the study reported here on bilingual centers in Seville, specifically the very low levels of integrated language and content strategies being implemented and the lack of awareness about the existence of training initiatives in their area, those in charge of CLIL training efforts in Andalusia might benefit from rethinking their professional development implementation and dissemination of information.

An additional consideration in expecting professional development efforts to translate to student achievement concerns the overall impact of expecting teachers to change their teaching habits. Changing teaching methods is challenging for teachers (Cohen and Ball, 1990). Indeed, within a variety of contexts, managing complex change is complicated and requires the integration of five specific elements: (1) vision + (2) skills + (3) incentives + (4) resources + (5) action plan. Without the presence of all five components, change will not result (Lippitt, 1987). If a program is put into place without

all stakeholders agreeing first on an overall *vision* (1) for it which is then continually shared with others, the result is confusion. The stakeholders do not share a common understanding of the direction the program is taking or what the expected results are. They have no guidance for why they are doing what they are doing. Next, if a program is put into place before educators have the *skills* (2) to implement it, the result is anxiety. Teachers are genuinely concerned with doing a good job and helping students. They are aware of when they are unprepared to fully and properly carry out their tasks. They feel stress and anxiety when they are put in a position to implement an education mandate without the skills to support their efforts. Furthermore, when *incentives* (3) are lacking for teachers, the result is gradual change. Incentives can be extrinsic (money; training) or intrinsic (personal satisfaction in a job well done; enthusiasm spurred by training; rewards; recognition; celebrations). Without incentives to keep teachers involved and motivated, change may happen but take longer than it would if incentives were present. Additionally, if a program is put into place before educators have the *resources* (4) to implement it, the result is frustration. Resources include the time, support, and materials, and equipment to implement the program. If teachers are being asked to create an abundance of materials for their classrooms and adapt texts, but they are not given additional time or a materials budget to do so, they will become frustrated in their endeavors.

Finally, if a program is implemented before an *action plan* (5) is created collaboratively, a number of false starts may occur. An action plan should be broken down into steps that people can take and accomplish in small bits. Without it, teachers may take off in a certain direction, only to realize that an important step was skipped, forcing them to stop their progress and go back and take care of it. These are false starts.

This is like being on a treadmill: there are copious amounts of effort put in, but the user goes nowhere. Moreover, a program which is lacking several components will cause teachers to experience more than one corresponding result. For example, if a program lacks vision and resources, teachers will be confused and frustrated. When teachers lack the skills for program implementation and that program has no articulated vision, teachers will be confused and anxious. Even if teachers are given ample professional development that includes coaching to enhance and support their teaching skills, if the program stakeholders never designed an action plan for the program, teachers may be busy with activities related to the program, but, like a treadmill, the program will go nowhere. This is a point that relates directly to the importance of quality initial program design, since all of the 5 elements in the process must be present to promote and support change of any sort, and a change in practice for bilingual programs in bilingual centers in Seville is clearly needed.

Regarding the observations made at the Seville bilingual centers for this study, no stakeholders at any school had met, discussed, or collaborated on creating or articulating a vision for their program. Thus, following the characteristics identified as essential in managing complex change, ‘vision’ was absent from their program equation. From the SIOP scores, it is plain that ‘skills’ were also missing. Teachers demonstrated that they had intrinsic motivation: they cared deeply about their school, their students, and student performance. No rewards, recognition, extra planning time, or celebrations were present to support that intrinsic motivation, however; and bilingual teachers received no more money for their efforts. They were not rewarded with training opportunities, because no one at their school realized they exist. The resources provided to teachers did not extend beyond what teachers in monolingual classrooms were given.

The resources called for in a successful CLIL program were absent: a curriculum modified to reflect language learning expectations, textbooks that reflect the CLIL tenets, abundant visual materials, abundant manipulative materials that support the content curriculum, support in using electronic whiteboards to their potential. Thus, ‘resources’ are a component that is lacking for these program. Finally, like the vision plan, no stakeholders at any school had met, discussed, or collaborated on creating an ‘action plan’. Indeed, they did not realize they should. The resulting absence of program vision, skills, resources, and action plan produced in teachers was observed to be exactly what research says it will: teachers experienced confusion, anxiety, frustration, and a treadmill effect. Teachers did not know how to properly implement language and content instruction, resulting in confusion. They were stressed and anxious about the instruction they were providing for a number of reasons. First, since there are no pre- and post-tests conducted, they were anxious about how well their students were learning. They had no data to lead them.

Next, no observations were performed in their classrooms, so they got no feedback about their instruction. They felt like they were on their own *because they were*. To say the lack of teaching resources created frustration for the teachers would imply they knew what resources they were lacking – and it did not seem that they did. Teachers were unaware of the abundance of visual and hands-on materials that is available which would so greatly enhance their instruction. Those that had an electronic white board did not realize how great its potential is for creating dynamic, lively, visual, active language and content lessons. Those who did not have an electronic white board did not realize that others had something they did not – and frankly did not care to have one as it would be one more thing they needed to spend time learning themselves. The

resource every single teacher mentioned that they wanted more of was *time*. They all felt time pressure, and that frustrated them. Finally, with no action plan, the attempts at implementing their program put them on a treadmill. They were all moving, putting in bountiful efforts, and giving the best they knew how – but as the SIOP and ELLOPA data in this study indicate, that was taking them nowhere.

5.2 Suggestions for follow-up studies

A call for continued research on the implementation of bilingual programs in general, but especially in Andalusia, has been mentioned previously in this study. Based on the results described here, logical research follow-ups would include:

1. A study similar to the one reported here, with a larger scope over a longer period of time (ideally, an entire school year), observing more teachers at a wider variety of grade levels in a greater number of bilingual centers. Perform program-wide pre- and post-tests of second language performance all students participating in the bilingual program. This study would serve to demonstrate whether the present study was a micro-picture of instruction in Seville, or whether the results found in this study are endemic to bilingual programs there.
2. A longitudinal experimental study (a minimum of one school year; ideally encompassing several school years) to measure the effects that teacher strategies training has on student language proficiency outcomes in bilingual centers. Provide an experimental group of teachers with ongoing, high-quality training in the use of strategies that promote second language learning in content classes. Identify a control group of teachers who do not receive this training. Compare the language proficiency outcomes (pre- and post-tests) of the students in the two

groups over intervals of time. A study of that nature would serve to show the effects that trained teachers have on student learning outcomes.

3. As a follow-up to the study outlined above, using three groups of teachers (the group of teachers that has received a minimum of two years of training in strategies and a second group who begins training at the outset of the research project and a third group who receives no training) could measure the effects that teacher strategy training has on student language proficiency outcomes in bilingual centers. This would use pre/post-test data to measure the language gains of students with teachers who have had training, teachers who are receiving training, and teachers who have no training and would serve to show how quickly having teachers receive training will affect student learning outcomes.
4. Again using a group of trained teachers such as those recommended in the studies above, do follow-up classroom observations over intervals of 3 months, 6 months, 9 months and 12 months to measure the amount of sustained application of strategies in their classrooms. This study would serve to establish whether or not the types of training being provided produce sustained, long-lasting changes in teacher practice in the classroom.
5. Again using a group of trained teachers such as those mentioned in the studies suggested above, perform a longitudinal experimental study to see what types of follow-up support influences teachers the most in maintaining a high level of strategy implementation. Divide the larger group into three groups. The first receives follow-up, hands-on work sessions at given at set intervals over one year. The second receives one week a month of expert in-class coaching that includes collaborative planning, instruction modeled by the expert, co-teaching, and

observed teaching with feedback over the course of three months, with a six and twelve month touch-back. The third group receives no interventions. At the end of 12 months, 18 months, and 24 months, perform classroom observations to document the level of strategies implementation being performed by the teachers. (Modeled on work done by Joyce & Showers, 2002.) This study would serve to show the level of resulting change in teacher practice influenced by two types of follow-up and no follow-up professional development models

Additional studies following the formats suggested in all 5 of the above could be designed to measure content knowledge attainment. Furthermore, of the studies suggested above, numbers 2 and 3 would strive to develop teacher knowledge of CLIL techniques, but would not speak to measuring or ensuring implementation of those new skills over time. Suggested studies 4 and 5 would take into account and build on what is known about increasing the effectiveness of teacher training (as discussed above in Section 5.3). Each of these studies would produce valuable information related to improving student outcomes: which is the reason why we teach.

5.3 Conclusion

The research study reported here supports other researchers' conclusions that additional training initiatives need to be put in place in Andalusia. It also suggests that the way training is provided there should be revisited to comply with research-based recommendations. Research done on CLIL programs indicates that when CLIL is properly implemented, students advance their abilities in their new language. Proper implementation implies appropriate application of strategies and techniques to support both language learning and subject knowledge attainment. In short, CLIL programs

clearly have the potential to produce high levels of language and content learning. Whereas the study reported here did not investigate increases in subject content knowledge, it did look at the quantity and quality of language development teaching in bilingual centers in Seville, Spain, and found it to be lacking. This study also measured gains in student language attainment, and found that students were not making the advances in language proficiency that research indicates is possible in bilingual programs.

Ideally, all content teachers in bilingual classes would be trained in such areas as second language acquisition and English as a second language teaching methodology. Starting programs without first creating an environment for success of that program makes the initiative more difficult to implement, and decreases the likelihood of its success. In the CLIL environment of Seville, elements that this research study have identified as missing include

- the creation of a schoolwide program vision for the program,
- the development of teacher skills,
- appropriate resources for the program including adapted curriculum and materials,
- a schoolwide action plan to implement the bilingual program.

The second item on this list, concerning teacher training, represents a very large endeavor and includes a wide variety of corresponding elements, but the other three items also have a significant impact on the success of implementing a new program even if they would be simpler to achieve. In addition to these missing elements, when implementing a CLIL program, it would benefit all stakeholders to begin by creating a shared knowledge about how a CLIL classroom and a traditional Spanish monolingual classroom might look and sound different from one another. In this way, student,

teacher, administrator, and parent expectations will all be in line, and stakeholders in CLIL programs would recognize that learning experiences in a CLIL classroom differ from a traditional one in many unexpected ways. CLIL programs should look different from a traditional classroom because the observer should see students working together in groups, using a variety of manipulatives, visuals, and text. Although monitored and structured, students might be moving, standing, and interacting. Observers should see the teacher taking on a role of “guide” or “facilitator” rather than “sage” or “knowledge expert”. The teacher would be circulating throughout the class as students work, standing beside one group to silently redirect their behavior with a gesture, looking across the room directing another group’s performance with her eyes, all while listening to what a student is saying in the group on her other side. She would be multi-tasking, looking, listening, and moving from group to group to ensure comprehension and completion of assignments, asking a variety of lower- and higher-order thinking questions to direct student thinking, adjusting her language use to accommodate and encourage students with more or less language proficiency.

The visitor would see students working on task-based, problem solving activities where they share information and negotiate meaning in the target language. Textbooks would be used as resource material as opposed to driving instruction. A wide variety of teacher-made and student-produced products would be evident throughout the room: on students’ desks, on the walls, and on the board, and students would be referring to these as anchor materials throughout a lesson, showing recycling of language and concepts from one lesson to another. Although the classroom would not be noisy, a hum or buzz of activity would be heard. Visitors would hear both languages being used in the classroom at a volume only pairs and groups could understand, with the majority of the

interaction and instruction happening in the target language and the home language being used for quick clarification of meaning, then switching back to the target language. They would hear questions being asked and answers given in the target language. They would hear controlled but enthusiastic voices. Observers would witness a routine of instruction that started with teacher-led information and progressed into pair or small-group activities to practice the information the teacher just provided and ending with individual tasks to demonstrate individual comprehension. Tasks would start with listening and speaking activities and then build into reading and writing assignments to support the new language presented. Instruction would present, use, reuse, expand on, and repeat language to give students multiple opportunities to understand, practice, and then acquire it. Teachers would not hesitate to repeat what they have said before, because they would understand that students learning a new language *require* multiple exposures to the same language and language features in order to acquire it. Indeed, stakeholders expecting the CLIL classroom to look and sound like the majority of traditional classrooms in Seville, those stakeholders without a shared understanding of what a CLIL classroom looks and sounds like, might be surprised by them – especially since that is not what this observer witnessed at the bilingual centers studied for this report.

All teachers who participated in this study were interested in and willing to receive information that would support them in their implementation of a CLIL program. Like the vast majority of teachers, they wanted to do well and give their students the best possible education. Teachers need help to make that happen, however; and this group of teachers in no exception. Available training efforts in Andalusia need to be more clearly and easily made known to them, and a high priority needs to be given

to developing not just the number of bilingual programs that exist in Andalusia and the target language abilities of the teachers, but also on ensuring the quality of instruction that students in those programs are receiving. As the results of this study imply, students will advance in their learning of both language skills and subject matter only when they consistently receive quality instruction that simultaneously supports language and content learning.

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APPENDIX

Warm-Up	Goal: salutations and set phrases
<ul style="list-style-type: none"> Greet the student warmly in English: Hello. How are you? Sit here please. What's your name? How old are you? 	
Game 1: School Tools	Goal: TPR with schools tools (paper, pencil, scissors, etc.) Put students at ease with simple listening comprehension first, followed by speaking.
<ul style="list-style-type: none"> Put a variety of common school tools out on the table: pencil, pen, paper, book, stapler, scissors, tape. Use TPR: for different items on the table, tell students to give it to you, touch it, point to it, move it somewhere else, etc. Point to different items and ask, "What is this?" (note: complete sentence? If not, model the complete sentence and prompt for it on the next question.) 	
Game 2: Colors	Goal: Give students an opportunity to answer in one word or in short phrases or sentences.
<ul style="list-style-type: none"> Place colored pencils on the table. Have students to name the color by asking, "What color is this?" Ask: What is your favorite color? 	
Game 3: The Family	Goal: Answer questions – Give students opportunities to express ideas on familiar topics
<ul style="list-style-type: none"> Using a visual depicting a family, ask students questions: Who is this? What does (he/she) look like? Do you have a (big/little, older/younger) (sister/brother)? Does your grandmother live in your house? Tell me about your family. Do you have a pet? (note: complete sentence? If not, model the complete sentence and prompt for it on the next question.) 	
Game 4: Talking with Puppets	Goal: Answer questions - Give students opportunities to express ideas on familiar topics. Describe - Give students opportunities to use academic language and to create language at sentence level.
<ul style="list-style-type: none"> The teacher and the student each have a puppet and hold a conversation. Teacher's puppet asks: What is your favorite class? What do you like about (science, art, PE: focus on classes in the bilingual program)? What don't you like about that class? Tell what you learn about in (content class) Look at this picture (show picture). What do you see? 	
Game 5: Story Retelling	Goal: Describe, narrate - Give students opportunities to speak about things that have happened in the past at paragraph level and beyond.
<ul style="list-style-type: none"> Using a set of felt manipulatives of the story <i>The Three Little Pigs</i>, show students all the felt representations. Choose the first or second and begin retelling the story, placing and using the felt pieces appropriately. Ask the student continue telling the story. 	

Adapted from Thompson et al., 2006

Cow Talk- Early Language Listening and Oral Proficiency Assessment Rating Profile™ (ELLOPA-RP) © 2002 CAL

	Junior Novice-Low	Junior Novice-Mid	Junior Novice-High	Junior Intermediate-Low
Beginner ORAL FLUENCY	<ul style="list-style-type: none"> -Produces isolated words and/or high frequency expressions such as <i>good morning</i> and <i>thank you</i>. -Tends to use native language almost exclusively. 	<ul style="list-style-type: none"> -Uses a limited number of isolated words, two- to three-word phrases, and/or longer memorized expressions within predictable topic areas. -May attempt to create sentences, but is not successful. Uses gestures or native language to expand meaning when attempting to create with language. Long pauses are common. 	<ul style="list-style-type: none"> -Uses high-frequency expressions and other memorized expressions with reasonable ease. -Signs of originality are beginning to emerge. -Creates some sentences successfully, but is unable to sustain sentence-level speech. 	<ul style="list-style-type: none"> -Maintains simple conversations at the sentence level by creating with the language although in a reactive, limited manner. -Handles a limited number of everyday social and academic interactions.
LANGUAGE CONTROL (GRAMMAR) (Speaking)	<ul style="list-style-type: none"> -May use memorized, high-frequency phrases accurately. -Lacks an awareness of grammar and syntax. 	<ul style="list-style-type: none"> -May use memorized expressions with verbs and other short phrases accurately, but inaccuracies are common. -Does not successfully create at the sentence level with conjugated verbs. 	<ul style="list-style-type: none"> -Creates some sentences with conjugated verbs, but in other attempts to create sentences, verbs may be lacking or unconjugated. -Many grammatical inaccuracies are present. 	<ul style="list-style-type: none"> -Verbs are conjugated in present tense, but may be inaccurate. -Other grammatical inaccuracies are present. -Begins to self-correct.
VOCABULARY (Speaking)	<ul style="list-style-type: none"> -Uses words in very specific topic areas in predictable contexts. -May use a few memorized, high frequency expressions. 	<ul style="list-style-type: none"> -Uses specific words in a limited number of topic areas, high-frequency expressions, and other memorized expressions. -Frequently searches for words. 	<ul style="list-style-type: none"> -Uses vocabulary centering on basic objects, places, and family, adequate for minimally elaborating utterances in predictable topic areas. -May use native language or gestures when attempting to create with language. 	<ul style="list-style-type: none"> -Has basic vocabulary for making statements and asking questions to satisfy basic social and academic needs, but cannot elaborate or provide explanations. -May use false cognates or resort to native language when attempting to communicate beyond the scope of familiar topics. -May use some common idiomatic expressions.
LISTENING COMPREHENSION	<ul style="list-style-type: none"> -Recognizes isolated words and high-frequency expressions such as <i>hello</i>, <i>good morning</i>, <i>thank you</i>. 	<ul style="list-style-type: none"> -Understands predictable questions, statements, and commands in familiar topic areas with strong contextual support (gestures, objects, visuals, or previously presented material) though at a slower than normal rate of speech and/or with repetitions. 	<ul style="list-style-type: none"> -Understands simple questions, statements, and commands, some new sentences with strong contextual support, and simple narratives in familiar topic areas. May require repetition, slower speech, or rephrasing. 	<ul style="list-style-type: none"> -Understands familiar and new sentence-level questions and commands in a limited number of content areas with strong contextual support for unfamiliar topics. -Follows conversation at a fairly normal rate.
COMMUNICATION STRATEGIES	<ul style="list-style-type: none"> -Primarily relies on speaker's facial expressions, gestures, and non-verbal clues to aid comprehension. -May mimic words or phrases or sing comprehending words. -May use native language, gestures, and facial expressions to convey message or invent words by mixing target and native language sounds. 	<ul style="list-style-type: none"> -Relies heavily on visuals, other contextual clues, and familiar expressions in the target language to assist in comprehension. -Uses manipulatives, visuals, and non-verbal clues to convey message. May use native language to expand meaning, change topic, or interpret for clarification. May invent words by using target language pronunciation for a native language word. May use a memorized expression in the target language inappropriately (e.g., <i>How old are you? I'm fine.</i>) After hearing a word in the target language, may repeat it or may even listen for a word and then repeat it in the conversation. 	<ul style="list-style-type: none"> -May draw on background experiences to assist in comprehension. May attempt to clarify meaning in the target language by interpreting phrases in the native language, by asking questions in the native language, or by selecting substitute words. Relies heavily on visuals for comprehension of new topics, less for familiar ones. -Relies on repeated language structures, non-verbal clues, and visuals to convey message. May use a new word in conversation rather than just repeating it. May resort to native language to expand meaning or change a topic. 	<ul style="list-style-type: none"> -Visuals and context may be important for comprehending new topics, but student relies less on these clues, especially in familiar topic areas. -May use paraphrasing, questioning, circumlocution, and other strategies to avoid breakdown in communication. Attempts to self-correct are primarily for meaning when communication does break down. May also resort to native language for urgent communication. May demonstrate more of the basic interpersonal communication skills than cognitive academic language proficiency.
CULTURAL AWARENESS	<ul style="list-style-type: none"> <input type="checkbox"/> 1. Can sing a song in the target language. <input type="checkbox"/> 2. Can distinguish objects that are typically found in a culture of the target language from objects typically found in U.S. culture. 	<ul style="list-style-type: none"> <input type="checkbox"/> 3. Can speak in English about some holidays and customs found in a culture of the target language. 	<ul style="list-style-type: none"> <input type="checkbox"/> 4. Uses some gestures and body language from a culture of the target language. 	<ul style="list-style-type: none"> <input type="checkbox"/> 5. Uses some culturally appropriate vocabulary and/or idiomatic expressions in the target language. <input type="checkbox"/> Other observations of Cultural Awareness from ELLOPA interview _____

CAL Center for Applied Linguistics
Early Language Listening and Oral Proficiency Assessment (ELLOPA) Rating Sheet

Language of Interview: French German Hebrew Japanese Spanish Other (check one box)

School _____ Grade _____ Interviewer _____ Date _____
 Rater _____

STUDENT INFORMATION	GAME 1:	GAME 2:	GAME 3:	GAME 4:	GAME 5:	RATINGS
Student A Name: Language Background:						Oral Fluency: Grammar: (Speaking) Vocabulary: (Speaking) Listening Comprehension: ----- Communication Strategies: Cultural Awareness:
Student B Name: Language Background:						Oral Fluency: Grammar: (Speaking) Vocabulary: (Speaking) Listening Comprehension: ----- Communication Strategies: Cultural Awareness:

SOLOM Teacher Observation Student Oral Language Observation Matrix					
Student's Name:		Grade:		Date:	
Administered By (signature):					
Language Observed:					
	1	2	3	4	5
A. Comprehension	Cannot be said to understand even simple conversation.	Has great difficulty following what is said. Can comprehend only social conversation spoken slowly and with frequent repetitions.	Understands most of what is said at slower-than-normal speed with repetitions.	Understands nearly everything at normal speech. Although occasional repetition may be necessary.	Understands everyday conversation and normal classroom discussions.
B. Fluency	Speech so halting and fragmentary as to make conversation virtually impossible.	Usually hesitant; often forced into silence by language limitations.	Speech in everyday conversation and classroom discussion frequently disrupted by the student's search for the correct manner of expression.	Speech in everyday conversation and classroom discussions generally fluent, with occasional lapses while the student searches for the correct manner of expression.	Speech in everyday conversation and classroom discussions fluent and effortless; approximating that of a native speaker.
C. Vocabulary	Vocabulary limitations so extreme as to make conversation virtually impossible.	Misuse of words and very limited; comprehension quite difficult.	Student frequently uses wrong words; conversation somewhat limited because of inadequate vocabulary.	Student occasionally uses inappropriate terms and/or must rephrase ideas because of lexical inadequacies.	Use of vocabulary and idioms approximate that of a native speaker.
D. Pronunciation	Pronunciation problems so severe as to make speech virtually unintelligible.	Very hard to understand because of pronunciation problems. Must frequently repeat in order to make him/herself understood.	Pronunciation problems necessitate concentration on the part of the listener and occasionally lead to misunderstanding.	Always intelligible, although the listener is conscious of a definite accent and occasional inappropriate intonation patterns.	Pronunciation and intonation approximate that of a native speaker.
E. Grammar	Errors in grammar and word order so severe as to make speech virtually unintelligible.	Grammar and word order errors make comprehension difficult. Must often rephrase and/or restrict him/herself to basic patterns.	Makes frequent errors of grammar and word order that occasionally obscure meaning.	Occasionally makes grammatical and/or word order errors that do not obscure meaning.	Grammar and word order approximate that of a native speaker.

The Sheltered Instruction Observation Protocol (SIOP) (Echevarría, Vogt, & Short, 2000; 2004; 2008)

Observer: _____ Teacher: _____
 Date: _____ School: _____
 Grade: _____ Class/Topic: _____
 ESL Level: _____ Lesson: (check one) Multiday Single-day

Directions: Check the box that best reflects what you observe in a sheltered lesson. You may give a score from 0-4 (or NA on selected items). Cite under *Comments* specific examples of the behaviors observed.

	Highly Evident	3	Somewhat Evident	2	1	Not Evident	0	NA
Lesson Preparation								
1. Content objectives clearly defined, displayed, and reviewed with students	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
2. Language objectives clearly defined, displayed, and reviewed with students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Content concepts appropriate for age and educational background level of students	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Supplementary materials used to a high degree, making the lesson clear and meaningful (e.g., computer programs, graphs, models, visuals)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Adaptation of content (e.g., text, assignment) to all levels of student proficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Meaningful activities that integrate lesson concepts (e.g., surveys, letter writing, simulations, constructing models) with language practice opportunities for reading, writing, listening, and/or speaking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Comments:</i>								
Building Background								
7. Concepts explicitly linked to students' background experiences	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
8. Links explicitly made between past learning and new concepts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Key vocabulary emphasized (e.g., introduced, written, repeated, and highlighted for students to see)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Comments:</i>								
Comprehensible Input								
10. Speech appropriate for students' proficiency level (e.g., slower rate, enunciation, and simple sentence structure for beginners)	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
11. Clear explanation of academic tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. A variety of techniques used to make content concepts clear (e.g., modeling, visuals, hands-on activities, demonstrations, gestures, body language)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Comments:</i>								
Strategies								
13. Ample opportunities provided for students to use learning strategies	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NA
14. Scaffolding techniques consistently used assisting and supporting student understanding (e.g., think-alouds)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. A variety of questions or tasks that promote higher-order thinking skills (e.g., literal, analytical, and interpretive questions) <i>Comments:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Interaction	4	3	2	1	0	NA
16. Frequent opportunities for interaction and discussion between teacher/student and among students, which encourage elaborated responses about lesson concepts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17. Grouping configurations support language and content objectives of the lesson	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
18. Sufficient wait time for student responses consistently provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19. Ample opportunities for students to clarify key concepts in L1 as needed with aide, peer, or L1 text <i>Comments:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practice and Application	4	3	2	1	0	NA
20. Hands-on materials and/or manipulatives provided for students to practice using new content knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Activities provided for students to apply content and language knowledge in the classroom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Activities integrate all language skills (i.e., reading, writing, listening, and speaking) <i>Comments:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Lesson Delivery	4	3	2	1	0	NA
23. Content objectives clearly supported by lesson delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24. Language objectives clearly supported by lesson delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25. Students engaged approximately 90% to 100% of the period	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
26. Pacing of the lesson appropriate to students' ability level <i>Comments:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Review and Assessment	4	3	2	1	0	NA
27. Comprehensive review of key vocabulary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
28. Comprehensive review of key content concepts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
29. Regular feedback provided to students on their output (e.g., language, content, work)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
30. Assessment of student comprehension and learning of all lesson objectives (e.g., spot checking, group response) throughout the lesson <i>Comments:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Total Points Possible: 120 (Subtract 4 for each NA given)						
Total Points Earned:					Percentage Score:	



CENTER FOR APPLIED LINGUISTICS
4646 40TH STREET NW • WASHINGTON DC 20016-1859 • (202) 362-0700 • fax (202) 362-3740 • www.cal.org

SIOP LESSON PLANNING SHEET

Name: _____ Date: _____ Assignment: _____

Lesson Preparation

- 1. Write **content objectives** clearly for students.
- 2. Write **language objectives** clearly for students.
- 3. Choose **content concepts appropriate** for age and educational background level of students.
- 4. Identify **supplementary materials** to use (graphs, models, visuals).
- 5. **Adapt content** (e.g., text, assignment) to all levels of student proficiency.
- 6. Plan **meaningful activities** that integrate lesson concepts (e.g., surveys, letter writing, simulations, constructing models) with language practice opportunities for reading, writing, listening, and/or speaking.

Building Background

- 7. Explicitly link **concepts** to students' backgrounds and experiences.
- 8. Explicitly link **past learning** and new concepts.
- 9. **Emphasize key vocabulary** (e.g., introduce, write, repeat, and highlight) for students.

Comprehensible Input

- 10. Use **speech** appropriate for students' proficiency level (e.g., slower rate, enunciation, and simple sentence structure for beginners).
- 11. **Explain academic tasks** clearly.
- 12. Use a **variety of techniques** to make content concepts clear (e.g., modeling, visuals, hands-on activities, demonstrations, gestures, body language).

Strategies

- 13. Provide ample opportunities for students to use **strategies**, (e.g., problem solving, predicting, organizing, summarizing, categorizing, evaluating, self-monitoring).
- 14. Use **scaffolding techniques** consistently (providing the right amount of support to move students from one level of understanding to a higher level) throughout lesson.
- 15. Use a variety of **question types including those that promote higher-order thinking** skills throughout the lesson (literal, analytical, and interpretive questions).

Interaction

- 16. Provide frequent **opportunities for interactions** and discussion between teacher/student and among students, and encourage elaborated responses.
- 17. Use **group configurations** that support language and content objectives of the lesson.
- 18. Provide sufficient **wait time for student responses** consistently.
- 19. Give ample opportunities for **students to clarify key concepts in L1** as needed with aide, peer, or L1 text.

Practice/Application

- 20. Provide **hands-on materials** and/or manipulatives for students to practice using new content knowledge.
- 21. Provide activities for students to **apply content and language knowledge** in the classroom.
- 22. Provide activities that **integrate all language skills** (i.e., reading, writing, listening, and speaking).

Lesson Delivery

- 23. **Support content objectives** clearly.
- 24. **Support language objectives** clearly.
- 25. **Engage students** approximately 90-100% of the period (most students taking part and on task throughout the lesson).
- 26. **Pace** the lesson appropriately to the students' ability level.

Review/Assessment

- 27. Give a comprehensive **review of key vocabulary**.
- 28. Give a comprehensive **review of key content concepts**.
- 29. Provide **feedback** to students regularly on their output (e.g., language, content, work).
- 30. Conduct **assessments** of student comprehension and learning throughout lesson on all lesson objectives (e.g., spot checking, group response.)

Comments:

Tool for measuring CLIL in the classroom*
General Observation Report

(draft 2/ under review – November 3rd '11)

Observed Professor:
Number of observed times:
Faculty:
Subject:
Name of Observer (Instituto de Lenguas Modernas):
Observation Nº:
Observation Date:
Observation Time:

Section 1 – Observation Criteria

Observed Criteria	Comments	Suggestions for improvement
1. Lesson & Material Preparation a. Introduces CLIL-driven outcomes. b. Plans vocabulary work. c. Emphasize key vocabulary (e.g., write, repeat, and highlight) for students. d. Divides the lesson into different, recognisable stages.		
2. Comprehensible Input to Communicate Meaning a. Elicits and links past learning to new concepts b. Builds schema in warm-up.		

* This tool was adapted from the resources below and modified by Naithe Nathasa Sobhy for the use of the Institute of Modern Languages (Univarsidad San Jorge – Zaragoza):
 Echevarria, J., Vogt, M.E., & Short, D. (2000). *Making content comprehensible to English language learners: The SIOP model*. Boston: Allyn & Bacon.
 Rosénius, W., Knoppert, R., & Soesbergen (2011). Teaching with CLIL: Learning and Language Come Together. Retrieved from Eric database.
 Fortune, T. (2009). Immersion teaching strategies checklist. *European Language Assessment Centre*. Retrieved from <http://www.cerkl.uwm.edu.pl/immersion/soesbergen/ltwa2009.pdf>, October 28th 2011.

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Tool for measuring CLIL in the classroom*
General Observation Report

(draft 2/ under review – November 3rd '11).

<p>c. Avoids difficult language. d. Enunciates/articulates clearly. e. Paces talk & Signposts. f. Provides realia, visuals, and/or manipulatives. g. Provides clear instructions. h. Frequently checks student comprehension.</p>		
<p>3. Promotes extended output: a. Creates opportunities/activities that increase STT¹ in English. b. Uses strategies to minimize TT². c. Fosters a student fronted/centred classroom d. Promotes HOT³ through questions and activities.</p>		
<p>4. Feedback on Meaning & Form a. Praises and encourages. b. Negotiates meaning when needed. c. Encourages self and peer correction. d. Provides explicit error correction and</p>		

¹ Student Talk Time

² Teacher Talk

³ Higher order thinking: moves from knowledge and comprehension to application, analysis, synthesis, evaluation, and creation (Bloom's Taxonomy).

* This tool was adapted from the resources below and modified by Nashwa Nashaat Sobhy for the use of the Institute of Modern Languages (Universidad San Jorge – Zaragoza):
Echeverría, J., Vogt, M.E., & Short, D. (2006). *Making content comprehensible to English language learners: The SIOP model*. Boston: Allyn & Bacon.
Floodinus, W., Kneppert, R., & Soesbergen (2011). *Teaching with CLIL: Learning and Language Come Together*. Retrieved from Eric database.
Fortune, T. (2009). *Immersion teaching strategies checked*. *European Language Acquisition Centre*. Retrieved from <https://www.ceris.uconn.edu/immersion/laes/field/Nov2009.pdf>, October 28th 2011.

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Tool for measuring CLIL in the classroom*
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explanation when needed.	
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Section II – Observation Outcome:

a) Conclusion

b) Recommendations Observer's suggestions for actively involving students in language-content integrated learning

* This tool was adapted from the resources below and modified by Nahiwa Nashedi Saichy for the use of the Institute of Modern Languages (Universitad San Jorge – Zaragoza):
Echevarría, J., Voci, M.E., & Short, D. (2000). *Making content comprehensible to English Language Learners: The SIOP model*. Boston: Allyn & Bacon.
Redden, W., Knoppert, R., & Spiesbergen (2011). Teaching with CLIL: Learning and Language Come Together. Retrieved from Eric database.
Fortuny, T. (2000). Immersion teaching strategies checklist. *Estowán Language Immersion Centre*. Retrieved from <http://www.californiaeducation.state.ca.us/Nov2000.pdf>. October 28th 2011.

JUNTA DE ANDALUCÍA

CONSEJERÍA DE EDUCACIÓN

Delegación Territorial de Educación, Cultura y Deporte de Sevilla



Fecha: 09/01/2013

Su referencia:

Nuestra referencia: 00640/CLP/jmp

Asunto: Proyecto de Investigación

DÑA. LYNDA WAITE FRANCO

C/ Ximénez de Enciso, 35 - Blq. 1 - Bajo A

41004 SEVILLA

Estimada Sra.:

En relación con su solicitud para realizar su trabajo de investigación sobre el progreso en el nivel oral y auditivo de los estudiantes de segundo de Educación Primaria dependiendo del tipo y calidad de la enseñanza recibida, le comunico que desde esta Delegación Territorial no se encuentra inconveniente en realizar dicho estudio en los siguientes centros educativos: CEIP Sor Ángela de la Cruz, CEIP Carmen Benitez, CEIP San José de Calasanz, CEIP Arias montano y CEIP San José Obrero, siempre que el Consejo Escolar de cada uno lo autorice.

No obstante lo anterior debemos hacerle las siguientes consideraciones:

- a) Para realizar las entrevistas al alumnado se deberá contar con la autorización pertinente de los padres o tutores.
- b) Se deberá tener en cuenta, conforme al artículo 37.7, de la Ley 30/1992, de 26 de noviembre, de Régimen Jurídico de las Administraciones Públicas y del Procedimiento Administrativo Común, que: "El derecho de acceso será ejercido por los particulares de forma que no se vea afectada la eficacia del funcionamiento de los servicios públicos debiéndose, a tal fin, formular petición individualizada de los documentos que se desee consultar, sin que quepa, salvo para su consideración con carácter potestativo, formular solicitud genérica sobre una materia o conjunto de materias. No obstante, cuando los solicitantes sean investigadores que acrediten un interés histórico, científico o cultural relevante, se podrá autorizar el acceso directo de aquéllos a la consulta de los expedientes, siempre que quede garantizada debidamente la intimidad de las personas."
- c) La investigadora deberá citar en su estudio, así como en las posibles publicaciones, la colaboración de la Consejería de Educación de la Junta de Andalucía a través de la Delegación Territorial de Educación, Cultura y Deporte en Sevilla.
- d) La información que se obtenga sólo podrá ser utilizada en el marco de la investigación autorizada.

LA JEFA DE SERVICIO DE
ORDENACIÓN EDUCATIVA

Carmen Liébanas Palacios

TEACHER INTERVIEW

1. Tell me about your bilingual program and how it was initiated at your school. Explain the steps that were followed to get the program approved and started. What is included in your approved education plan for this program?
2. How long have you been teaching in a bilingual program? How long at this school?
3. When/how did you learn English?
4. How comfortable do you feel teaching content in English?
5. What training is available to support your teaching of English?
6. What training is available to support your teaching in the content areas?
7. What training have you received to help you effectively simultaneously develop the English language and content knowledge for your students?
8. Do you have the availability of an electronic board in your classroom? Have you had training in how to use it? How much time have you spent working to figure out how to use it?
9. What are your teaching schedule and assignments?
10. When is your common planning time scheduled with other teachers in the bilingual program?
11. When is your common planning time scheduled with the instructional assistant?
12. What training have you had to help you know how to use the instructional assistant in your classes?
13. When do you meet with the other teachers in the bilingual program to discuss the progress of the program and students?
14. How do you decide what to teach in your content classes?
15. What materials do you use for instruction?

INSTRUCTIONAL ASSISTANT (IA) INTERVIEW

1. How did you become an IA?
2. Where are you from?
3. Did you study a foreign language before you came to Spain? How long have you studied it?
4. How long have you been teaching in a bilingual program? How long at this school?
5. What teaching experience did you have before you came to work as an IA?
6. What training have you received to prepare you as an IA?
7. What are your schedule and typical assignments?
8. How comfortable do you feel teaching content in English?
9. When is your common planning time scheduled with other teachers in the bilingual program?
10. When do you meet with the other teachers in the bilingual program to discuss the progress of the program and students?
11. What materials do you use for instruction?

Alpha School: Observations made of both 2A and 2B classes

Wednesday, January 23: Conduct student interviews 9 to 11:30

Weeks When Classroom Observations Occurred

- January 28 to February 1
- February 11-15
- February 25 to March 1
- March 11-15
- April 1-5
- April 22-26

Classes Observed

- Mondays
 - 9:50 -10:40 2B English
 - 12:00 -13:00 2B Science
 - 13:00 -14:00 2A Science
- Fridays
 - 9:50 – 10:40 2A English
 - 10:40 – 11:30 2A Arts

Wednesday, May 8: Conduct student interviews 9 to 11:30

Delta School: Observations were made of both 2A and 2B classes. Observations were made on TUESDAYS and FRIDAYS *in alternating weeks*.

Thursday, January 24: Conducted student interviews 9 to 11:30

Weeks When TUESDAY Classroom Observations Occurred

- January 28 to February 1
- February 11-15
- February 25 to March 1
- March 11-15
- April 1-5
- April 22-26

Classes Observed on TUESDAYS

- 10:00 – 11:00 2A Music
- 11:00 – 11:45 2A Science
- 12:15 – 13:15 2A English
- 13:15 – 14:00 2B Science

Weeks when FRIDAY Classroom Observations Occurred

- February 4 – 8
- February 18 – 22
- March 4 – 8
- March 18 – 22
- April 8 – 12
- April 29 – May 3

Classes Observed on FRIDAYS

- 10:00 – 11:00 2B English
- 13:15 – 14:00 2B Arts

Thursday, May 9: Conducted student interviews 9 to 11:30

Gamma School

Tuesday, January 22: Conducted student interviews 9 to 11:30

Weeks When Classroom Observations Occurred

- January 28 to February 1
- February 11-15
- February 25 to March 1
- March 11-15
- April 1-5
- April 22-26

Classes Observed

- Thursdays
 - 11:00 – 11:45 Science
 - 13:15 – 14:00 English
- Fridays
 - 13:15 – 14:00 Arts

Tuesday, May 7: Conduct student interviews 9 to 11:30

Epsilon School

Days when Classroom Observations Occurred

- January 21
- February 4

- February 18
- March 4
- March 18
- April 8
- April 29

Classes Observed

- Mondays
 - 10:00 – 11:00 Science
 - 12:00 – 12:30 English
 - 12:30 – 13:15 Physical Education

Monday, May 6: Conducted student final interviews 9 to 11:30

Beta School

Friday, January 25: Conducted student interviews 9 to 11:30

Weeks when Classroom Observations Occurred

- February 4 – 8
- February 18 – 22
- March 4 – 8
- March 18 – 22
- April 8 – 12
- April 29 – May 3

Classes Observed

- Tuesdays
 - 10:00 – 11:00 2B Arts
 - 13:15 – 14:00 2B Science
- Thursdays
 - 11:00 – 12:00 2B English

Friday, May 10: Conducted student interviews 9 to 11:30

Alpha School	Delta School	Gamma School	Epsilon School	Beta School
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Schedule A (#visit)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9-10	9:50-10:40 2B Eng				9:50-10:40 2A Eng
10-11		2A Music			
11-12		11-11:45 2A science		11-11:45 Science	10:40-11:30 2A Arts
12-1					
1-2		12-15, 1-15		1:15-2 Eng	1:15-2 Arts
2-3					

Schedule B (#visit)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9-10					
10-11	Science	2B Arts			2B Eng
11-12	12-30 Eng			2B	
12-1					
1-2	12-30, 1-15	1:15-2: 2B Science			1:15-2 2B Arts
2-3					

School	Sections / # Students	# Teachers
Alpha School	2A and 2B 23	2
Delta School	2A and 2B 25	3
Gamma School	One group 21	1
Epsilon School	One group 20	3
Beta School	The 2B group 20	2
TOTALS	109	11

Schedule C1 (Assessments) (Week of January 21)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9-10					
10-11					
11-12					

Schedule C2 (Assessments) (Week of May 6)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9-10					
10-11					
11-12					

JAN 2013

	SUN	MON	TUES	WEDS	THURS	FRI	SA
				16	17	18	19
C1	20	21	22	23	24	25	26
A1	27	28	29	30	31		

FEB

	SUN	MON	TUES	WEDS	THURS	FRI	SA
(A1)						1	2
B1	3	4	5	6	7	8	9
A2	10	11	12	13	14	15	16
B2	17	18	19	20	21	22	23
A3	24	25	26	27	28		

MAR

	SUN	MON	TUES	WEDS	THURS	FRI	SA
(A3)						1	2
B3	3	4	5	6	7	8	9
A4	10	11	12	13	14	15	16
B4	17	18	19	20	21	22	23
HOLY	24	25	26	27	28	29	30
A5	31						

APR

	SUN	MON	TUES	WEDS	THURS	FRI	SA
(A5)		1	2	3	4	5	6
B5	7	8	9	10	11	12	13
FAIR	14	15	16	17	18	19	20
A6	21	22	23	24	25	26	27
B6	28	29	30				

MAY

	SUN	MON	TUES	WEDS	THURS	FRI	SA
(B6)				1	2	3	4
C2	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	

ALPHA SCHOOL

SIOP CRITERION NUMBER	SCIENCE (2 sections)	ENGLISH (2 sections)	ARTS (1 section)	AVERAGE SIOP SCORE FOR THIS SCHOOL	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	2.75	2.50	0	2.1	2.7	3
4	1.25	1.25	0	1	1	4
5	0.75	0.75	0	0.60	0.31	5
6	0.50	0.50	0	0.40	1.13	6
7	0.50	0	0	0.20	0.16	7
8	0.50	0.50	0	0.40	0.24	8
9	1	0.09	0	0.96	1.12	9
10	1.25	1.75	0	1.20	1.74	10
11	0.75	1.75	0	0.80	1.12	11
12	1	1	0	0.80	1	12
13	0.59	0.50	0	0.40	0.26	13
14	0.50	0.50	0	0.40	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

17	0	0	0	0	0	17
18	1	2	0	1.20	1.62	18
19	1.50	3	3	3	2.68	19
20	0.40	0.40	0	0.32	0.65	20
21	0	0	0	0	0.70	21
22	1.50	1.50	0	1.20	0.70	22
23	1	1	0	0.80	0.32	23
24	1	1	0	0.80	0.22	24
25	1.90	1.90	1	1.72	1.44	25
26	1.40	2.40	0	1.52	1.30	26
27	0.50	0.50	0	0.40	0.06	27
28	0.50	0.50	0	0.40	0.06	28
29	1.75	1.75	0	1.40	1	29
30	1.25	1.25	0	1	0.22	30
AVERAGE AGGREGATE SIOP SCORES FOR THIS SCHOOL				0.77	0.67	

BETA SCHOOL

SIOP CRITERION NUMBER	MUSIC	SCIENCE	ENGLISH	AVERAGE SIOP SCORE FOR THIS SCHOOL	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	3	3	3	3	2.7	3
4	1	0	0	0.33	1	4
5	0	0	0	0	0.31	5
6	1.50	0	0	0.50	1.13	6
7	0	0	0	0	0.16	7
8	0	0	0	0	0.24	8
9	2	0	1	1	1.12	9
10	1.50	1	1	1.17	1.74	10
11	1.50	1	0	0.83	1.12	11
12	1.50	0	0	0.50	1	12
13	0	0	0	0	0.26	13
14	0	0	0	0	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

17	0	0	0	0	0	17
18	2	0	1	1.44	1.62	18
19	3	3	3	3	2.68	19
20	0	0	0	0	0.65	20
21	1	0	0	0.33	0.70	21
22	1	0	0	0.33	0.70	22
23	0	0	0	0	0.32	23
24	0	0	0	0	0.22	24
25	1	0	0	0.33	1.44	25
26	1	0	0	0.33	1.30	26
27	0	0	0	0	0.06	27
28	0	0	0	0	0.06	28
29	0	0	0	0	1	29
30	0	0	0	0	0.22	30
AVERAGE AGGREGATE SIOP SCORES FOR THIS SCHOOL				0.77	0.67	

GAMMA SCHOOL

SIOP CRITERION NUMBER	SCIENCE	ENGLISH	ART	AVERAGE SIOP SCORE FOR THIS SCHOOL	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	3	3	2	2.67	2.7	3
4	0	0.80	0	0.27	1	4
5	0	0	0	0	0.31	5
6	0	0	0	0	1.13	6
7	0	0	0	0	0.16	7
8	0	0	0	0	0.24	8
9	2.80	1	0	1.27	1.12	9
10	2.80	2.50	2	2.43	1.74	10
11	1.50	0	0	0.50	1.12	11
12	0	0	0	0	1	12
13	0	0	0	0	0.26	13
14	0	0	0	0	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

17	0	0	0	0	0	17
18	1	2.50	0	1.17	1.62	18
19	2.80	2.80	2.80	2.80	2.68	19
20	0	0	0	0	0.65	20
21	0	0.80	0	0.27	0.70	21
22	0	1.20	0	0.40	0.70	22
23	0	0	0	0	0.32	23
24	0	0	0	0	0.22	24
25	0.40	0.80	0	0.40	1.44	25
26	2	2.20	0	1.40	1.30	26
27	0	0	0	0	0.06	27
28	0	0	0	0	0.06	28
29	0	0.80	0	0.27	1	29
30	0	1	0	0.33	0.22	30
AVERAGE AGGREGATE SIOP SCORES FOR THIS SCHOOL				0.47	0.67	

DELTA SCHOOL

SIOP CRITERION NUMBER	MUSIC (1 section)	ARTS (1 section)	SCIENCE (2 sections)	ENGLISH (2 sections)	AVERAGE SIOP SCORE FOR THIS SCHOOL	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	0	1
2	0	0	0	0	0	0	2
3	3	3	3	3	3	2.7	3
4	2.5	3	1	3	2.40	1	4
5	1.50	1	0	0	0.63	0.31	5
6	2.50	1	0	0	0.88	1.13	6
7	1	0	0.80	0	0.45	0.16	7
8	1.50	0	0.80	0	0.58	0.24	8
9	1	1.80	2.50	2	1.83	1.12	9
10	2.50	2	2.50	2	2.25	1.74	10
11	2	1	2	1	1.50	1.12	11
12	2.50	1.80	1	3	2.08	1	12
13	0.80	0.80	0	0	0.40	0.26	13
14	0	0.80	0	0	0.20	0.18	14
15	0	0	0	0	0	0	15
16	0	0	0	0	0	0	16

17	0	0	0	0	0	0	17
18	2	3	3	1.80	2.45	1.62	18
19	3	3	3	3	3	2.68	19
20	2	2.50	0	0	1.13	0.65	20
21	2	1	1	1.50	1.38	0.70	21
22	1	0	2	2.50	1.38	0.70	22
23	2	0	0	0	0.50	0.32	23
24	1	0	0	0	0.25	0.22	24
25	1.80	2.50	3	2.50	2.45	1.44	25
26	2	1.80	2	1.50	1.83	1.30	26
27	0	0	0	0	0	0.06	27
28	0	0	0	0	0	0.06	28
29	2	2	1.80	1	1.70	1	29
30	0	1	0	1	0.50	0.22	30
AVERAGE AGGREGATE SIOP SCORES FOR THIS SCHOOL					1.09	0.67	

EPSILON SCHOOL

SIOP CRITERION NUMBER	SCIENCE	LANGUAGE	PHYSICAL EDUCATION	AVERAGE SIOP SCORE FOR THIS SCHOOL	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	2	2	3	2.33	2.7	3
4	0	0	0.80	0.27	1	4
5	0	0	0	0	0.31	5
6	0	0	3	1	1.13	6
7	0	0	0	0	0.16	7
8	0	0	0	0	0.24	8
9	0	1	1	0.67	1.12	9
10	1	2	2	1.67	1.74	10
11	0	1	2	1	1.12	11
12	0	0	1	.33	1	12
13	0	0	0	0	0.26	13
14	0	0	0	0	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

17	0	0	0	0	0	17
18	1	2	2	1.67	1.62	18
19	1	2	2	1.67	2.68	19
20	0	1	1	0.67	0.65	20
21	0.80	0	1	0.60	0.70	21
22	1.20	2	0	1.07	0.70	22
23	0	0	0	0	0.32	23
24	0	0	0	0	0.22	24
25	1	0	2	1	1.44	25
26	2	0	2	1.33	1.30	26
27	0	0	0	0	0.06	27
28	0	0	0	0	0.06	28
29	2	2	2	2	1	29
30	0.80	0	0	0.27	0.22	30
AVERAGE AGGREGATE SIOP SCORE FOR THIS SCHOOL				0.58	0.67	

ALPHA SCHOOL

SIOP CRITERION NUMBER	TEACHER #1 ENGLISH, SCIENCE AND ARTS	TEACHER #2 ENGLISH, SCIENCE AND ARTS	SCHOOL AVERAGE	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	1
2	0	0	0	0	2
3	3	1.5	2.1	2.7	3
4	2.50	0	1	1	4
5	1.50	0	0.60	0.31	5
6	1	0	0.40	1.13	6
7	0.50	0	0.20	0.16	7
8	1	0	0.40	0.24	8
9	2	0.26	0.96	1.12	9
10	2.50	0.33	1.20	1.74	10
11	1.50	0.33	0.80	1.12	11
12	2	0	0.80	1	12
13	1	0	0.40	0.26	13
14	1	0	0.40	0.18	14
15	0	0	0	0	15
16	0	0	0	0	16

APPENDIX XIII
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MEAN SIOP SCORES BY TEACHER

17	0	0	0	0	17
18	2	0.67	1.20	1.62	18
19	3	3	3	2.68	19
20	0.80	0	0.32	0.65	20
21	0	0	0	0.70	21
22	3	0	1.20	0.70	22
23	2	0	0.80	0.32	23
24	2	0	0.80	0.22	24
25	2.80	1	1.72	1.44	25
26	2.80	0.67	1.52	1.30	26
27	1	0	0.40	0.06	27
28	1	0	0.40	0.06	28
29	3.50	0	1.40	1	29
30	2.50	0	1	0.22	30
TOTALS	1.53	0.26	0.77	0.67	
Teacher's SOLOM Score	4	3			

BETA SCHOOL

SIOP CRITERION NUMBER	TEACHER #1 MUSIC	TEACHER #2 ENGLISH AND SCIENCE	SCHOOL AVERAGE	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	1
2	0	0	0	0	2
3	3	3	3	2.7	3
4	1	0	0.33	1	4
5	0	0	0	0.31	5
6	1.50	0	0.50	1.13	6
7	0	0	0	0.16	7
8	0	0	0	0.24	8
9	2	0.50	1	1.12	9
10	1.50	1	1.17	1.74	10
11	1.50	0.50	0.83	1.12	11
12	1.50	0	0.50	1	12
13	0	0	0	0.26	13
14	0	0	0	0.18	14
15	0	0	0	0	15
16	0	0	0	0	16

APPENDIX XIII
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MEAN SIOP SCORES BY TEACHER

17	0	0	0	0	17
18	2	1	1.44	1.62	18
19	3	3	3	2.68	19
20	0	0	0	0.65	20
21	1	0	0.33	0.70	21
22	1	0	0.33	0.70	22
23	0	0	0	0.32	23
24	0	0	0	0.22	24
25	1	0	0.33	1.44	25
26	1	0	0.33	1.30	26
27	0	0	0	0.06	27
28	0	0	0	0.06	28
29	0	0	0	1	29
30	0	0	0	0.22	30
TOTALS	0.70	0.33	0.77	0.67	
Teacher's SOLOM SCORE	4	3			

GAMMA SCHOOL

SIOP CRITERION NUMBER	TEACHER #1 SCIENCE, LANGUAGE, ART	SCHOOL AVERAGE	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	1
2	0	0	0	2
3	2.67	2.67	2.7	3
4	0.27	0.27	1	4
5	0	0	0.31	5
6	0	0	1.13	6
7	0	0	0.16	7
8	0	0	0.24	8
9	1.27	1.27	1.12	9
10	2.43	2.43	1.74	10
11	0.50	0.50	1.12	11
12	0	0	1	12
13	0	0	0.26	13
14	0	0	0.18	14
15	0	0	0	15
16	0	0	0	16

APPENDIX XIII
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MEAN SIOP SCORES BY TEACHER

17	0	0	0	17
18	1.17	1.17	1.62	18
19	2.80	2.80	2.68	19
20	0	0	0.65	20
21	0.27	0.27	0.70	21
22	0.40	0.40	0.70	22
23	0	0	0.32	23
24	0	0	0.22	24
25	0.40	0.40	1.44	25
26	1.40	1.40	1.30	26
27	0	0	0.06	27
28	0	0	0.06	28
29	0.27	0.27	1	29
30	0.33	0.33	0.22	30
TOTALS	0.47	0.47	0.67	
Teacher's SOLOM SCORE	4			

DELTA SCHOOL

SIOP CRITERION NUMBER	TEACHER #1 MUSIC	TEACHER #2 ARTS AND SCIENCE	TEACHER #3 ENGLISH	SCHOOL AVERAGE	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	3	3	3	3	2.7	3
4	2.5	2	3	2.40	1	4
5	1.50	0.50	0	0.63	0.31	5
6	2.50	0.50	0	0.88	1.13	6
7	1	0.40	0	0.45	0.16	7
8	1.50	0.04	0	0.58	0.24	8
9	1	2.15	2	1.83	1.12	9
10	2.50	2.25	2	2.25	1.74	10
11	2	1.50	1	1.50	1.12	11
12	2.50	1.40	3	2.08	1	12
13	0.80	0.40	0	0.40	0.26	13
14	0	0.40	0	0.20	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

APPENDIX XIII
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MEAN SIOP SCORES BY TEACHER

17	0	0	0	0	0	17
18	2	3	1.80	2.45	1.62	18
19	3	3	3	3	2.68	19
20	2	1.25	0	1.13	0.65	20
21	2	1	1.50	1.38	0.70	21
22	1	1	2.50	1.38	0.70	22
23	2	0	0	0.50	0.32	23
24	1	0	0	0.25	0.22	24
25	1.80	2.75	2.50	2.45	1.44	25
26	2	1.90	1.50	1.83	1.30	26
27	0	0	0	0	0.06	27
28	0	0	0	0	0.06	28
29	2	1.90	1	1.70	1	29
30	0	0.50	1	0.50	0.22	30
TOTALS	1.32	1.04	0.96	1.09	0.67	
Teacher's SOLOM Score	4	4	4			

EPSILON SCHOOL

SIOP CRITERION NUMBER	TEACHER #1 SCIENCE	TEACHER #2 LANGUAGE	TEACHER #3 PHYSICAL EDUCATION	SCHOOL AVERAGE	PROJECT AVERAGE (AGGREGATE SCORES OF ALL SCHOOLS)	SIOP CRITERION NUMBER
1	0	0	0	0	0	1
2	0	0	0	0	0	2
3	2	2	3	2.33	2.7	3
4	0	0	0.80	0.27	1	4
5	0	0	0	0	0.31	5
6	0	0	3	1	1.13	6
7	0	0	0	0	0.16	7
8	0	0	0	0	0.24	8
9	0	1	1	0.67	1.12	9
10	1	2	2	1.67	1.74	10
11	0	1	2	1	1.12	11
12	0	0	1	.33	1	12
13	0	0	0	0	0.26	13
14	0	0	0	0	0.18	14
15	0	0	0	0	0	15
16	0	0	0	0	0	16

APPENDIX XIII
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MEAN SIOP SCORES BY TEACHER

17	0	0	0	0	0	17
18	1	2	2	1.67	1.62	18
19	1	2	2	1.67	2.68	19
20	0	1	1	0.67	0.65	20
21	0.80	0	1	0.60	0.70	21
22	1.20	2	0	1.07	0.70	22
23	0	0	0	0	0.32	23
24	0	0	0	0	0.22	24
25	1	0	2	1	1.44	25
26	2	0	2	1.33	1.30	26
27	0	0	0	0	0.06	27
28	0	0	0	0	0.06	28
29	2	2	2	2	1	29
30	0.80	0	0	0.27	0.22	30
TOTALS	0.43	0.50	0.87	0.58	0.67	
Teacher's SOLOM Score	4	4	4			

SIOP CRITERION NUMBER	ENGLISH LANGUAGE CLASSES	SCIENCE CLASSES	ART CLASSES	MUSIC CLASSES	PHYSICAL EDUCATION	MEAN SIOP SCORE FOR THIS CRITRION	SIOP CRITERION NUMBER
1	0	0	0	0	0	0	1
2	0	0	0	0	0	0	2
3	2.7	2.75	2	2	3	2.7	3
4	1	0.60	1	1.75	0.80	1	4
5	0.25	0.25	0.30	0.75	0	0.31	5
6	0.16	0.17	0.30	2	3	1.13	6
7	0	0.30	0	0.50	0	0.16	7
8	0.16	0.30	0	0.75	0	0.24	8
9	1.30	1.20	0.60	1.50	1	1.12	9
10	1.80	1.60	1.30	2	2	1.74	10
11	0.75	0.80	0.30	1.75	2	1.12	11
12	0.83	0.50	0.60	2	1	1	12
13	0.16	0.16	0.60	0.40	0	0.26	13
14	0.16	0.16	0.60	0	0	0.18	14
15	0	0	0	0	0	0	15
16	0	0	0	0	0	0	16
17	0	0	0	0	0	0	17
18	1.90	1.20	1	2	2	1.62	18

19	2.80	2.60	3	3	2	2.68	19
20	0.30	0.13	0.80	1	1	0.65	20
21	0.38	0.30	0.30	1.50	1	0.70	21
22	1.50	1	0	1	0	0.70	22
23	0.30	0.30	0	1	0	0.32	23
24	0.30	0.30	0	0.50	0	0.22	24
25	1.40	1.20	1.20	1.40	2	1.44	25
26	1.40	1.50	0.60	1	2	1.30	26
27	0.16	0.16	0	0	0	0.06	27
28	0.16	0.16	0	0	0	0.06	28
29	1.20	1.20	0.60	1	2	1	29
30	0.30	0.50	0.30	0	0	0.22	30
MEANS	0.71 MEAN SIOP Score All English Classes	0.64 MEAN SIOP Score All Science Classes	0.51 MEAN SIOP Score All Art Classes	0.99 MEAN SIOP Score All Music Classes	0.83 MEAN SIOP Score All PE Classes	0.75 MEAN SIOP Score for all Criteria	MEANS

APPENDIX XV SIOP SCORE STATISTICAL SIGNIFICANCE CALCULATIONS

Is there a statistical significance between the SIOP scores achieved on a scale of 0 to 4?

The results of this exact contingency table shows a very low probability of relationship between the row and column data. No single SIOP score is more or less statistically significant than the others.

A contingency table is a tabular arrangement of count data representing how the row factor frequencies relate to the column factor. A contingency table with “r” rows and “c” columns, is an r x c contingency table.

r × c Exact Contingency Table: Results

In this case, using an r x c 4X5 contingency table, the row factors are the SIOP score ranges of (1) 0 - 0.4 (2) 0.5 – 0.9 (3) 1 – 1.4 (4) 1.5 – 1.9. (The data was all multiplied by 100 for analysis.) These column ranges were achieved by dividing into four equal ranges the lowest score possible (0) to the highest score achieved 1.9. The column factors are the five schools in the study.

data: contingency table

	A	B	C	D	E	
1	0	0	0	0	0	0
2	87	50	69	60	0	266
3	0	0	0	0	109	109
4	0	0	0	0	0	0
	87	50	69	60	99	365

expected: contingency table

	A	B	C	D	E
1	0.00	0.00	0.00	0.00	0.00
2	63.4	36.4	50.3	43.7	72.1
3	23.6	13.6	18.7	16.3	26.9
4	0.00	0.00	0.00	0.00	0.00

The given table has probability 4.8E-92

The sum of the probabilities of "unusual" tables finds $p < .001$ i.e., $p = 0$. (the value that you would get if you assumed compound symmetry in the variance-covariance matrix).

CORRELATION BETWEEN YEARS OF PROGRAM EXISTENCE AND SIOP SCORES

SCHOOL	YEARS PROGRAM HAS EXISTED	SIOP AVERAGE SCORE	COVARIANCE
Alpha School	4	0.87	
Beta School	6	0.50	
Gamma School	6	0.69	
Delta School	6	1.12	
Epsilon School	2	0.60	
			0.0792

Correlation coefficient shows a low correlation

A second correspondence calculation gave the same results:

Sample Mean and Covariance Calculator

Covariance is a measure of two variables (X and Y) changing together.

Result

Mean x:

Mean y:

N:

Cov(X,Y):

Covariance has Low correspondence 0.0792

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1)s^2_1 + (n_2 - 1)s^2_2}{n_1 + n_2 - 2} \left[\frac{n_1 + n_2}{n_1 n_2} \right]}}$$

formula for the t-test,

Where:

Where:

\bar{X}_1 is the mean for Group 1.

\bar{X}_2 is the mean for Group 2.

n_1 is the number of people in Group 1.

n_2 is the number of people in Group 2.

s^2_1 is the variance for Group 1.

s^2_2 is the variance for Group 2.

Pearson's Correlation Coefficient

- 1 Create a table of the variable scores and the product of the two scores.

Score X	Score Y	X ²	Y ²	XY
4	1.530	16	2.341	6.120
4	0.700	16	0.490	2.800
4	0.470	16	0.221	1.880
4	1.320	16	1.742	5.280
4	1.040	16	1.082	4.160
4	0.960	16	0.922	3.840
4	0.430	16	0.185	1.720
4	0.500	16	0.250	2
4	0.870	16	0.757	3.480
3	0.260	9	0.068	0.780
3	0.330	9	0.109	0.990
42	8.410	162	8.166	33.050
↑ ΣX	↑ ΣY	↑ ΣX^2	↑ ΣY^2	↑ ΣXY

- 2 Use the following equation to calculate Pearson's coefficient:

$$r = \frac{\Sigma XY - \frac{\Sigma X \Sigma Y}{N}}{\sqrt{\left(\Sigma X^2 - \frac{(\Sigma X)^2}{N}\right)\left(\Sigma Y^2 - \frac{(\Sigma Y)^2}{N}\right)}}$$

3 Substitute the values obtained from the table into the equation:

$$r = \frac{33.050 - \frac{42 \times 8.410}{11}}{\sqrt{\left(\frac{42^2}{11}\right) \left(8.166 - \frac{8.410^2}{11}\right)}}$$

4 Simplify the equation:

$$r = \frac{33.050 - 32.111}{\sqrt{(162 - 160.364) (8.166 - 6.430)}}$$

$$r = \frac{0.939}{\sqrt{(1.636) (1.736)}}$$

$$r = \frac{0.939}{\sqrt{2.841}}$$

$$r = \frac{0.939}{1.685}$$

$$r = 0.557$$



Therefore, Pearson's correlation coefficient is **0.557**.

A perfect correlation = 1.0

High correlation: .5 to 1.0 or -0.5 to 1.0

Medium correlation: .3 to .5 or -0.3 to .5

Low correlation: .1 to .3 or -0.1 to -0.3

A high correlation exists.

Correlation between subject content area and SIOP Scores

r × c Exact Contingency Table: Results

A contingency table is a tabular arrangement of count data representing how the row factor frequencies relate to the column factor. A contingency table with “r” rows and “c” columns, is an r x c contingency table.

In this case, using an r x c 5X4 contingency table, the row factors are the five content areas and the column factors are SIOP score ranges of (A) 0 - 0.4 (B) 0.5 – 0.9 (C) 1 – 1.4 (D) 1.5 – 1.9. These column ranges were achieved by dividing into four equal ranges the lowest score possible (0) to the highest score achieved 1.9.

	A	B	C	D	
1	2	2	1	0	5
2	3	2	1	0	6
3	2	0	1	1	4
4	0	1	0	1	2
5	0	1	0	0	1
	7	6	3	2	18

	A	B	C	D
1	1.94	1.67	0.833	0.556
2	2.33	2.00	1.00	0.667
3	1.56	1.33	0.667	0.444
4	0.778	0.667	0.333	0.222
5	0.389	0.333	0.167	0.111

The given table has probability 2.9E-04 (0.00029)

The sum of the probabilities is, $p = 0.773$ (the value that you would get if you assumed compound symmetry in the variance-covariance matrix).

This table shows a very low probability of relationship between the row and column data.

T-test to find significance of differences between ELLOPA pre and post test scores

formula for the t-test,

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \left[\frac{n_1 + n_2}{n_1 n_2} \right]}}$$

Where:

\bar{X}_1 is the mean for the pre-test. (1.332)

\bar{X}_2 is the mean for post-test. (1.284)

n_1 is the number of criteria in the pre-test.

n_2 is the number of criteria in the post-test.

s_1^2 is the variance for the means of criteria on the pre-test

s_2^2 is the variance for the means of the criteria on the post-test.

The two-tailed P value equals 0.7084

This difference is considered to be not statistically significant.

