The Impact of CLIL on Arabic, English and Content Learning of Arab High School Students in the UAE

By

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Approval Signatures

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Dedication

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Abstract

The present study investigated the impact of the Content and Language Integrated Learning (CLIL) approach, as applied in a private school in the UAE, on students' L2 learning, L1 knowledge and content learning. It also analyzed secondary teachers' perspectives on the outcomes of CLIL programs regarding content and language learning. The first section of the study focuses on students' general language proficiency by examining one of their writing assignments in each language. First, the assignments were analyzed, to assess students' organization, vocabulary and language structure in English and Arabic writing skills. The second section focuses on students' academic performance reflected in the researcher' own rating as her grading in science (taught in English) and in social studies (taught in Arabic). Results revealed that the overall linguistic proficiency of the students in English was better than their proficiency in Arabic. The results also revealed a positive correlation between the students' academic achievement (content learning) and their linguistic proficiency in the language used in instruction. In addition, the lexical complexity analysis revealed that the students used a wide range of vocabulary and used more lexical words than function words in English compared to Arabic. Similarly, the syntactic analysis showed that students produced more coordinated clauses than subordinate clauses, thus inferring that structure did not benefit from the CLIL instruction. The third section presents teachers' responses to the questionnaire. The results showed that the majority of the participants felt that CLIL has a positive impact on L2 and content learning but were concerned about the negative impact of CLIL on the students' L1 knowledge.

Search Terms: CLIL, L2 learning, L1 knowledge, content learning, teachers' perspectives

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Chapter 1: Introduction

Overview

This chapter introduces the present study by first defining CLIL (Content and Language Integrated Learning) and describing its origin. It then situates the study within the UAE context where the data was collected before identifying the purpose of the study. The chapter then presents the research questions, the methodology of the study and the significance of the thesis.

Background

With globalization, English has become the *lingua franca* which has made its learning one of the goals in educational systems worldwide. There are several approaches used to achieve this goal and implement a bilingual education system. Among these, the Content and Language Integrated Learning (CLIL) is gaining increased popularity. In CLIL approaches, content subjects such as science and math are taught using a foreign language (FL) as a medium of instruction (MoI) to help students learn the FL while learning content subjects. The assumption behind CLIL is that proficiency in a FL is enhanced when it is done through content. The European Commission's (2005) report stated that teaching FL can be successfully accomplished if it is used where "the language becomes a tool rather than an end in itself" (Navés, 2009, p.9). Since the early 1990s, European Union (EU) policy has considered CLIL as a vital instrument for promoting multilingualism in Europe. De Bot, (2007) noted that the main aim of applying CLIL is to achieve communicative bilingual proficiency via content. He described the CLIL approach as a "sneaky way" to teaching a language indirectly. Other programs such as Content-based Instruction (CBI), Dual Language Programs, English Across the Curriculum, Bilingual Teaching, Bilingualer Sachfachunterricht (BiLi) and Englisch Als Arbeitssprache (EAA) are similar to CLIL (Dalton-Puffer, 2007, p.1), however, CLIL is the most common approach.

In the UAE, globalization and economic transformations have led to promoting English in education particularly in science and math. In addition, the sociocultural context of the UAE is another factor that encourages the spread of English everywhere since the UAE is a multi-national community where English is used as a *lingua franca* to facilitate communication among its residents. As a result, a number of schools in the UAE, both public and private, attempt to apply CLIL to

promote the teaching of the English language. As part of its educational reforms, the UAE has applied CLIL as an educational approach in several public schools in the UAE such as "New Model Schools" in Abu Dhabi and "Madares Al Ghad/Schools of the Future" in both Sharjah and Dubai. Likewise, a number of private schools have applied CLIL as their educational approach aiming to develop students' English proficiency. In these schools, English is used as a medium of instruction in teaching science and math in addition to using the first language (L1), Arabic, in teaching Arabic, social studies and Islamic other subjects.

Statement of the Problem

To implement CLIL programs effectively, research is needed before any implementation of the program begins (Butler, 2005). Yet, there are no current studies conducted to investigate the long term impact of CLIL on students' learning L2, content subjects and their L1 development in the UAE context. Indeed, previous research studies have focused on CLIL programs that have been done mostly in Europe, in addition to others conducted in other non-Arab countries. Few studies have focused on the Middle East region and even less in the Arab Gulf (El Zarka, Doublesin, Yilmaz, 2011; Gallagher, 2011). The aim of the present study is to help close this gap.

The fact that the CLIL approach succeeds in achieving a set of desired outcomes in some countries is insufficient to predict that it will succeed everywhere as the outcomes of any bilingual program may vary according to a variety of contextual factors (Genessee, 2015). A closer look at the UAE's linguistic context offers a picture of different variables that are likely to influence the success of a CLIL approach. The UAE population is made up of 80-91% of expats of which 77% are Non-Arabic speakers (Badry, 2015). This diversity of linguistic background has led to English becoming the *lingua franca* for communication in major domains while Arabic use has been demoted to lower status. English is gradually substituting the Arabic language in the UAE (Kabeil, 2005) despite several positive factors associated with Arabic as highlighted by Badry (2015) which are: Arabic is the official language in the UAE, it represents "Emirati identity as an Arab nation" (p.200); it is the language unifying Arabic-speaking peoples in the Middle East and it is linked to the holy Qur'an. Although Arabic still preserves a high respect among Emiratis for the above reasons, Arabic language proficiency of students in the UAE schools suffers

due to not only the focus devoted to English but also to the "diglossic nature" (Badry, 2015, p.205) of Arabic in which two varieties of Arabic are used in different domains. Modern Standard Arabic (MSA) is used in academic context and formal interactions while dialectal Arabic is used in informal interactions (Badry, 2015). The combination of these factors leads Arab speaking students to gradually favor English creating unequal use of both languages in the UAE (García, 2009a). This situation concerns many scholars, thus they have warned against the negative impact of the widespread use of English on the Arabic language learning (e.g. Al-Issa and Dahan, 2011; Badry, 2011; Ronesi, 2011). There is risk in abandoning Arabic and using English instead to the extent of losing the Arabic language. Baker (2011) suggests that when a community stops using its mother language, a death of that language may occur.

Furthermore, CLIL opponents warned against the impact of a CLIL approach on the development of the first language, as it may lead to a subtractive model of bilingualism rather than an additive one (Baker, 2011). They also believe that teaching content in L2 may negatively impact content acquisition as students do not have enough mastery of L2 to be able to acquire knowledge in it. Thus, it is important to keep in mind that a successful implementation of a CLIL program demands a balance between the two languages, L1 and L2, in curriculum and school culture (Swain & Johnson, 1997); however, this is not what is applied in the UAE CLIL schools which can lead to different outcomes from other studies that have been carried out elsewhere to date.

The present research investigates how the particular implementation of CLIL interacts with the specific UAE context in achieving the desired goals of a bilingual educational system. Specifically, it aims to answer the following questions:

1. What is CLIL's effect on students' proficiency in L1 and L2 in UAE CLIL schools?
2. What is CLIL's effect on students' learning of content in L2 in UAE CLIL schools?
3. How do teachers perceive the benefits and disadvantages of CLIL in the UAE?

To answer the first two questions, a comparative study was conducted by analyzing two written compositions: one in science in English and one in social

studies in Arabic. These tests were administrated to CLIL high school male students at the eighth grade in a CLIL private school in the UAE. Participants were given a prompt on content of a lesson which had been covered in class that asked them to write a composition about the topic in question. The two compositions, from the 23 participants, one on a social studies lesson in Arabic and the other on a science lesson in English were analyzed in terms of linguistic proficiency and conceptualization in each language. The first analysis addressed the linguistic proficiency in terms of organization, vocabulary and structure. Lexical complexity and syntactic complexity were calculated in both languages. The second analysis examined participants' understanding of content in each language. In addition, the analysis examined the relation between participants' content learning and their linguistic proficiency. For triangulation purposes, multiple choice questions (MCQ) tests were added to examine students' content learning of each lesson. To answer the third question, a questionnaire written in English and Arabic was used to elicit the perspectives of all secondary science and social studies teachers in the school regarding the impact of CLIL on the students' L1 development and their learning in L2 and content.

Significance of the Research

The significance of the present study lies in its focus on the UAE context which has a different set of factors compared to other areas reported in the literature. Its findings may benefit educators who currently apply CLIL in the UAE as well as those who plan to adopt this approach in their education system later. The results may either support stakeholders' implementation of CLIL in public and private schools in the UAE or they may elucidate concerns that need to be considered before applying the CLIL program. Findings from teachers' perspectives towards implementing such programs may elucidate the type of opportunities and challenges encountered by these teachers in promoting learning of both content and language. By knowing this information, stakeholders in the UAE will be able to evaluate the program objectively.

Structure of the Thesis

This chapter has provided the background, the purpose, the significance of this study. Chapter 2 presents the theoretical framework by reviewing empirical studies that have examined the impact of CLIL on learners' proficiency in L1and L2, besides their understanding of content subjects. Chapter 2 also reviews work on teachers'

perspectives towards the use of CLIL. Chapter 3 presents the methodology of the study including a description of the school context, the subjects, the research instruments used in collecting the data and the scope of analyzing the data. Chapter 4 reports the findings from participants' written responses, MCQ tests and teachers' questionnaires, besides, discusses these results. Chapter 5 draws conclusions of the study, specifies its limitations and provides suggestions for further research.

There are five appendices. Appendix A is the science writing test. Appendix B is the social studies writing test. Appendix C is the science lesson. Appendix D is the social studies lesson. Appendix E is the science multiple choice question test. Appendix F is the social studies multiple choice question test. Appendix G is the teacher questionnaire. Appendix H is the grading rubric for students' writing proficiency. Appendix I is the grading rubric for students' content learning.

Chapter 2: Literature Review

Background of CLIL

Bilingual education is not recent as it has been a usual practice even before the Greek era (Dalton-Puffer, 2007). A huge renaissance occurred in the last 50 years in the bilingual education field (Baker, 2011), particularly, in Europe. Although, various bilingual education programs appeared, not all bilingual programs teach students to become bilinguals. Baker (2011) highlighted that all bilingual education approaches are categorized as being either weak or strong form. He outlined that bilingual programs that aim to achieve monolingualism or limited bilingualism are considered weak forms such as submersion program, submersion with pull-out classes, transitional bilingual education and mainstream education with foreign language program. He also considered bilingual programs as strong when they support bilingualism and biliteracy such as immersion program, the dual language/two-way bilingual program, the maintenance/heritage language education and mainstream bilingual education.

According to Brisk (2005), both strong and weak bilingual programs share "the use of two or more languages for instruction, but that is where the similarities end" (p.20). Cummins (2000) emphasized the difference between both programs by differentiating between additive and subtractive bilingualism. He explained that for additive bilingualism, L1 and Target Language (TL) are developed at the same time. Baker (2011) suggested that additive bilingualism take place in a context where L1 is not endangered to be substituted by L2. For example, the outcomes of bilingual programs in Canada and Wales were successful because the society adopted additive bilingualism. In contrast, subtractive bilingualism is resulted when the focus of teaching is on TL, while the L1 neglected. Baker (2011) pointed out that subtractive bilingualism refers to contexts where L1 is devalued in the society. This subtractive bilingualism has spread in UK and USA. It can be concluded that the level of bilingualism that can be reached in a community is influenced by their contexts including the learners' linguistic background, the allotment devoted to both languages concerned, the support given by policy makers and community for the bilingual program involved. Baker (2011) specified several common benefits of effective bilingual education (Baker, 2011) as it:

- Raises the linguistic proficiency in both languages.
- Develops enculturation that includes the culture of the TL.
- Leads to biliteracy.
- Develops students' cognitive and linguistic proficiency.
- Increases students' self-perception.
- Fosters students' identity.
- Results in economic benefits.
- Results in other societal, ethnic group and community benefits.

One popular way to achieve successful bilingual education is by adopting CLIL approach. The term CLIL is commonly defined as an educational approach in which "the teaching and learning of … language and subject areas (e.g. science, mathematics, etc.) occurs in the same classroom, at the same time" (Barwell, 2005, p.143). Other scholars attempted to define the term by focusing on different aspects of the approach.

> CLIL is a dual-focused educational approach in which an additional language is used for the learning and teaching of both content and language…. In the teaching and learning process, there is a focus not only on content and not only on language. Each is interwoven, even if the emphasis is greater on one or the other at a given time (Coyle, Hood & Marsh, 2010, p.1).

This definition indicates that CLIL approach is "content-oriented but at the same time language-sensitive" (Wolff, 2007, p.17). The CLIL term was coined in the mid-1990s in Europe (Marsh, 2009) to be used as an "umbrella" term for many other educational programs (Mehisto, Marsh & Frigols, 2008, p.12). In these programs, students learn new features of the TL while learning content with no direct emphasis on language teaching, yet both are considered as "integral parts of the whole" (Marsh, 2002, p.58). Thus, CLIL can be considered as a dual-focus program. As for the mother tongue and target language, CLIL is aimed to promote an additive form of bilingual education (Baker, 2011; García, 2009a; 2009b) where L1 has an important role as it functions as a resource (García, 2009a). Learners usually draw upon their background of L1 in learning new languages and concepts (de la Campa and Nassaji, 2009).

Although the CLIL term is recent, its origin can be traced back to the French immersion programs that adopt the CLIL educational approach which were

noncompulsory programs in 1965 in Quebec (Dalton-Puffer, 2008). This influential Canadian immersion program was initiated by a group of Anglophone parents who sought to fill the gap between the Anglophone and Francophone residents in Quebec (Genessee, 2015). This program had offered a majority of subjects in French to enable students to master them. The success of the Canadian immersion program led to further expansion of the program to other countries such as the USA, Australia and Finland where the Swedish immersion program had started in the 1980s (Johnson & Swain, 1997). In the 1990s, this educational approach was offered in a number of schools in Europe to encourage bilingual education. The main difference between CLIL and Canadian immersion programs is the status of the TL used in the country. In Canada, the TL French has been an official language since the official language act (Genessee, 2015), whereas in European contexts English is usually the TL. Baker argued that various types of linguistic context of CLIL programs could lead to different outcomes. Examples are presented in Table 1.

Table 1: *CLIL Context (extracted from Cambridge English (2015))*

The Linguistic Context	Outcomes
Students in home country learning a subject through CLIL. Some students may be non-native speakers (e.g. Slovenia)	Monolingual
Students learn 30-50% of their curricular subjects in a second or foreign language (e.g. regions of Spain and The Netherlands)	Bilingual
Students learn some curricular subjects in three or more languages (Basque Country, Catalonia and Australia)	Multilingual

The categorization presented in Table 1 suggests that the CLIL approach can be influenced by its linguistic context. In Slovenia, content subjects are taught in a second language that is considered as a first language for some students, thus the outcome of the CLIL program is having monolingual students. In Spain and The Netherlands, 30-50% of their curricular subjects are taught in a second language and their first language is strongly used in everyday use, therefore, the CLIL students tend to be bilingual. In Basque country and Australia, students learn some curricular subjects in three or more languages and consequently students tend to become multilingual (being competent in more than one language).

The Impact of CLIL

In general, there are positive impacts of CLIL such as developing TL and learning content efficiently and effectively (Gajo, 2007). The CLIL approach can also enable people to communicate with others from different backgrounds and understand their culture (Baker, 2011, p.208). It can be considered as a "language bath" (p.3) that enhances learning a language naturally and improves communicative skills (Dalton-Puffer, 2007; Pena Díaz & Porto Requejo, 2008). Dalton-Puffer (2007) proposed a list of the benefits of CLIL (p.10).

- Improve overall target language competence.
- Develop oral communication skills.
- Deepen awareness of both mother tongue and target language.
- Develop multilingual interests and attitudes.
- Introduce a target language.

Target language learning. Besides these benefits, other studies have examined the impact of CLIL on more specific areas of L2 learning. Jiménez Catalán and Ruiz de Zarobe (2009) investigated the development of students' receptive learning of vocabulary of two groups of CLIL and non-CLIL primary students in schools in Spain, who had been exposed to 960 and 629 of hours of L2 instructions respectively. The results revealed that CLIL students outperformed their non-CLIL counterparts on the cloze and receptive tests. Likewise, Canga Alonso (2013) found that Spanish sixth grade primary CLIL students had a larger size receptive vocabulary. Similarly, Jiménez Catalán, Ruiz de Zarobe and Cenoz (2006) examined the vocabulary size of two CLIL and non-CLIL Spanish groups and concluded that CLIL students had richer lexical repertoires than the other group. Likewise, Espinosa (2009) examined the effect of CLIL teaching methods on Spanish students' lexical development. She found that CLIL students developed receptive and productive vocabulary. She also observed that CLIL students provided lexical associations that have been previously stressed in CLIL instruction while Non-CLIL students did not provide these associations. Thus, she concluded that CLIL teaching methods could have affected the depth of the students' lexical knowledge. Similarly, Sylvén (2006) proved in examining secondary students in Sweden that there is a positive correlation between the amount of exposure to English language and vocabulary learning. She

found that CLIL students surpassed their non-CLIL peers in vocabulary acquisition due to the larger exposure to English language, not only inside the school but also outside the school, via media.

Another aspect of L2 learning examined with respect to CLIL was developing L2 oral skills. Bret (2011) examined the impacts of CLIL on the oral competency of CLIL primary students in terms of the three measures of complexity, accuracy and fluency in a three years' time span. The results confirmed that the participants benefited more from the three-years CLIL exposure. They provided more complex, accurate and fluent L2 productions than non-CLIL learners. In morph-syntactic development, Villarreal and García-Mayo (2009) found that CLIL students produced fewer inflectional third person errors. In addition, CLIL students outperformed their non-CLIL counterparts in producing affixal morphemes. Similarly, Hüttner and Rieder-Bünemann (2010) noted that German secondary CLIL students exceeded their non-CLIL peers in terms of their oral narrative proficiency and communication skills in the English language. They found that CLIL students were more accurate and had fewer verb errors.

A different aspect of L2 learning examined with respect to CLIL was developing overall L2 proficiency. Admiraal, Westhoff and de Bot (2006) conducted a six-year long term study in which they compared the language proficiency of pre-university students in the Netherlands who had CLIL classes to non-CLIL ones. The results revealed that CLIL students achieved higher results in both reading comprehension and oral proficiency than the other group. Similarly, Navés and Victori (2010) found that CLIL Catalan students outperformed their non-CLIL peers in overall English proficiency and writing competency. Likewise, Alonso, Grisaleña and Campo (2008) proved that CLIL program in the Basque Country was effective in terms of developing the four skills especially the communicative skill. Haunold (2006), relying on standard placement test scores, also found that more Austrian CLIL students at a secondary level attained higher level in English compared to their non-CLIL counterparts who were learning the TL as a second language. In sum, studies investigating the effectiveness of CLIL effects on learners' L2 proficiency found that CLIL students generally outperformed their non-CLIL counterparts in oral proficiency, communicative skills, receptive vocabulary and oral accuracy.

First language knowledge development. Many second language acquisition researchers have focused on the impact that L2 learning has on L1 learning (e.g. Hussien, 2014; Kecskes & Papp, 2000; Noor, 2007). They proposed that there is a positive impact of learning L2 on first language proficiency. In a study conducted in Italy, Yelland, Pollard and Mercuri (1993) found that the English reading skills of native learners had improved when they learned Italian as a second language. Likewise, Hussien (2014) conducted a study in Egypt where he found that the oral reading and spelling accuracy of students' L1were improved by learning English as L2. Similar results were found among Hungarian secondary school students whose L1 writing essays improved by learning L2 (Kecskes & Papp, 2000). Noor (2007) also reported that native Arabic learners in tertiary levels outperformed their monolingual peers in L1 syntactic processing. Likewise, Baker (2011) noted that students in CLIL programs performed well in their first language proficiency test when compared to their peers in monolingual programs.

Other studies suggested different effects. For example, Airey (2009) focused on the use of disciplinary discourse of Swedish undergraduate students in describing physics concepts through L1 and L2. He found varied results according to each student, but it was noticed that students who had "a dual-language approach" (p.33) outperformed the student who was taught only in English. The participant students sometimes used their L2 while describing scientific concepts in their L1. In another study, Airey (2010) investigated the oral competency of undergraduate students in their L1 (Swedish) and L2 (English) describing physics concepts learned before. Oral competency was measured by fluency, code-switching and discipline discourse. Regarding fluency, the results showed that students were more fluent in their L1 than L2 by 45 percent. In code-switching, Airey found that students tended to use their L1 in describing physics concepts in L2. However, he found that high achievers used both their L1 and L2 equally. He suggested that teaching in both L1 and L2 could have a positive impact on students' disciplinary descriptions in both languages. Coetzee-Lachmann (2007) reported counter results. She found that CLIL students lacked academic literacy in German L1. They produced simple writing texts that had deficiencies in academic lexis.

In sum, studies that have investigated the impact of L2 learning and CLIL on learners' L1 proficiency have shown areas that were positively affected by L2

learning such as reading skills, spelling accuracy, writing and syntactic processing. Students' disciplinary discourse competency was positively influenced when they were taught in both their L1and L2. Yet, academic literacy was an area that CLIL secondary students lacked in their L2.

Content learning through L2. Dalton-Puffer (2011) points out that little research has addressed the effects of using L2 as a medium of instruction on learning content. Those studies that investigated the impact of CLIL in learning content showed mixed results. For example, Jäppinen (2005) examined the acquisition of content, 'cognitional' development, of Finnish students aged 7 to15 years. These students learned mathematics and science through three languages concurrently: 60% English, 30% French and 10% Swedish. Comparing the results of these students with non-CLIL peers, the results revealed students' performances differed according to age. Students aged 7 to10 years outperformed their non-CLIL peers. These differences were not detected in the older age students. The results also revealed that the percentage of L2 instruction received might have affected students' performances. He discovered that the highest amount of instruction in L2, high achievers received. Jäppinen (2005) suggested other variables that might have impacted his results such as "home environment, the socio-economic status of parents, possible entrance exams for CLIL classes, or the nature of learners entering CLIL" (p.163). Thus, it is difficult to identify specific factors that impacted these results. This study indicated that students struggled to understand abstract ideas due to the lack of language competency. Another study conducted by Seikkula-Leino (2007) in Finland found that "teaching in a pupil's mother tongue provides the pupil with more opportunities to reach maximum results" (p.336). She also found that there were more high achievers among the non-CLIL Finnish students than their CLIL peers. Similarly, Coetzee-Lachmann (2007) found that CLIL 10th grade German students had less knowledge in geography according to the standard of 10th grade. In contrast, comparing both CLIL and non-CLIL students' results of the high school national test in Geography in the Netherlands, Admiraal, Westhoff and de Bot (2006) found that there were no differences between both groups. Similarly, Stohler (2006) conducted a study in the University of Bern in Switzerland where she found that there was no difference between students' knowledge in both CLIL and non-CLIL groups. She

further pointed out that students were better able to explain their knowledge when they were permitted to code-switch into their L1.

Many studies carried out in different countries outside Europe tackled the academic performance of students in immersion programs similar to CLIL and found similar mixed results. Turnbull, Lapkin and Hart (2001) used standardized tests to compare the academic performance in mathematics of third grade students in both controlled immersion program and regular general programs in Canada and found no differences. Turnbull, Lapkin and Hart (2001) found that the performance of students in immersion programs was worse. However, the authors related these results to the variations in test practices. In another study, Marsh, Hau and Kong (2000) examined the influence of late immersion of secondary Chinese students during three years by using standardized achievement tests. Instructing the students in English was found to negatively impact students' academic performance in content subjects. De Courcy and Burston (2000) investigated a group of students in a bilingual program where they studied mathematics through their L1 and L2. The students were selected from third and fifth grades in Australia. According to the Australian norms, these students' scores were higher than the expected norm of this age. Regarding their content knowledge, 50% of these students took the test in their L1 while the second half did it in their L2. The results showed that the first half performed on average better than the second half.

One of the factors found to impede students' content learning was their L2 level of proficiency. The relationship between students' L2 level of proficiency and their academic performance was the focus of several studies (e.g. Barton & Neville-Barton, 2004; Gerber, Engelbrecht & Harding, 2005; Klaassen, 2001; Neville-Barton & Barton, 2005). Barton and Neville-Barton (2004) and Neville-Barton and Barton (2005) reported negative correlations between students' L2 level of proficiency and their academic performance in mathematics in New Zealand. They confirmed that students with low English proficiency suffered when studying mathematics compared to those with high English proficiency. Similar correlations were found by Gerber et al. (2005) among Afrikaans students, in South Africa, who learned undergraduate mathematics in English. Likewise, Dutch engineering students' content learning in the Netherlands were negatively affected when they were instructed in L2 (Klaassen, 2001).

In sum, studies that have focused on the impact of CLIL on content learning have revealed mixed results. On the one hand, some results showed that CLIL students equally performed or outperformed their non-CLIL peers, whereas others indicated a detrimental effect on students' academic performances when they were taught in L2 rather than their L1.

Academic discourse and CLIL. Some scholars state that writing is one of the macro four skills that CLIL aims to develop, however there are limited studies that examined CLIL students' language proficiency by investigating their writing (e.g. Ruiz de Zarobe, 2010; Whittaker, Llinares & McCabe, 2011). Ackerl (2007) performed an error analysis of CLIL students' writing in Vienna. Students in CLIL programs produced sentences with complex structure and a variety of tenses compared to non-CLIL counterparts who used only simple tenses such as the present and past simple. These benefits were, however, questioned in other studies. Coetzee-Lachmann (2007), examined the use of appropriate discourse in geography content by analyzing students' L2 written productions in tenth grade. She pointed to some problems with CLIL students' competency in this area. The results revealed that CLIL students experienced different problems in using precise formal language to express academic concepts, particularly, in using academic terms. CLIL students had problems in grammar and vocabulary in their L2 (English). Their essays lacked variation in vocabulary and grammar structures. They tended to use simple structures and basic vocabulary. The authors found that in a few cases there were major errors that impeded meaning.

Lyster's (2007) study found that, in French immersion programs in Canada, receptive skills such as reading and listening, had improved while an improvement of productive skills including writing was not detected. In the Netherlands, Verspoor, Schuitemaker-King, Van Rein, de Bot and Edelenbos (2010) noted that CLIL students wrote better quality texts about personal topics than those produced by their counterparts. Studies showed that CLIL students outperformed their peers in EFL programs in writing about a common topic (e.g. Lasagabaster, 2008; Ruiz de Zarobe, 2010) but Dalton-Puffer's (2008) review of CLIL studies concluded that CLIL had no influence on students' writing competency. Other studies that analyzed the writing production of CLIL secondary students in Germany (Vollmer, Heine, Troschke, Coetzee & Küttel, 2006) and Spain (Llinares & Whittaker, 2006) found several errors

in CLIL students' writings in grammar rules, coherence and discourse style. As for the academic writing, studies demonstrated that CLIL students had similar problems in articulating subject knowledge. Zydatiβ (2007) investigated CLIL German students' writing and found some problems in "expository and argumentative writing which was based on subject-matter content materials" (cited in Jexenflicker & Dalton-Puffer 2010, p.172).

Moreover, Whittaker and Llinares (2009) applied systemic functional linguistics (SFL) to analyze secondary students' productive skills in L2 English in social studies and geography classes in Spain. The SLF deals with language as a social semiotic system in which language serves certain meta-functions such as bringing meaning through organization and semantic aspects. They chose SFL because it places an emphasis on academic writing. As for adherence to genre features, the results showed that students responded "appropriately in general, although with varying success as regards some registerial features" (Whittaker & Llinares, 2009, p.230) which led the authors to conclude that students gradually acquire the targeted disciplinary discourse aspects. Later in a subsequent study, Linares and Whittaker (2010) compared the communicative competency including oral and written production related to a certain subject of four groups of students, two CLIL groups and two non-CLIL groups. The analysis of language elucidated that the non-CLIL students were more aware of the targeted register than their CLIL peers.

Similarly, Lim-Falk (2008) compared the interaction and discourse of two science secondary classes in Sweden, a CLIL and a non-CLIL, through a three years' time span. The study found that "CLIL students use less relevant subject-based language in speech and writing [in their L1 and L2 productions] … than do control students" (p.5). To investigate the relationship between the overall language proficiency and historical discourse in the same language, Järvinen (2010) investigated the realization of grammatical metaphor in written historical text of CLIL Finnish students and other students from an international school, where all subjects are taught in English, about the same topic. According to syntactic and thematic analysis, students from the international school who have a high level of overall linguistic proficiency in English produced better historical discourse essays in English than CLIL students' essays. This data suggested that there is positive correlation between students' overall language proficiency and their academic discourse.

In sum, the studies that have analyzed CLIL students' writing competency showed inconsistent results, with CLIL students outperforming their non-CLIL peers when asked to write about common topics, while struggling in writing subject-specific discourse compared to their peers.

Teachers' Perspectives towards CLIL

Schocker-von Ditfurth (2001) proposed that the perspectives of stakeholders such as learners, parents and teachers can help in clarifying the environment of teaching and learning a foreign language. Teachers particularly in CLIL programs have an important role as they have responsibility for developing their students' linguistic proficiency as well as their learning of content subjects. Thus there are studies that have examined teachers' perspectives towards CLIL. Massler (2012) conducted a longitudinal study in Germany that focused on the perspectives of Pro-CLIL stakeholders. She examined how teachers, parents and children experience CLIL at the primary stage. Results showed that all participant teachers considered CLIL a positive approach in which CLIL students learned language differently from non-CLIL teaching approach. Yet, Massler did not identify the aspects that are different. She also found that teachers linked problems faced by students in achieving content learning understanding with their inadequate proficiency in the language. Other studies looked at the perspectives of CLIL secondary teachers and learners in Germany. Dirks (2004) and Viebrock (2007) conducted a qualitative analysis. Using a psychological approach to try and reconstruct teachers' perspectives and beliefs. They presented an opposite view of the CLIL approach as an innovative domain field that attracts teachers. It was found that teachers had doubts about students' actual learning. For example, a teacher selected from Viebrock's (2007) sample doubted that his students were actually acquiring any competency in problem solving. Another study was conducted in Spain at the tertiary stage by Dafouz, Núñez, Sancho and Foran (2007) to investigate the attitudes of 70 teachers and 85 undergraduate students towards implementing CLIL. Results showed that both teachers and students had a positive attitude towards CLIL implementation. Teachers expressed their willingness to become involved in CLIL programs, while students expressed doubts towards CLIL stating that the assigned courses were already demanding in Spanish (L1) not to mention in English. Yassin, Tek, Alimon, Baharom and Ying (2010) reported that participant Malay teachers considered CLIL to be demanding because they as teachers

supposed to master content subjects through science discourse in L2 (English). McDougald (2015) looked at the attitudes and experiences of 140 Colombian teachers towards CLIL. The teachers were selected from various subjects, grades and educational backgrounds. All participant teachers had positive experiences in teaching content subjects and language together. In addition, they agreed that CLIL can benefit students in developing both language skills and subject knowledge.

Others had negative attitudes towards the CLIL approach. For example, Hasberg (2004) and Zydatiβ (2012) indicated that teachers in their studies doubted that content subjects in CLIL programs are sufficient to teach TL. They also questioned the positive impact on learning the content itself. These doubts were justified by the fact that CLIL students are still in the process of acquiring the language of instruction (Dalton-Puffer, 2008; Hajer, 2000). Similarly, di Martino and di Sabato (2012) reported on teachers' expectations and concerns regarding CLIL implementation in Italy where they found that participant teachers worried about that subject learning as it could be delayed by CLIL. Thus, the authors suggested that teachers need to be convinced by the success of CLIL to be able to encourage their students. Similar concern was expressed about teachers themselves. A similar concern was expressed by different stakeholders (head teachers, parents and school board members) who feared that students may be negatively affected academically due to learning via a target language that they are still acquiring (Dalton-Puffer, 2011). Another concern was about the tendency of teachers to simplify their speech according to the students' levels which could result in "reduced cognitive complexity of the subject matter presented" (Dalton-Puffer 2007, p.5). Alonso, Grisaleña and Campo (2008) highlighted that some of the difficulties that CLIL teachers encountered were managing the time and achieving both language and content objectives. They suggested that these concerns should be addressed through teacher training. The responses and attitudes among teachers towards CLIL implementation varied greatly due to various factors. For example, Doughty and Long (2003) noted that teachers' level of linguistic proficiency in the target language. They found that content teachers' insufficient language competency can inhibit their content teaching. Järvinen (2010) also suggested that the lack of suitable pedagogical texts that teach both language and content.

Conclusion

This literature review attempted to provide the major issues and approaches dealing with CLIL. It offered a definition of CLIL and its different effects by reviewing empirical studies that have examined the impact of CLIL on learners' proficiency in L1and L2 and their acquisition of subject content. Overall, studies show that CLIL students outperform their peers in areas such as oral proficiency, communicative skills and receptive vocabulary. Results from studies investigating learners' L1 proficiency reveal that some areas are positively affected by L2 learning such as reading skills, spelling accuracy, writing, syntactic processing, while academic discourse competency in secondary students seems to be lagging behind in both their L1 and L2. However, students in tertiary levels were positively influenced. As for the impact of CLIL on content learning, studies shown mixed results. On the one hand, some results showed that CLIL students performed equally or outperformed their non-CLIL peers, whereas others indicated a negative effect on students' academic performances when they were taught in L2 rather than L1. Inconsistent results also were found CLIL students' writing competence. CLIL students outperformed their non-CLIL peers when they were asked to write about personal topics. In contrast, they underperformed when they wrote about subject-specific topics. Finally, teachers' attitudes towards CLIL implementation were varied due to several factors such as teachers' level of linguistic proficiency in the target language used in CLIL programs and the availability of suitable pedagogical texts that teach both language and content.

Chapter 3: Research Methodology

Overview

This chapter delineates the methodology of the study including a description of the context of the study, the participants, the instruments used in the data collection process and the approach used in data analysis.

School Context

The data in this study was collected from a private secondary school in Sharjah, UAE. The school was built in 1991 and has applied CLIL since then in teaching the science subject at all levels of the school while social studies subjects are taught in Arabic up to only grade eight. Social studies subjects are not offered beyond that. The selected school follows the UAE schools' system with four stages, over 14 years: Kindergarten (2 years), Primary (4 years) and Secondary (8 years). Five content subjects are mathematics, science, humanities, ICT, in addition to English as a subject are taught in English. Arabic is used as a medium of instruction in social studies and Islamic studies. According to the school website, the school has a good standing level in both linguistic and academic achievement records. The school is gender segregated and caters to male students only.

The initial intention was to conduct the study in one of the MAG schools in the UAE; however, the Ministry of Education (MOE) rejected the request to conduct the study in a MAG school. Subsequently, the researcher contacted all the CLIL schools located in Dubai and Sharjah but only one school granted the researcher permission to conduct the study in its establishment. Appropriate permissions from the headmaster, the teachers and the students were obtained that complied with AUS IRB policies. As a result of this modification in the original context of the study, the researcher made two changes to match the context of the new school. First, the year group became the eighth grade instead of the ninth grade given that it is the highest grade where a content subject is taught in Arabic. In the present school, from the ninth grade onward, all subjects are taught in English. Second, the subject taught in Arabic was changed to social studies instead of history because it is the only content subject taught in Arabic in the school.

The Participants

To answer the research questions, data was collected from both students and teachers.

Students. Participants in the study are eighth grade students (approximately 15 year olds) who attend a private secondary school in Sharjah. The total number of student participants is 23 male students coming from different Arabic regional backgrounds: eight Egyptians, seven Syrians, five Lebanese and three Palestinians. Arabic is their mother tongue, but their spoken Arabic comes from the distinct dialectal varieties of their communities. All students have attended CLIL schools from primary level till the eighth grade. The choice of grade eight in the secondary stage relates to the fact that the school does not offer the social studies subject beyond this grade as stated above. This highest grade was selected for this study based on the assumption that by eighth grade, students would have had eight years of CLIL education and thus its impact on L2 learning, content learning and L1 development. The class was selected as a convenience sample based on parents' consent for their children to participate in the study. The selected class comprises low-achievers and high-achievers.

Teachers. To answer the third question a questionnaire was filled out by all 8^{th} grade teachers to explore perspectives, attitudes and experiences (Fink, 2003). The first part of the questionnaire was completed by all science teachers (12) and social studies teachers (10) in the secondary stage in the school. The demographic and experience description of the participant teachers aimed to examine the findings of the study in the light of different teachers' independent variables such as gender and age and teaching experience.

Table 2: *Participant Teachers' Details*

(Science teachers N=12 and social Studies Teachers N=10)

	Age Range			Gender		Proficiency of English		Proficiency of Arabic		Length of Teaching experience (in years)			Length of Teaching in CLIL programs	Length of Studying in English in years		Students' Level Taught	Mother language		
Selected Responses	21-30	31- 40	51- 60	Female	Male	Advanced	Intermediate	Advanced	No Proficiency	3-5	6-9	15- more	5-7	15	6	7th, 8th, 9th	English	Urdu	Arabic
Science Teachers	6	4	2	8	4	12	0	0	12	7	3	2	12	12	0	12	8	4	0
Social Studies Teachers	5	4	1	6	4	0	10	10	0	4	6	0	10	4	6	10	0	0	10

All the participant secondary teachers teach all levels from the seventh grade till the ninth grade (see Table 2). In addition, they all had minimum three years of experience in CLIL program. Generally, eight male teachers and 14 female teachers responded to the questionnaire. Regarding the science teachers, English is the mother language of only eight teachers while Urdu was the mother language of the other four teachers. All of them have advanced level of English proficiency as they had learned English for more than15 years. All of them have no proficiency in Arabic. The majority of teachers (six) ranged in age from 21 to 30, four teachers being 31 to 40 years of age and only two teachers ranged in age from 51 to 60. The teachers varied in their teaching experiences; the majority (seven teachers) had been teaching for three to five years, while three teachers had six to nine years and two teachers had 15 years or more. As for the social studies teachers, all of them have an advanced level of Arabic and an intermediate level in English. Arabic is their mother language. The majority of teachers (five) ranged in age from 21 to thirty, four teachers being 31 to 40 years of age and only one teacher ranged in age from 51 to 60. The teachers varied in their teaching experiences; the majority (four teachers) had been teaching for three to five years, while six teachers had six to nine years.

Data Collection

Procedures. Before starting the data collection stage, the head of the school gave permission to conduct research with the students and teachers. The data was collected during the month of March, 2015. Although the researcher did not directly collect the data, she conducted several meetings with the head of the school to clarify the procedure of the data collection and to provide samples of the test questions in both subjects for teachers to follow while designing the tests. For the participant teachers, the researcher gave hard copies of the questionnaire to the head of the school who distributed them to the science and social studies secondary teachers. The head of the school assigned the two teachers (one in science and one in social studies) perform the two tests in their respective classes. Before collecting the data, consent forms were signed by all participants. Participants who were below 18 years of age were given a consent form to be signed by one of their parents. The consent forms were separated from the questionnaires to maintain confidentiality. Basically, all the students in the eighth grade were targeted as potential participants but only 23 students were allowed by their parents to participate. All the tests were administrated by the subject teacher and were rated by the researcher. The researcher carried double marking to check rating and ensure reliability (Hughes, 2003).

Data collection instruments. Varied instruments in collecting the data was used to provide a thorough examination of the research questions as suggested by Creswell (2008). As he pointed out, using various methods helps in triangulating the collected data and makes it more credible. Thus, the data of the present study was collected from questionnaires distributed to teachers, two written tests and a set of Multiple Choice Questions (MCQ) to ensure the reliability of the data.

The Written assignment. To answer the first two questions, a writing test in each of the two content subjects of science in English and social studies in Arabic (see Appendix A and B) were collected from the eighth graders. In the science test, students were asked to write an explanatory, informative essay about the process of digesting the food in the human body. For the social studies test, they were asked to write an explanatory essay and give reasons about the increasing number of the population in the UAE. Both tests were conducted in two sessions in the same week based on their timetable in their usual classroom setting. Both tests were part of regular assignments given by the science and the social studies teachers as part of the

UAE national curriculum for eighth graders. In each test, one writing prompt was used that is related to a lesson previously covered in class. The teachers decided on "Digestion" as the science topic to be written about (see Appendix C) . The social science studies topic was "التعداد السكاني بالأمارات" meaning "Census in the UAE" (see Appendix D). Following the objectives of the science syllabus, the prompt targeted both scientific facts and explanation through answering given questions. The objectives of the social studies syllabus were followed, thus the prompt elicited both an account and explanation such as recording facts and explaining them, giving causes and consequences of certain events by answering given questions. Participants wrote their essays in the language of the prompt. In each test, the students were allowed 45 minutes as suggested by their teachers. They also were required to write essays with a minimum length of 200 words as instructed by their teachers.

Multiple Choice Questions (MCQ) test. Multiple Choice Questions tests (see Appendices E and F) were designed by the class teachers to assess whether students understood the concepts tested in the writing assignment or not. The purpose of including this type of test was to obtain an objective measure of content learning. Results from the MCQ tests were triangulated with the data collected from the written assignments. Each test included 20 questions worth half mark each. Each question had four choices (a, b, c and d).

The procedures of the tests. All the tests were conducted in students' regular class setting and followed the usual school exam procedures. Students were notified of the test time and the content that they will be tested on. They were seated in rows with adequate distance between them. The teacher proctored the tests. Each exam lasted one period time and students were allowed to check the time with the teacher. All tests were conducted on paper. Once the time was finished, students remained seated and the teacher collected the essays. The final output was 46 written essays and 46 MCQ tests two from each participant, the science tests in English and the social studies tests in Arabic.

Teachers' questionnaire. Merriam (2009) noted that "researchers are interested in understanding how people interpret their experiences, how they construct their worlds and what meanings they attribute to their experiences" (p.5). To explore the perspectives of in-service secondary teachers on their experiences in CLIL regarding students' L1 and L2 development and their understanding of content, a

questionnaire, *Teacher's Perceptions and Experiences in CLIL* (see Appendix G), was distributed to all 8th grade teachers in the school. The questionnaires were written in English and Arabic which were filled by both science and social studies teachers respectively. The content of all the questions were the same, with some adaptions to suit the content subjects of the teachers. The questionnaire consisted of two parts. Part 1 included 10 items were designed to collect personal information, demographics, type of science subjects taught, levels taught and language(s) spoken. The second part consisted of 13 questions, three open ended questions, six combined questions that consisted of open-ended questions and fixed alternative questions and 4-scale questions. This second section addressed teachers' perspectives towards three main areas: The impact of CLIL program on students' L2 learning, L1 development, content learning. Twenty-two questionnaires were distributed to 12 science teachers and 10 social studies teachers; all were completed by hand and returned.

Data Analysis

To preserve the anonymity of the students who participated in the study, the data was coded by assigning numbers to refer to students from 1 to 23 and the assignments were identified as S for Science and SS for social studies. For example, the English and Arabic essays from participant 1 were coded as S1 (science) and SS1 (social science) respectively. The researcher double rated the four tests following the answer key provided by the teachers. This practice was adopted in line with Hughes' (2003) observation that rater reliability is achieved when a test is rated more than one time. Due to the small sizes of the participating students (23) and the teachers (22), all data was entered in an Excel sheet and percentages were calculated.

Analysis of students' writing proficiency in L1 and L2. The first analysis examined students' essays in terms of linguistic proficiency in both Arabic and English. First, linguistic proficiency was assessed in terms of organization, vocabulary and structure. Due to the unavailability of any school grading rubric for this area, the researcher used an adapted version from the analytic grading rubric by Friedl and Auer (2007) (see Appendix H). Hughes (2003) highlighted that analytic grading places equal importance on the different aspects in the written product. He also added that they are also deemed to be reliable scales. The grading rubric of Friedl and Auer (2007) consists of four categories of task fulfillment, organization, vocabulary and structure. The first aspect (the task fulfillment) was discarded to fit the

study. The Organization category dealt with two main aspects: first, text coherence, organization of ideas, use of connectives and, second, cohesion, use of paragraphs as a structuring device. The vocabulary category assessed range, appropriateness of the register, usage of vocabulary. The structure category addressed the use of grammatical rules and categories such as tense, plural, word order, articles, pronouns and prepositions. All the three categories were equally weighted where each category scores ranged from 0 to 5. Second, using the same rubric, an analysis of the students' grades was conducted. As a result of the unavailability of any school benchmark for this area, the researcher used benchmark set by Sánchez and Salaberri (2015), the average score achieved by all the students. The researcher calculated and compared the students' average scores in their overall linguistic performance in English to their counterpart scores in Arabic. In addition, the researcher compared the students' average scores in each linguistic category in English to their counterpart scores in Arabic.

Quantitative ratios were measured in vocabulary and grammatical structure categories. Johansson (2008) highlighted that lexical complexity has commonly examined by calculating lexical complexity and lexical density. He also added that syntactic complexity has commonly been examined by calculating the ratio of subordination and coordination. Thus, these quantitative ratios were calculated. To calculate these ratios, the researcher counted the total number of the following: (1) words including content and function words (word token), (2) word types, (3) lexical words, (4) subordinate structures and (5) coordinate structures. These numerical values were used to calculate lexical diversity, lexical density and the ratio of subordination and coordination by using Li's (2000) formulas mentioned below:

> Lexical Diversity= number of different lexical and functional words (types) ×100/total number of tokens
>
> Lexical Density= number of different lexical words×100/total number of tokens
>
> Ratio of Subordination= number of subordinated structures/combination of subordinated structures and coordinated structures (Li, 2000, p.236)

Analysis of students' content learning. This second analysis examined students' written answers and MCQ answers to determine their academic performance

in science and social studies. In addition, the analysis compared students' linguistic proficiency in English and in Arabic to their respective academic performances in science and social studies to determine the correlation between students' competency in content subjects and their linguistic proficiency. Due to the unavailability of the school grading rubric, the researcher used a holistic scoring scale (see Appendix I) adapted from Coetzee-Lachmann (2007) to assess correctness and completeness of the topics. Weigle (2002) noted that holistic scale enables a rater to assess a performance based on a general impression of the written product as a whole and can be used to evaluate the degree of content learning. The used rubric consisted of five levels which are: No content learning, weak content learning, advanced content learning, almost content learning and complete content learning. In assessing content, the researcher used the school benchmark (50% of the total score). The researcher conducted three comparisons. First, content scores to MCQ test results. Second, students' academic performance in science and social studies were compared. Third, students' linguistic proficiency was compared to their academic performance.

Analysis of teachers' perspectives towards CLIL. Quantitative approaches were used to analyze the data collected by the teacher questionnaire. Teachers' perspectives towards the impact of CLIL program on students' L2 learning, students' L1 development, students' content learning was addressed. Nunan (1992) stated that responses to closed-ended questions help in quantifying the data while responses to open-ended questions gives more accurate account of the respondents' perspectives. The quantitative data collected from the close-ended questions were analyzed to calculate the frequencies of the responses. To support the quantitative data, descriptive analysis of the open-ended questions was used.

Chapter 4: Findings and Data Analysis

Overview

This chapter consists of two parts. Part 1 reports the findings of the study in three areas: the students' linguistic proficiency in English and in Arabic, the students' content learning in science and social studies and the participant teachers' perspectives towards the impact of CLIL. Part 2 analyzes the findings to answer the questions raised in this study, namely,

1. What is CLIL's effect on students' linguistic proficiency in L1 and L2 in UAE CLIL schools?
2. What is CLIL's effect on students' learning of content in L2 in UAE CLIL schools?
3. How do teachers perceive the benefits and disadvantages of CLIL in the UAE?

Findings

The Students' Linguistic Proficiency

It is important to first review the main structural and rhetorical aspects of organization, vocabulary and structure employed characteristic of scientific genres in English and expository texts in Arabic used in analyzing participants' writings.

Organization. The first category, *organization*, deals with text coherence, organization of ideas, cohesion and use of paragraphs as a structuring device. Halliday (2004) stated that the global organization of scientific English texts, at the level of "micro-structure" (p.155), is mainly characterized by sentences being linked by a "thematic progression" (p.155) using connectives. He categorized these connectives as elaborating (for example), adding (and, or, but) and enhancing (then, yet, so). He further explained that every sentence conveys new content and adds to the previous content. In each of these thematic progressions, he highlighted that there is a starting point which is the topic sentence of a paragraph that functions as the theme for the whole paragraph. He also explained that the organization of scientific texts at a macro level is characterized by the use of connectives to express logical-semantic relations to connect the body paragraphs together. He pointed out that paragraphs are presented sequentially where the first main point is followed by a second point and so forth.

Overall, participants' essays showed their mastery of the organizational aspects in English. Out of the 23 English essays, nineteen were structurally coherent. Ideas were logically and thematically sequenced. All the essays started by setting the theme of the whole text by starting with a topic sentence that explained that food passes through different parts of the body in order to be digested. They all used paragraphs effectively. Transitions were moderately used. Basic connectives to add information or enhance it such as "and, but, or" were also present. More complex connectives were found in three out of the 23 essays such as (afterwards, therefore, meanwhile). No elaborating connectives were used. Seventeen students organized their ideas logically and systematically. Another strong aspect was paragraphing. All the students used paragraphs effectively in their English essays starting with an introduction, a body and a concluding paragraph. The following examples are excerpts from eight students (S2, S3, S5, S8, S6, S12, S15 and S23) from the English essays. (1) Shows connectives. (2) Shows simple connectives. (3) No connectives.

(1) Connectives

S3. **First**, food is crushed **and** grinded in the mouth. **Afterward**s, Amylase breaks down starch into sugar **then**, it passes through the Esophagus without any changes.

S12. **Finally**, the food moves to the large intestine where the food is changed into feces, **after that** it passes to the colon.

S12. The food **next** passes into the small intestine where it is further digested by the pancreatic juices from the pancreas and **then** the food is absorbed from the walls of the small intestine.

(2) Simple Connectives

S5. Food is put into the mouth **and** mixed with saliva.

S8. The protein is absorbed **because** of amylase.

S15. Food is passed through the small intestine **and** lipase breaks down fat **and** absorbed, **but** the food that wasn't absorbed is turned into waste.

(3) No Connectives

S2. Food enters from your mouth to the Esophagus to the stomach.

S6. Food starts in the mouth to get crushed**.** It goes to the Esophagus.

S23. Food gets absorbed. The leftovers are exerted from the body.

The global organization of factual texts in Arabic is characterized by the use of long sentences that are linked with coordinating conjunctions (Mohamed & Omar, 2000). They added that sentences are linked in parallel structure to create a balance. They also mentioned that repetition is a usual aspect in Arabic. In addition, they stated that Arabic rhetoric has a main idea (topic sentence) which is usually expressed implicitly. Flaitz (2003) added that Arabic rhetoric also employs elaboration to develop paragraphs through restatement of the main idea. Results from the Arabic essays revealed that all students expressed their main ideas explicitly which appearing to follow the English rather than Arabic rhetoric norms. Second, only nine Arabic essays were structurally coherent with many repetitions. Ideas were arranged logically and transitions were present as expected in Arabic rhetoric. Students mainly used simple connectives. In particular, the coordinating conjunctions (و, *and*), (أو, *or*), (لكن , *but*) lacked subordinating conjunctions like (بالرغم من ,Although) and (بينما ,*while*). Another important aspect revealed in the Arabic essays was paragraphing. Twenty texts had one long paragraph and there were many long sentences. The following examples illustrate the use of a wider range of basic connectives, simple connectives and no connectives.

(4) Connectives

SS4. The United Arab Emirates located in Asia and specifically in the Arabian Peninsula and its population reaches up to 5.2 million people.

4. تقع دولة الأمارات في أسيا **و** بالتحديد شبة الجزيرة العربية **و** تعدادها السكاني يصل الي 5.2 مليون نسمة.

SS12. And the United Arab Emirates is famous of the petrol, thus it is one of the richest countries in the Arabic region and in the world.

12. **و** تشتهر دو لة الأمارات بالبترول **لذالك** هي من أغني الدول العربية **و** العالمية.

SS20. And the most important factors influencing the distribution of the population in the United Arab Emirates is the climate and the availability of job opportunities and tourist attractions.

20. و من أهم العوامل المؤثرة في توزيع السكان في دولة الأمارات هي المناخ **و** فرص العمل المتوفرة **ثم** المعالم السياحية.

(5) Simple Connectives

SS3. And of the most famous landmarks in UAE are Burj Khalifa and Burj Al Arab and Sheikh Zayed Mosque and the Global Village.

3. و من أشهر معالم دولة الأمارات هي برج خليفة **و** برج العرب **و** مسجد الشيخ زايد **و** القرية العالمية.

SS17. And the Emirates is from the importing countries of the population because the petroleum and job opportunities and the high income per capita income.

17. **و**تعتبردو لة الأمارات من الدول المستوردة للسكان علشان البترول **و** فرص العمل **و** علو دخل الفرد.

SS23. United Arab Emirates will witness a development in the number of people in 2020 because of the Expo, the country investment plans in tourism and state economy.

23. ستشهد دولة الأمارات العربية المتحدة تطورا في عدد السكان في 2020 بسبب الأكسبو **و** خطط الدولة الأستثمارية **و** السياحية **و** الأقتصادية.

(6) No Connectives

SS15. The landmarks in UAE are Burj Khalifa, Dubai museum, Sheikh Zayed Mosque, Burj al Arab.

15. معالم دولة الأمارات هي برج خليفة, متحف دبي, مسجد الشيخ زايد, برج العرب.

SS19. United Arab Emirates is rich, advanced, secure, planned.

19. دو لة الأمارات دولة غنيه, متقدمة, أمنة, مخططة.

SS 21. Climate, geographic nature, job opportunities are the most effective factors that influence the distribution of population.

21. المناخ, الطبيعة الجغرافية, فرص العمل هم العوامل المؤثرة علي توزيع السكان

SS16. And the Emirates is from the importing countries of the population because the petroleum and job opportunities and the high income per capita income.

16. **و**تعتبردو لة الأمارات من الدول المستوردة للسكان علشان البترول **و** فرص العمل **و** علو دخل الفرد

Vocabulary. The second category to be examined is *vocabulary*, which refers to the range and usage of vocabulary and the appropriateness of the register. Halliday (2004) pointed out that scientific texts tend to be formal and planned, thus, the lexical density becomes high. He added that scientific English texts contain a wide range of technical vocabulary and frequent use of prefixes and suffixes. Almost two-thirds of students' English essays (15 out 23) demonstrated a wide range of vocabulary that was used in a precise way as underlined in the examples under 7. All students used a discipline appropriate register from the list of vocabulary provided by the teacher in her answer key. The terms included: *break down, broken down, substances, stomach, chewing, increase surface area, acid and enzyme.* Essays also included other scientific terms (see terms in bold in 7). Many words had derivational affixes as in these examples, *undigested, unabsorbed, dissolved, fatty, firstly, lastly.*

(7) Range of Vocabulary

S3. The food starts in the **alimentary canal** (the mouth) and then the **starch** is broken down by **amylase** to **glucose**. It goes down to **Esophagus** to be broken into **amino acid**.

S5. **Pancreatic** juices breakdown fat by **Lipase** to **fatty acids** and finally the **unabsorbed and** non-digested substances excreted through **the Anus**.

S10. The food is **grinded** and swallowed **and** then transported into **the** stomach and broken down by enzymes which are **catalyst** that speeds up the process of digestion when the **nutrients** are small enough to enter the **small intestine**.

The vocabulary of factual texts in Arabic includes many adjectives, adverbs and synonyms (Flaitz, 2003). The examination of vocabulary in the Arabic essays revealed similar patterns to their English essays, mostly with regards to the use of a wide range of vocabulary. More than half of the students' Arabic essays (13) demonstrated a wide range of vocabulary. Yet, the majority of the students tended to

use simple expressions as italicized in the examples under 8. Seventeen students showed a high degree of awareness by using the appropriate academic vocabulary from the list of vocabulary provided by the teacher in her answer key (see the words in bold in 8). Essays also included other academic terms as underlined in the examples under 8. It was observed that, five students' Arabic essays revealed deficits, such as repeated expressions and colloquial words which in some cases affected the clarity of meaning such as (وايد, *very*), (المصاري, *money*), (وجود, *existence*) and (علشان, *because*). In general, the students' Arabic essays included an overuse of simple words such as the adjective (أطول, *tallest*), (غني, *rich*) and (كبير, *old*). They also used the wrong form of plural (المصدرات, *resources*), (نواطح, *skyscraper*), (أفرصة, *opportunities*) and (أبرجة, *towers*).

(8) Range of Vocabulary

SS13. The affecting factors behind the distribution of the population are natural factors such as climate and agricultural land and the geographical location and the fertile soil.

13.العوامل **المؤثرة** في **توزيع** السكان هي **عوامل طبيعية** مثل **المناخ** و **الاراضي الزراعية** و **التضاريس** و الموقع الجغرافي و التربة الخصبة.

SS5. The increasing proportion of the population is due to the external immigration and the increase of the economic resources and the lack of wars.

5.*تزايد* **نسبة** السكان *بسبب* **الهجرة الخاريجية** و *زيادة* الموارد الأقتصادية و *قلة* **الحروب**.

SS12. The Emirates is from the importing countries of the population because the petroleum and job opportunities and the high income per capita income.

12. دو لة الأمارات هي من الدول *الجازبه* للسكان *بسبب* البترول و فرص العمل و *علو* دخل *المواطن.*

In the field of vocabulary, students' essays in English and in Arabic were analyzed in accordance with lexical diversity and lexical density. Lexical diversity and lexical density ratios are calculated by counting the total number of word tokens, word types and lexical words. Word token total in English essays was 3,100, compared to 1,552 in the Arabic essays. English word types total was 373 and 123 in the Arabic essays. The total number of lexical words in English essays was 300,

compared to 101 in the Arabic essays. Results of the lexical diversity (Type-Token Ratio) and lexical density based on Li's (2000) formulas are presented in Table 3.

Table 3: *Lexical Complexity of the Vocabulary in the English and Arabic Written Essays*
(N=23)

	Lexical Diversity (Type-Token Ratio TTR)	Lexical Density
Science Essays in English	11.94%	9.68%
Social Studies Essays in Arabic	7.93%	6.51%

As it can be observed from the data presented in Table 3, the lexical complexity results in the students' English essays (Lexical Diversity= 11.94%, Lexical Density= 9.68%) indicate that nearly 12% of students' total word tokens were from different word types and nearly 10% of students' total word tokens were lexical words. While, the lexical complexity results in the students' Arabic essays were (Lexical Diversity= 7.93%, Lexical Density= 6.51%) which indicate that their total word tokens had nearly 8% of different word types and 7% of lexical words. These results obtained for lexical complexity were higher in English than they were in Arabic, which indicated that students produced more word types and lexical words in their English essays than in their Arabic essays. In particular, the type/token ratio in students' English essays suggested that lexical richness and lexical diversity were more significant in English than in Arabic essays. The lexical density ratios suggested that students made use of a larger number of lexical words (nouns, verbs, adjectives and adverbs), which reflected "lexical sophistication and higher language level", as suggested by Jiménez Catalán, Ruiz de Zarobe & Cenoz (2006, p.26).

The Structure. The third category, *structure*, refers to the use of grammatical rules and categories. According to Halliday (2004), present simple tense and simple past tense are both frequently used in scientific discourse to present facts. He added that the prevalent use of passive voice is a main characteristic of scientific discourse. He also mentioned that a wide variety of structures are preferred in scientific writing to elaborate ideas. The analysis of the English essays in the present study show about half of the students used correct grammatical forms and a variety of structures

including complex ones (9). Twenty of the 23 students used simple present and passive voice correctly (see the text in bold in 9). Students also effectively used subject-verb agreement in English (10) and had no errors in word order. Students had problems with the past participle form “putted, broked, pass, goed”.

(9) Correct grammatical structure

S3. Digestion is the process in which food **is broken down** into small pieces in order to **be absorbed by** the walls of the alimentary canal.

S12. Food **goes** through the stomach, where it **stays** there for three hours.

S15. Small intestines **help** to break the fat and protein with the help of Bile enzyme which **is produced** from the liver.

S18. The food **enters** the mouth and then **passes** through esophagus, after that the nutrients **are absorbed** and **passes** through the small intestine, finally, the waste goes through the anus.

S20. Food **is broken** by the mouth.

(Use of simple present and passive voice)

(10) Verb-Subject Agreement

S15. Digestion is.... food is broken down
S17. Food goes …. it stays ....
S19. Small intestines help …. Bile enzyme which is ….
S20. The food enters …. and then passes …. the waste goes ….
S23. Food is ….

Arabic factual texts, *as Flaitz* (2003) points out, usually contain many parallel structures and attention must be paid to the verb and subject agreement in gender, number and case. All participants’ essays demonstrated an extensive use of parallel structure (see texts in bold in 11) and correct use of prepositions as underlined in examples under (11, 12 and 14) and word order (see texts in bold in 12). Frequent errors were at the level of number and gender both at the level of the verb phrase and the noun phrase (13) and case (14).

(11) Parallel Structure

SS11. The United Arab Emirates is located on the Arabian sea and specifically in the Arabian Peninsula.

11. **تقع دولة الأمارات** علي الخليج العربي **و تقع دولة الأمارات** بالتحديد شبة الجزيرة العربية.

SS13. Some of the factors of the increased immigration to the UAE are the country's keenness to increase income per capita and to increase employment opportunities.

13. من عوامل زيادة الهجرة الي الأمارات هي حرص الدولة **علي زيادة دخل الفرد** و **زيادة فرص العمل.**

SS17. And the most important factors influencing the distribution of the population in the United Arab Emirates is the climate and the availability of job opportunities and tourist attractions.

17. من أهم العوامل المؤثرة في توزيع السكان في دولة الأمارات هي المناخ و فرص العمل المتوفرة ثم المعالم السياحية.

(12) Word Order

SS12. The Emirates has the highest ratio of Emigration in the world.

12. تحتوي الأمارات علي **أعلي نسبة** من الهجرة في العالم.

SS15. The influencing factors in distributing the population in the United Arab Emirates are climate, job opportunities and the touristic sites.

15. من أهم العوامل المؤثرة في توزيع السكان في دولة الأمارات هي المناخ و فرص العمل المتوفرة ثم المعالم السياحية.

(13) Pronominal Gender and Number Agreements

SS21. The weather of the Emirates is hot that lasts over the whole year.

21. مناخ الأمارات حار و **هي** تستمر طول العام.

SS23. The total area is 830000 kilometers and the number of population is 800000.

23. المساحة الأجمالية **هم** 83000 كيلو مترو عدد السكان **هي**800000 نسمة

(14) Case

SS13. The Emirates united in year 1971and the expats to the country and the country developed due to the workers.

13. أتحدت دولة الأمارات في عام 1971, و جاءوا **الوافدين** للبلد و تقدم البلد بسبب **العمالات**

SS16. The Emirates people won the Expo which will provide job opportunities.

16. كسبوا شعب الأمارات الأكسبوالذي سيوفر **أفرصة** عمل

As in the vocabulary aspect, students' essays in English and in Arabic were analyzed using a quantitative measure. Thus the ratio of both subordinated and coordinated structures were calculated to examine the syntactic complexity of the students' essays by counting the total number of subordinated, coordinated structures and number of total sentences. Subordinated total in English essays were 93, compared to 35 in the Arabic essays. Coordinated total was 137 in English essays, compared to 202 in the Arabic essays. Results of the ratio of subordinated and coordinated structures based on Li's (2000) formulas are presented in Table 4.

Table 4: *Percentage of Complex Grammatical Structures*
(N=23)

	The Subordination Ratio	The Coordination Ratio
English essays	40.43%	59.57%
Arabic essays	14.77%	85.23%

The results show that students used more complex sentences in their English essays than in the Arabic texts (see Table 4). Almost 41% of their English sentences had subordination compared to the Arabic essays with 14.77% subordinate clauses. While nearly 85% of their Arabic sentences had coordination compared to the English with 59.57% coordination. Arabic essays contained extensive coordinated structures mainly the simple connective "and" which is very common in Arabic.

Students' grades in English and Arabic. Using Sánchez and Salaberri (2015) benchmark by calculating the average score achieved by all the students, the essays' linguistic proficiency was rated using a five-point rating rubric on organization, vocabulary and structure. Table 5 presents the percentages of students

who scored above and below the calculated benchmark which yielded the average scores of 11 for English and 10 for Arabic.

Table 5: *Number and Percentage of Students' scores above and below the benchmark in Linguistic Proficiency*
(N=23)

Linguistic Proficiency	English Text	Arabic Text
	No. of Students	No. of Students
Above the Benchmark Mark (Average)	82.61% (19)	43.48% (10)
Below the Benchmark Mark (Average)	17.39% (4)	56.52% (13)
Total	100% (23)	100% (23)

In general, overall linguistic performance was better in English than in Arabic. As Table 5 shows, out of the 23 students, 19 (82.61%) performed above the average linguistic proficiency mark in English and four students obtained scores lower than the benchmark (17.39%). In Arabic, 10 (43.48%) scored above the benchmark and 13 below the benchmark (56.52%).

The average scores of the 23 essays in both languages were further compared in terms of the three aspects included in the grading rubric namely, organization, vocabulary and structure (see Figure 1).

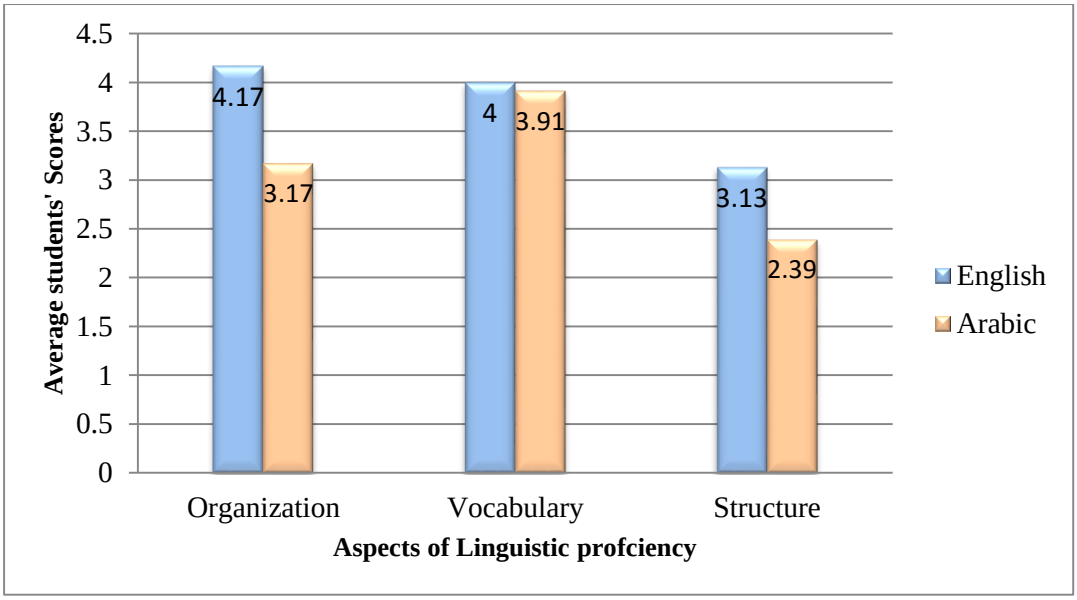

Figure 1: Comparison between average scores per aspect of students' writing proficiency in English and in Arabic (N=23)

These results demonstrate that the average scores of all three aspects in the English were higher than in the Arabic essays. Regarding the two aspects organization and structure, the average scores in English significantly exceeded the average scores in Arabic (4.17/3.17 and 3.13/2.39 respectively). As for the third aspect (vocabulary), the average scores were very close in both languages (4/3.91).

The students' Content Learning

To answer the second question on content learning three comparisons were carried out. First, content scores and MCQ test results were compared. Second, students' academic performance in science and social studies were compared. Third, students' linguistic proficiency was compared to their academic performance. First, students' average academic scores in content essays were compared to their counterpart scores in MCQ test in both subjects (see Table 6).

Table 6: *Average Academic Performance Scores (N=23)*

	Science	Social Studies
Students' Average Scores in Content Essays	7.70	6.16
Students' Average Scores in MCQ Test	7.60	5.9

The results indicate that total average score of the students in science content writing was very close to their total average score in MCQ test (7.70 and 7.60) respectively. Similarly, in social studies, the total average score in content writing was very close to their total average score in MCQ test (6.16 and 5.9) respectively. There is no significant difference between the two tests' results. In other words, students perform similarly in terms of content learning in both the written assignments and associated MCQ tests in both content subjects. This suggests a certain level of reliability of the two testing instruments.

Second, to compare students' academic performance in science and social studies, students' graded essays were classified according to the benchmark set by the school as below or above the school benchmark. While for linguistic proficiency the research used Sánchez and Salaberri benchmark, in assessing content, the school was using its own benchmark (50%). The calculated benchmark yielded 5 for both subjects. The percentages of students who scored above and below the benchmark are presented in Table 7.

Table 7: *Academic Performance Scores Based on the School Benchmark (N=23)*

		Science	Social Studies
No. of Students	Above the School Benchmark	100% (23)	73.91% (17)
	Below the School Benchmark	0% (0)	26.09% (6)
	Total	100% (23)	100% (23)

The results indicate that students performed better overall in science than in social studies. All the 23 (100%) students passed the test in the science writing test while only 17 (73.91%) scored at or above the benchmark, in the social studies test with 11 (26.09%) scoring below the average.

Third, academic average scores in the science content were compared using students' linguistic proficiency scores, classified as below and above average. Results indicate a positive correlation between linguistic and academic performance. Students who were above the English linguistic benchmark significantly also scored above the academic average scores in science (8.11), and those below the English linguistic

benchmark scored slightly higher than the academic average scores in science (6.5) (see Figure2).

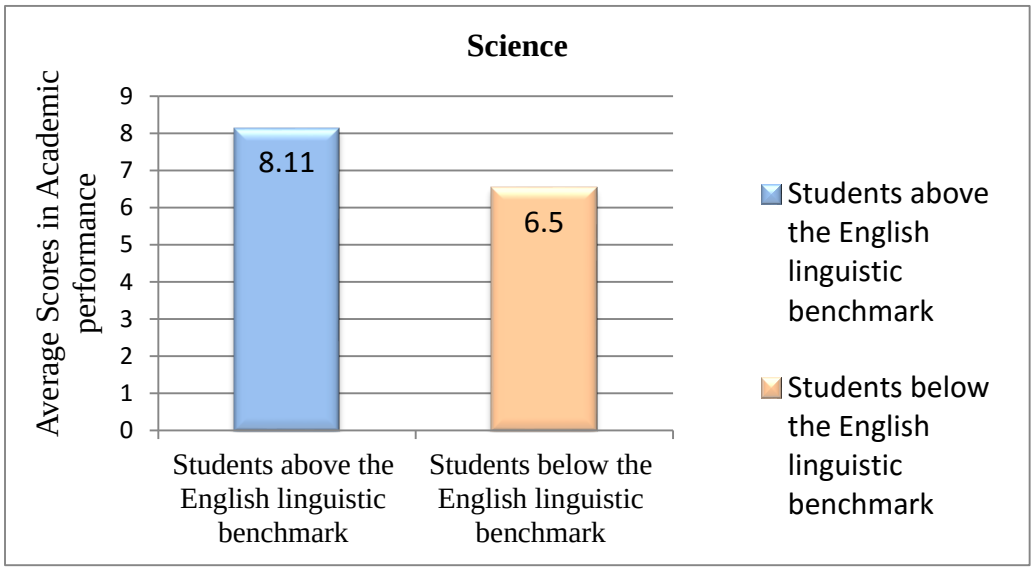

Figure 2: Average academic scores in science and English linguistic proficiency

Students who were above the Arabic linguistic benchmark significantly also scored above the academic average score in social studies (7.5), and those below the average Arabic linguistic benchmark scored slightly lower than the academic average score in social studies (4.92) (see Figure 3).

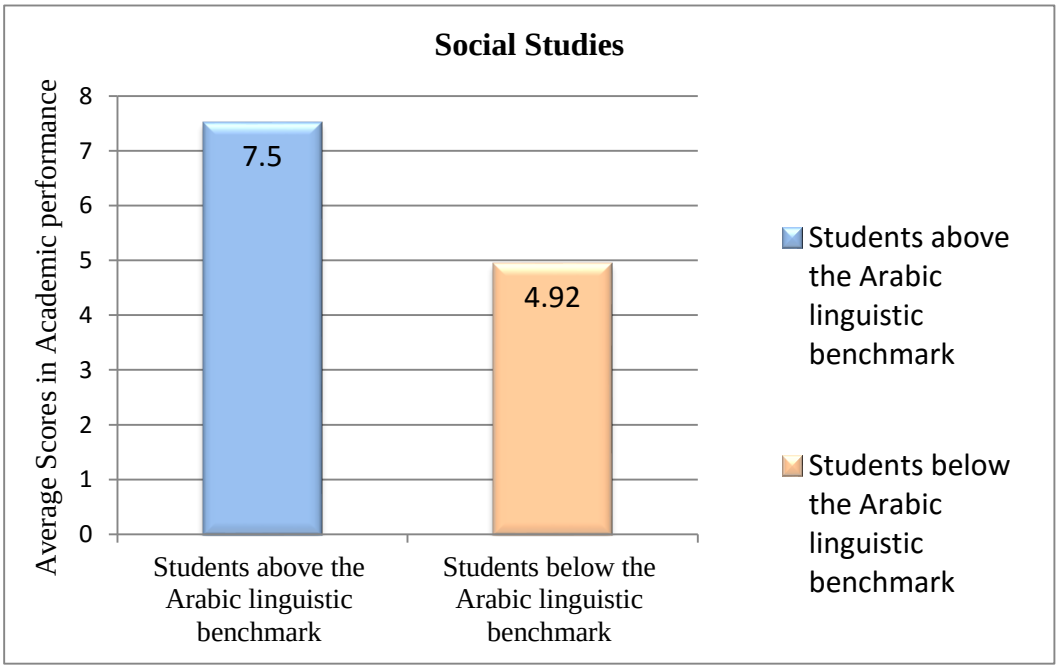

Figure 3: Average academic score in social studies and Arabic linguistic proficiency

Summary of students' linguistic and content learning. Results revealed that the overall linguistic proficiency of the students in English was better than their proficiency in Arabic. The results revealed that the aspects of organization and vocabulary were the most developed while structure was the least influenced by the CLIL approach in English. In addition, the lexical complexity analysis revealed that the students used wide range of vocabulary and used more lexical words than function words in English compared to Arabic. Similarly, the syntactic analysis showed that students produced more coordinated clauses than subordinate clauses. Thus, the syntactic analysis infers that structure was the least aspect benefited from the CLIL instruction. Furthermore, data indicated that the students' performance in science was better than in social studies, thus indicating that CLIL has a positive impact on students' content learning taught in the target language. There was also a positive correlation between the students' academic achievement (content learning) and their linguistic proficiency in the language used in instruction. The results also demonstrated a positive correlation between the students' academic achievement (content learning) and their linguistic proficiency.

Teachers' Perspectives towards the CLIL Approach

Teachers' questionnaires on their perspectives on the impact of CLIL are discussed under three categories. First, impact on students' L2 learning, second, impact on students' L1 development and third, impact on content learning.

The impact of CLIL on L2 learning. With regards to the questionnaire written in English, Questions 1-4 addressed the teachers' perspectives on the impact of CLIL on L2 learning (see Table 8 and Table 9).

Table 8: *Science Teachers' Responses to Questions 1 and 3.*
(N=12)

Q#	The Question	Yes	No	I teach language in every class
Q1	In your teaching, do you focus on language in teaching scientific content? If yes, how often?	12 100%	0 0%	12 100%

Q#	The Question	Speaking	Listening	Writing	Reading
Q3	Which skills of the English language are improved by studying science through English? Please tick all applicable.	12 100%	12 100%	12 100%	12 100%

Table 9: *Science Teachers' Responses to Questions 2 and 4.*
(N=12)

Q#	The Question	Item	Most important /benefit (1)	Slightly important/ benefit (2)	Least important /benefit (3)
Q2	What writing aspects do you focus on?	a. Vocabulary	12 100%	0 0%	0 0%
		b. Structures	0 0%	3 25%	9 75%
		c. Organization	0 0%	9 75%	3 25%
Q4	Which components of writing proficiency in English benefit most of applying CLIL?	a. Vocabulary	9 75%	2 16.67%	1 8.33%
		b. Structures	2 16.67%	9 75%	1 8.33%
		c. Organization	1 8.33%	2 16.67%	9 75%

Question 1 enquired whether teachers focus on language while teaching scientific content and how often they do that. All 12 participants (100%) indicated that they focus on the language in every class, as demanded by the school. They also mentioned specific aspects that they focus on such as spelling, scientific terminology, and pronunciation. In response to question 2 regarding the linguistic areas that participant teachers focus on the most, all the participants found vocabulary to be the most important aspect (see Table 8). Further, the majority of the participants (75%) found that structure was the least important, while 75% of the participants found organization to be slightly important aspect. Question 3 inquired skills that are improved by studying science through English. All 12 teachers highlighted that all the skills are improved. In addition, four participants added that CLIL mostly improves the listening and speaking skills, in addition to enhancing students' academic writing skills. In response to question 4 about which components of writing proficiency in English are enhanced most by CLIL, the majority of the participants (75%) thought that vocabulary benefited the most and 75% believed that structure slightly benefited, while the same percentage thought that organization benefited the least from CLIL.

The impact of CLIL on L1 knowledge. Questions 5-8 focused on teachers' perspectives on the impact of CLIL programs on students' L1 development. None of the participants answered question 8. Table 10 and Table 11 below show teachers' responses.

Table 10: *Science Teachers' Responses to Questions 5, 6 and 7 (N=12)*

Q#	The Question	Yes	NO
Q5	If you speak Arabic, would you use Arabic in class to explain certain concepts in the lesson?	8 66.67%	4 33.33%
Q6	If you speak Arabic, would you like to teach science in Arabic?	2 16.67%	10 83.33%
Q7	Do you think students can describe scientific concepts in Arabic?	0 0%	12 100%
Q8	Do you think students prefer learning content via English rather than Arabic?	0 0%	0 0%

Eight out of the 12 participants (66.67%) indicated in response to question 5 that they would use Arabic in their class to explain some concepts. Only four stated that they would not because they believed that English is a global language used in science. Eight participants who positively answered the question explained their position by stating that it would "help in clarifying challenging concepts and difficult key terms", "helping underachievers in understating difficult concepts" and "help in checking and fostering students' understanding".

Questions 6 and 7 pertained to the teachers' preference in teaching science in Arabic (if they were competent in Arabic) or in English and their perspectives of students' competency in explaining scientific concepts in Arabic. In response to question 6 (see table 9), two participants expressed their preference to teach content via Arabic rather than English, because, according to them, Arabic, is the students' mother tongue, is an easier medium to be used in learning science. Yet, the majority of the participants (10) expressed their satisfaction with teaching content via English, due to a number of reasons, summarized below:

- English is the primary language of science in the school.
- English is the primary language of the engaging materials and online materials.
- English is the medium of instructions and exams.
- English is the widely accepted language in our school.
- The school enforces using English.
- English is easier language for them.

In response to question 7, all the participants thought that students have no ability to describe scientific concepts in Arabic. They explained that students had not been introduced to science via Arabic; therefore, their scientific vocabulary would be limited. The limited time of instructions devoted to teaching Arabic compared to English was another reason highlighted by teachers. In addition, they stated that the availability of on-line materials in English exceeded the one in Arabic.

Social studies participant teachers answered questions 5-7 in the questionnaire written in Arabic and their responses are presented in Table 11.

Table 11: *Social Studies Teachers' Responses to Questions 5, 6 and 7 (N=10)*

Q#	The Question translated into English	Yes	NO
Q5	If you speak English, would you use English in the class to explain certain concepts in the lesson?	10 100%	0 0%
Q6	Do you think social studies should be taught in English?	0 0%	10 100%
Q7	Do you think students can describe social studies concepts in English?	10 100%	0 0%

All teachers indicated that they would use English in their class (question 5). All participants thought English to be easier than Arabic in simplifying difficult concepts and checking understanding. They highlighted the fact that it is challenging for some students to learn some concepts in Arabic due to students are more familiar with English than with Arabic. Teachers also explained that students used to learn most content subjects in English throughout their academic life. In addition, they mentioned that students used to English in everyday practices which made them more convenient to use English. In response to question 6, all participants expressed that they were against teaching social studies in English due to different reasons, such as enhancing students' proficiency in Arabic, promoting the language of the holy Qur'an and preserving students' identity. The teachers also mentioned some concerns regarding the domination of English over Arabic. They noted that English is the common medium of communication in the school. In response to the question 7, all the participants assumed that students are able to describe social studies concepts in English, as students had a high proficiency in the language. In addition, the teachers stated that the amount of exposure to English would enable students to express any content in English.

The impact of CLIL on content learning. None of the participants answered question 9 which enquired whether students understand abstract concepts easily or they would prefer to have an explanation in Arabic. In response to question 10, the participant science teachers stated some challenges associated with teaching science concepts in English. One of these challenges stated by eight participants was the underachievers students' struggle with some linguistic aspects such as vocabulary,

spelling, and pronunciation. Another challenge, according to the participants, was the underachievers' lack of comprehension of certain vocabulary, which may lead to poor analysis and explanation. Four participants maintained that students tend to have difficulty in pronouncing some scientific terminology.

In response to question 11, the science teachers stated some advantages and disadvantages of teaching science in English. Nine participants highlighted that English is a global language that helps students to have greater opportunities to study abroad. According to the teachers, the main advantage of CLIL was that it would prepare students better in academic life (11 participants). Another benefit was that teaching science in English helps in developing students' proficiency in English. In addition, teachers viewed English as the language of science, and this was mentioned by seven of the participants. They also stressed the availability of the materials written in English (five participants) and believed that CLIL can provide students with an authentic setting which would enable them to effectively express themselves in spoken English (50%). Some of the recurrent advantages stated by the participant teachers were:

- providing easier life in the future.
- a possibility to provide better paid jobs.
- learning a lot of specialized vocabulary.
- acquiring the ability to think in a foreign language.
- allowing students to get access to many articles and books in English.

As for the disadvantages of teaching science in English, teachers stressed their students' difficulty with learning content due to the use of English. Another main concern was that students were deprived from knowing the Arabic version of scientific terminology. Ten teachers were concerned about the negative influence of English on the students' ethnic identity and their attitudes towards Arabic. The majority stated that teaching social studies through Arabic may protect the Arabic language from being replaced by English. In addition, they viewed using Arabic as a tool to enhance the students' cultural identity and build positive attitudes towards their first language.

The last question, question 12, was a common to both groups of teachers and was in English and in Arabic (see table 12). It asked about the skills in science and social studies that students find difficult.

Table 12: *Teachers' Responses to Question 12*
(Science teachers N=12 and social Studies Teachers N=10)

		Most difficult (1)		Slightly difficult (2)		Least difficult (3)	
	Item	Science	Social studies	Science	Social studies	Science	Social studies
Q12. Which aspects of science or social studies skills students find difficult to master?	a. Defining	0 0%	0 0%	0 0%	0 0%	12 100%	10 100%
	b. Analyzing	3 25%	9 90%	9 75%	0 0%	0 0%	1 10%
	c. Explaining	3 25%	2 20%	9 75%	8 80%	0 0%	0 0%

Table 12 clearly highlights that all science (12) and social studies teachers (10) believed that the students found "defining" scientific concepts as the least difficult. Nine science teachers (75%) found that students moderately find "analyzing" academic concepts as slightly difficult, while nine social studies teachers (90) usually struggle with "analyzing" academic concepts. Furthermore, nine science teachers (75 %) found "explaining" as slightly difficult, while three found it as the most difficult skill. Similarly, eight social studies teachers (80%) found "explaining" as slightly difficult, while two found it as the most difficult skill. Six science teachers explained that they encourage students to use the three skills (defining, analyzing and explaining). They added that the content materials were helpful in applying the three skills in their lessons, while the majority of the social studies teachers (8) stated that they focused on defining and restating the information. They explained that the content materials mainly focus on these two skills.

Summary of teachers' perspectives. The teacher responses revealed important findings. They focused on language teaching while teaching content, particularly vocabulary. As a result, they found students' vocabulary is positively affected. Although they mostly focused on teaching vocabulary and organization, they believe that students' skills in organization did not improve. Most of the teachers found teaching science in Arabic would be challenging, yet they stated that Arabic could be used in explaining difficult terms or concepts. Some of the teachers were concerned about the student's Arabic proficiency due to the focus placed on English. All teachers support teaching social studies in Arabic rather than English to enhance the students' Arabic proficiency. Most of the teachers found students generally struggle with explaining academic concepts in both English and Arabic, yet they found students perform better in analyzing academic concepts in English than in Arabic. The majority of the teachers found CLIL approach has a positive impact on learning L2 and content, while some teachers were concerned about the negative impact of CLIL on students' L1 knowledge and their ethnic identity. In addition, teachers suggested that Arabic can be used as a tool to enhance the students' cultural identity and build positive attitudes towards their first language. Some teachers stated some advantages of applying the CLIL approach such as being a tool that can help students to get better jobs and learning opportunities in the future.

Data Analysis and Discussion

Results discussed above reveal that overall students' linguistic proficiency in English was better than their proficiency in Arabic, their academic performance was better in science than in social studies, there was a positive correlation between students' academic proficiency and their linguistic proficiency and the majority of teachers felt that CLIL has a positive impact on L2 and content learning but were concerned about the negative impact of CLIL on the students' L1 knowledge.

In general, students scored higher in English than in Arabic. Thus, CLIL seems to have a more positive impact on students' English learning (L2) than on their Arabic knowledge (L1). This finding is in line with other studies findings discussed in chapter 2 (e.g. Haunold, 2006; Lasagabaster, 2008). These results may be attributed to the fact that students have more hours of exposure to English than to Arabic. Many studies have shown a strong correlation between the positive impact of CLIL on L2

linguistic skills and the amount of time devoted to L2 instruction (Jiménez Catalán and Ruiz de Zarobe, 2009; Sylvén, 2004, 2006). This relation was also discussed by Sylvén's (2006) study of secondary schools in Sweden. She found that there is a positive correlation between the amount of exposure and language learning. In the context of the present study, the content instruction in English is definitely greater in English than in Arabic and thus could explain the students' better performance. In fact, teaching in English is about 80% of the total teaching time compared to nearly 20% for teaching in the Arabic language. Exposure to English is not only higher within the classroom, but also it is present outside the classroom. Students commonly use English as a *lingua franca* in order to communicate in outside the classroom, particularly given the UAE demographics where 80-91% are expats and 77% of Non-Arabic speakers (Badry, 2015). All this amount of exposure to English, inside and outside the classroom, can be a strong factor in developing the students' linguistic proficiency in English more than in Arabic. Teachers' responses were concerned that the amount of instruction devoted to L1 (Arabic) compared to L2 (English) may delay students' L1 development compared to L2 learning.

More specifically, the results revealed students achieved significantly high marks over the average benchmark in the first two aspects, organization and vocabulary, in both languages. In comparison, students demonstrated higher proficiency in English than in Arabic in the three aspects of organization, vocabulary, structure examined. In the organization aspect, all students got high marks in both languages. Yet, they scored higher in English than in Arabic. Their English essays were more coherent than their Arabic essays. This data suggests that the CLIL approach seem to have a positive impact on the organization aspect in L2. This finding contradicts what has been reported by Jexenflicker and Dalton-Puffer (2010), who observed that students in CLIL contexts suffered from textual organization in their written productions at the sentence level more than at discourse level. Concerning vocabulary, students had a wide range of vocabulary and a more appropriate register in English. In comparison, students used more lexical words than function words in English compared to Arabic. Confirming findings that CLIL positively influenced students' vocabulary development particularly, technical terms (e.g. Dalton-Puffer, 2008, Jiménez Catalán, Ruiz de Zarobe & Cenoz, 2006; Sylvén, 2004, 2006). As for the last linguistic aspect analyzed (structure), results revealed

weaknesses in areas such as participles. In addition, the syntactic analysis showed that students produced more coordinated clauses than subordinate clauses, suggesting that structure was the aspect that benefits the least. This finding concurs with Ackerl's (2007) findings in which CLIL students used simple clauses extensively in their texts. In contrast, other results obtained from previous research (e.g. Hüttner and Rieder-Büneman, 2007; Lasagabaster, 2008) showed the positive influence of CLIL on structure. In sum, the present results suggested that organization and vocabulary seem to be benefit the most from the CLIL approach in L2 which concur with results of previous studies (e.g. Cenoz and Perales 2001; Serra, 2007).

The extent to which a linguistic aspect in the writing skill is positively influenced by the implantation of the CLIL approach can be related to the amount of focus devoted to that aspect in class. This factor was mentioned by the participant science teachers. They mentioned that they usually focus on vocabulary in every class, which might explain the development of students' vocabulary. The students' wide vocabulary repertoire can be a possible reason behind the participant students' high performance in organization as they seem to benefit from their wide range of connectives for structuring their essay logically. As for the reason behind students' low performance in the structure aspect, it can be due to the little focus devoted to this aspect in the class. According to the participant science teachers, structure was the least aspect on which they focus in class. Dalton-Puffer reasoned that the problems with any aspects of the students' writing can be due to the absence of teaching this aspect in content teaching. According to Vollmer et al. (2006) and Llinares and Whittaker (2006), the less focus devoted to writing in content-teaching was a strong reason behind students' organization and grammar weaknesses.

Results also demonstrated that students' MSA knowledge at the syntactic and lexical levels was the weakest. In addition, there was a significant influence of colloquial Arabic on the students' writing performance in MSA. Several factors can be used to explain this weak performance. First, teachers usually use both the colloquial Arabic and the MSA in their teaching. Second, MSA is not the language of communication in the UAE. Therefore, a lack of exposure to MSA input might inhibit the students from effectively mastering MSA. According to García (2009a), any bilingual program should consider whether the language taught is used outside the classroom or not. In case the language is not used in the community, a focus on

teaching such language should be placed inside the classroom. Another factor is the diglossic nature of Arabic, in which MSA represents the high variety used in formal interactions, while dialectal Arabic is the low variety used in everyday life interactions. As MSA is not the language used in informal communication, current curriculum should increase the time of teaching MSA in the school. Furthermore, another factor is related to the teaching methods adopted in teaching subjects in Arabic. In fact, some participant social studies teachers stated that the social study content includes difficult terminology, and the content is presented in a traditional manner. Morrow and Castleton (2011) supported these data when reporting that Arabic teachers consider the Arabic curriculum to be plain and disengaging for the students. The outdated content in subjects taught in Arabic can demotivate the students. Badry (2011) suggested, "A serious reflection on the diglossic nature of Arabic and how it impacts literacy development [is needed, in addition to] an overhaul of the Arabic language and its pedagogy, and an emphasis on teacher training … to maintain bilingualism and strengthen the Arabic act of identity in the UAE" (p.111).

As for the impact of CLIL on content learning, results showed that the overall performance of students was better in science than in social studies. These results can be justified by different reasons. One possible explanation for these results can be related to the fact that the amount of teaching time devoted to teaching through English was greater than the amount of time devoted for teaching through Arabic. This was due to the policy of the school that restricts the amount of teaching in Arabic. Thus, it can be inferred that the consequences of CLIL seem to have positive impact on content leaning. This inference is in line with what has been reported by other researchers (e.g. de Courcy and Burston, 2000; Jäppinen, 2005; Seikkula-Leino, 2007) that CLIL has a positive impact on content learning through L2. Other factors suggested by Jäppinen (2005) that could have influenced the results are “the home environment, the socio-economic status of parents…, or the nature of learners entering” (p.162). Another possible factor can be the lack of creative and engaging social studies materials. In fact, the polled social studies teachers raised a concern about the scarcity of the materials. In addition, they mentioned that they focus on skills such as description, analyzing and explanation, while social studies teachers focused on skills such as narration, which requires students to memorize the content.

In contrast, the surveyed science teachers found the availability of scientific materials that promote creative thinking and learning to help them in teaching. A Further possible explanation is the positive correlation between the students' academic achievement (content learning) and their linguistic proficiency. As results suggested that there is a positive correlation between academic performance and linguistic proficiency. Since the medium of teaching a content subject is a language, the level of proficiency of students in this language can have an impact on their ability to learn content subjects. This inference is expressed by other researchers (e.g. Jäppinen, 2005; Massler, 2012; Sánchez & Salaberri, 2015; Vollmer et al., 2006). As explained in chapter 2, they justified the performances of CLIL students in content subjects by students' competency in the L2. Additional factor that leads to the aforementioned results is teachers' lack of training in CLIL teaching. All participant teachers reported that they have minimum three years of experience in teaching CLIL, yet they have no CLIL training which suggests that teachers are not aware of the CLIL pedagogical methods. This suggestion concurs with Marsh's (2002) claim that CLIL teachers usually have adequate proficiency in L2 and competency in teaching content, but have no training in bilingual education.

Results also revealed that most of the teachers found students generally struggle with explaining academic concepts in both English and Arabic, yet they found students perform better in analyzing academic concepts in English than in Arabic. Another finding was that science teachers encouraged students to interact with content from multiple perspectives and engage in analyzing and explaining the content material, while the social studies teachers focused mainly on defining and memorizing the topics. These results suggest that CLIL can offer students an opportunity to use various academic functions that might influence the students' way of learning content and language of instruction. In a sense, students need to use L2 in different ways in order to convey different aspects of content, which may indicate a positive influence of students' academic achievement (content learning) on their linguistic proficiency. It can also be inferred that CLIL enables students to use various skills (analyzing and explaining) in their learning content. This conclusion is in line with Nikula's (2007) finding, that CLIL setting enable students to learn content in different ways other than mere reporting information.

Results obtained from teachers' surveys show that they have positive attitudes towards the CLIL approach impact on students' target language confirming results from previous other studies that indicated that teachers preferred employing the CLIL approach, despite concerns about the demanding nature of the program (e.g. Dafouz, Núñez, Sancho & Foran, 2007; McDougald, 2015). Participants in this study highlighted several benefits of CLIL. One important benefit was providing a natural learning environment of the second language. They also believed that the CLIL approach enhances students' communicative skills, a stance that supports Dalton-Puffer (2007) and Pena Díaz and Porto Requejo (2008) claims. As to the disadvantages of the CLIL program, it has been frequently mentioned that CLIL can be a demanding learning approach that requires students to be high achievers in the second language. Teachers also mentioned that they often struggle to balance between teaching language and content. These results concurred with what Alonso, Grisaleña and Campo (2008) concluded. Furthermore, another concern stated by the teachers was that the students would not have adequate scientific knowledge in their mother language. Airey (2010) also found that students had difficulty with "retrieving knowledge in their non-instructional language" (p.152). Finally, teachers were concerned that the linguistic proficiency level of students in English might influence their content learning, a concerned shared with other studies (e.g. Dalton-Puffer, 2008; di Martino & di Sabato, 2012; Hajer, 2000).

Findings of the present study also showed that the participant teachers had several concerns. They pointed out that students tend to prefer learning content through English rather than through Arabic. Social studies teachers believed that the majority of the students are not interested in learning Arabic and that students were more motivated to study English than to study Arabic. They considered learning in CLIL settings to be more demanding to students than when students' L1 is used as a medium of learning. These results are surprising as usually students had a negative attitude towards challenging subjects. This contradiction could be due to the overall ideology adopted by the entire country towards English. Badry (2011) suggested that "the dominant ideology in the UAE, espousing globalization to achieve rapid modernization and assigning high value to English, may have predetermined what choices" (p.108) the students make. The overwhelming preference of English can also be due to the strong dominance of English in up-to-date research. Teachers stated that

students perceive English as a mean to advance in their education and future careers and to keep up with modern life.

In conclusion, the results are mostly in line with research findings discussed in chapter 2. It was inferred that CLIL seems to have a more positive impact on students' English learning (L2) than on their Arabic knowledge (L1). It has been concluded that CLIL seems to have a positive impact on content learning. Finally, it was revealed that teachers had positive attitudes towards the CLIL approach.

Chapter 5: Conclusion, Implications, Limitations and Suggestions

This chapter offers conclusions and suggests possible implications of adopting the CLIL approach in a secondary school in the UAE. It also describes some limitations encountered in conducting this research.

Conclusion

The present study was set out to examine the effects of CLIL on students' L1 development, their L2 learning and their content learning in the UAE and to investigate the perspectives of secondary school teachers towards the CLIL approach. The data showed that the eighth grade students' linguistic proficiency was better than their proficiency in Arabic, suggesting that CLIL has a positive impact on students' L2 learning while L1 knowledge seems to be hampered. In general, the results suggested that the aspects of organization and vocabulary were the most developed while structure was the least influenced by the approach in English. In addition, the lexical complexity analysis revealed that the students used wide range of vocabulary and used more lexical words than function words in English compared to Arabic. Similarly, the syntactic analysis showed that students produced more coordinated clauses than subordinate clauses, thus inferring that structure did not benefit from the CLIL instruction. Furthermore, data revealed that the students' performance in science was better than in social studies, thus indicating that CLIL has a positive impact on students' content learning taught in the target language. There was also a positive correlation between the students' academic achievement (content learning) and their linguistic proficiency in the language used in instruction. Students who scored above the academic benchmark were also those who exhibited a high writing proficiency in both languages. Teachers' perceptions support the previous quantitative data from the analysis of students' essays. Teachers highlighted that CLIL had a positive impact on both the students' L2 and their content learning but they were concerned about students' L1 knowledge. In addition, they explained that CLIL benefits from the availability of the materials written in English and it provides students with an authentic setting, in which they can communicate orally in English and enables them to compete in the international market. At the same time, the teachers highlighted that CLIL can be demanding for students in learning content. A number of teachers were particularly concerned about the negative role that English

may play in maintaining the students' ethnic identity. However, teaching social studies through Arabic can protect the Arabic language from being replaced by English, according to social studies teachers.

Implications

The findings from this study suggest that in its current implementation, CLIL in the UAE current educational system does not foster students' proficiency in MSA. The development of MSA seems to be restrained by the promotion of English in schools and its wide spread use as *lingua franca* in UAE society. Based on these results many implications for teachers and education planners can be identified. Reforms to the current educational system should stress achieving balanced bilingualism and biliteracy in both Arabic and English. Curricula should be designed to provide a balanced amount of instruction in the two languages. In addition, education specialists need to design creative materials in Arabic to motivate students in favor of Arabic and help them preserve their Arabic identity. Another important implication is that materials and teaching methods should recognize the diglossic nature of the Arabic language. According to Badry (2011), the current educational policies do not address the effect of this diglossic nature of Arabic. Thus, she suggests that providing a transition period from colloquial Arabic to MSA can ease students into the standard form and increase their motivation towards learning MSA. In addition, content materials delivered in Arabic should enforce students' critical thinking through analyzing and explaining skills.

With regards to teacher training, CLIL teachers need to be trained in applying bilingual methodologies where they learn how they can use L1 in teaching L2. This training would help them to be mindful of the linguistic aspects of L2 in general and to its subject specific aspects in particular. Furthermore, teachers also need to be trained in integrating content and language in class.

Limitations of the Study

The present study is a first examination to Content and Language Integrated Learning (CLIL) in the UAE and as such has explored new grounds. However, just like all studies it has its own limitations. A major limitation has been in the sample selection and size. The data was collected from one school and one class with twenty-three students. The teachers sample was slightly more representative as it included all

twenty teachers of grade 8 in the school. In addition, two important questions in the teachers' questionnaire were not answered; consequently, these items had to be omitted. Given the study's important limitations, the conclusions need further confirmation from larger samples. A further limitation is that, to date, there is a lack of literature on the impact of CLIL on Arabic.

Despite the limitations, the study is significant because it shows investigated CLIL in the UAE context that that has proved effective in impacting students' L2 learning and content learning. The study also has provided educators who currently apply CLIL in the UAE evidence that CLIL programs can negatively impact students' L1. Thus, they need to adapt CLIL program to suit the UAE linguistic context. The UAE educational policy should place a balanced emphasis to English and Arabic.

Suggestions for Further Research

A similar analysis must be carried out over a larger number of schools across the UAE and include more representative sample of students' writing in different subject matters. Also, previous studies have examined the impact of CLIL on CLIL students with their non-CLIL peers as presented in the second chapter. It would be interesting to compare CLIL students' results to their EFL peers in the UAE. The present study examined the impact of CLIL on male high school students. Other studies should examine female high school students to find out the influence of gender on the results.

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Appendix A

Science Writing Test

Name: _____ 10 Marks

The Digestive system

The digestive system is the organ system that breaks food down into small molecules that are absorbed into the bloodstream.

Write a well-structured essay about all the following aspects. (200 words)

1. Define digestion.

2. Compare and contrast physical and chemical digestion.

3. Describe, with the use of relevant keywords, the passage of food through the body.

Appendix B

Social Studies Writing Test

اختبار في مادة التربية الوطنية

التعداد السكاني الأمارات العربية المتحدة

الأسم: _____ 10 درجة

"تشهد دولة الأمارات العربية المتحدة تطورا في عدد السكان, و يختلف توزيعهم نتيجة للعوامل الطبيعة".

أكتب مقال جيد التنظيم حول جميع الجوانب التالية (200 كلمة):

1. العوامل المؤثرة في توزيع السكان مع شرح الأسباب
2. أهمية دراسة السكان.
3. ما الأثارالمترتبة علي هجرة السكان من الدول؟

The Translation of the Social Studies Written Test

"The United Arab Emirates is witnessing a huge increase in the population number, and their distribution differs as a result of various natural factors."

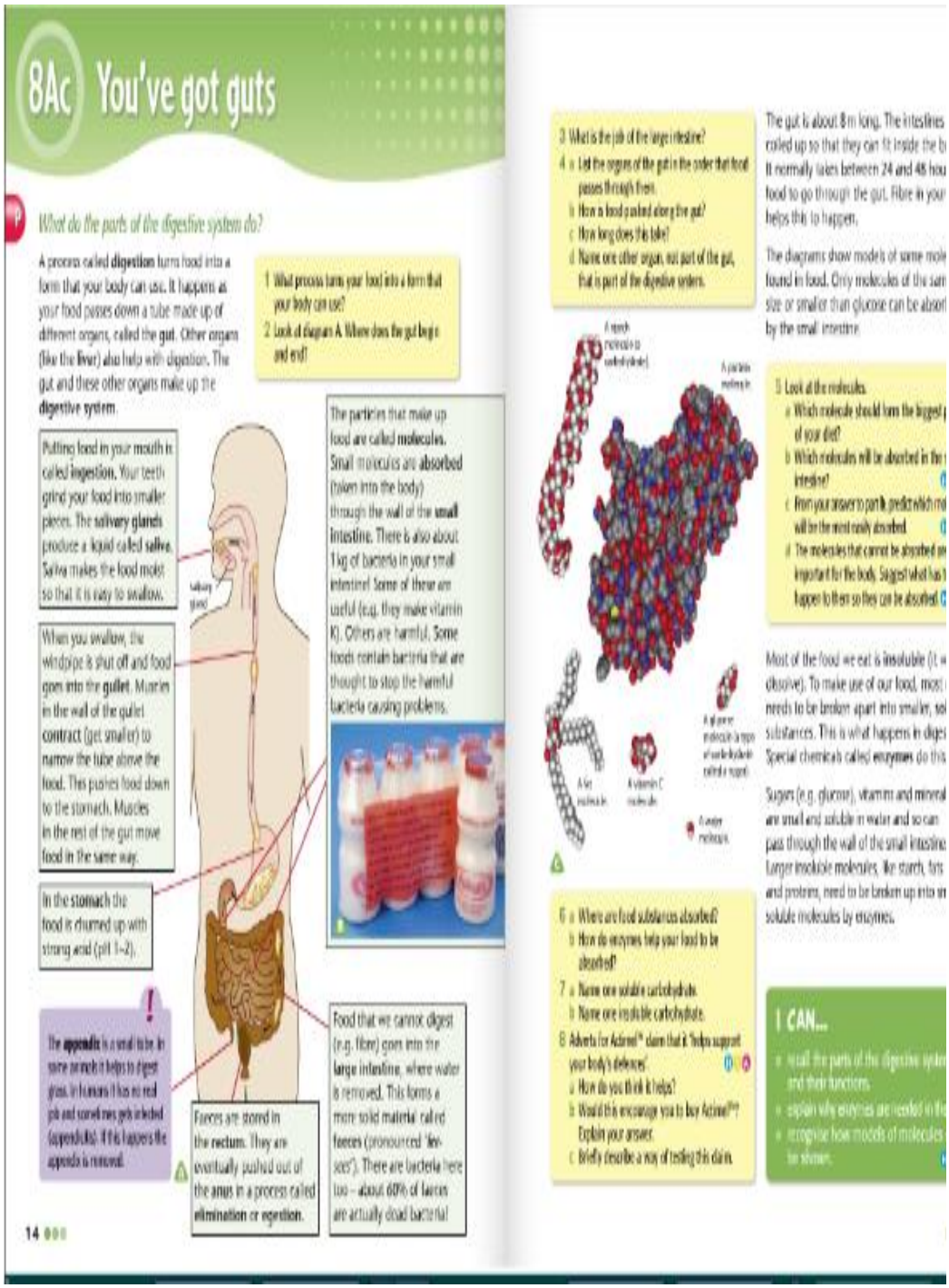
Write a well-structured essay about the following aspects: (200 words)

1. The different factors that affect the distribution of population in the UAE
2. The importance of studying population in the UAE
3. What the outcomes of the immigration of people from their own countries?

Appendix C

Science Lesson

The Digestive system



8Ac You've got guts

What do the parts of the digestive system do?

A process called **digestion** turns food into a form that your body can use. It happens as your food passes down a tube made up of different organs, called the **gut**. Other organs (like the **liver**) also help with digestion. The gut and these other organs make up the **digestive system**.

1 What process turns your food into a form that your body can use?
2 Look at diagram A. Where does the gut begin and end?

Putting food in your mouth is called **ingestion**. Your teeth grind your food into smaller pieces. The **salivary glands** produce a liquid called **saliva**. Saliva makes the food moist so that it is easy to swallow.

When you swallow, the windpipe is shut off and food goes into the **gullet**. Muscles in the wall of the gullet **contract** (get smaller) to narrow the tube above the food. This pushes food down to the stomach. Muscles in the rest of the gut move food in the same way.

In the **stomach** the food is churned up with strong acid (pH 1–2).

The **appendix** is a small tube. In some animals it helps to digest grass. In humans it has no real job and sometimes gets infected (appendicitis). If it is, it is removed.

The particles that make up food are called **molecules**. Small molecules are **absorbed** (taken into the body) through the wall of the **small intestine**. There is also about 1 kg of bacteria in your small intestine! Some of these are useful (e.g. they make vitamin K). Others are harmful. Some foods contain bacteria that are thought to stop the harmful bacteria causing problems.

Faeces are stored in the **rectum**. They are eventually pushed out of the **anus** in a process called **elimination** or **egestion**.

Food that we cannot digest (e.g. fibre) goes into the **large intestine**, where water is removed. This forms a more solid material called **faeces** (pronounced 'fee-sees'). There are bacteria here too – about 60% of faeces are actually dead bacteria!

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3 What is the job of the large intestine?
4 a List the organs of the gut in the order that food passes through them.
b How is food pushed along the gut?
c How long does this take?
d Name one other organ, not part of the gut, that is part of the digestive system.

The gut is about 8 m long. The intestines coiled up so that they can fit inside the b It normally takes between 24 and 48 hou food to go through the gut. Fibre in your helps this to happen.

The diagrams show models of some mole found in food. Only molecules of the sam size or smaller than glucose can be absor by the small intestine.

5 Look at the molecules.
a Which molecule should form the biggest of your diet?
b Which molecules will be absorbed in the intestine?
c From your answer to part b, predict which mo will be the most easily absorbed.
d The molecules that cannot be absorbed ar important for the body. Suggest what has t happen to them so they can be absorbed.

Most of the food we eat is insoluble (it dissolve). To make use of our food, most needs to be broken apart into smaller, sol substances. This is what happens in diges Special chemicals called **enzymes** do this

Sugars (e.g. glucose), vitamins and mineral are small and soluble in water and so can pass through the wall of the small intestine Larger insoluble molecules, like starch, fats and proteins, need to be broken up into sm soluble molecules by enzymes.

6 a Where are food substances absorbed?
b How do enzymes help your food to be absorbed?
7 a Name one soluble carbohydrate.
b Name one insoluble carbohydrate.
8 Adverts for Actimel™ claim that it 'helps support your body's defences'.
a How do you think it helps?
b Would this encourage you to buy Actimel™? Explain your answer.
c Briefly describe a way of testing this claim.

I CAN...
- recall the parts of the digestive syste and their functions.
- explain why enzymes are needed in the
- recognise how models of molecules be shown.

Appendix D

Social Studies Lesson

التعداد السكاني في الأمارات العربية المتحدة

4/2/2016

الدّرسُ 5

السّكّانُ في دولةِ الإماراتِ العربيةِ المتحدةِ

نواتج التعلم

- يتعرفُ المفاهيمَ والمصطلحاتِ الواردةَ في الدرسِ.
- يتتبعُ النموَّ السّكّانيَّ في دولةِ الإماراتِ العربيةِ المتحدةِ.
- يفسرُ اختلافَ توزيعِ السّكّانِ في دولةِ الإماراتِ.
- يبينُ أسبابَ الزيادةِ السّكّانيةِ المطردةِ خلالَ العقودِ الأخيرةِ.
- يتعرفُ أهميةَ برنامجِ نظامِ السّجلِ السّكانيّ، وبطاقةِ الهويّةِ.
- يقدّرُ جهودَ دولةِ الإماراتِ في تنفيذِ وتطويرِ برنامجِ السّجلِ السّكانيّ وبطاقةِ الهُويّةِ.

المفاهيم والمصطلحات

- التعدادُ السّكّانيُّ.
- التركيبةُ السّكّانيةُ.

الفكرةُ الرئيسةُ:
تشهدُ دولةُ الإماراتِ العربيةِ المتحدةِ تطورًا في عددِ السّكانِ، ويختلفُ توزيعُهم نتيجةَ للعواملِ الطبيعيةِ والبشريةِ.

تطوّرُ عددِ السّكانِ:

أُجريَ أوّلُ تعدادٍ للسّكّانِ في عامِ 1968 بمعرفةِ مجلسِ تطويرِ الإماراتِ المتصالحةِ.

أجرَتْ وزارةُ التخطيطِ أولَ تعدادٍ عامٍّ للسّكّانِ والمنشآتِ في عهدِ دولةِ الإماراتِ عامَ 1975 فكانَ بدايةً لإجراءِ تعدادٍ للسّكّانِ كلَّ عشرِ سنواتٍ، ويعتبرُ هذا التعدادُ الأوّلَ منْ نوعهِ في المنْطقةِ منْ حيثُ إتباعُ المعاييرِ العالميةِ، والتوصياتِ العالميةِ بهدفِ التعرفِ إلى احتياجاتِ ومتطلباتِ البحثِ والتخطيطِ والتنميةِ الاجتماعيةِ والاقتصاديةِ للسنواتِ القادمةِ.

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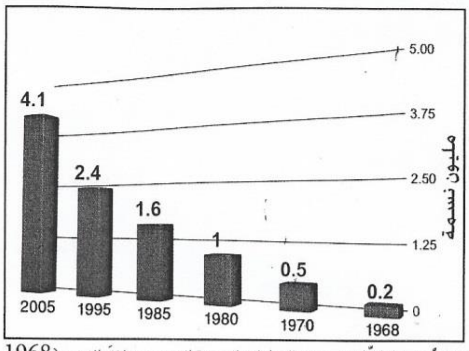
اقرأ الشكل (31)، ثُمَّ لاحظِ الآتي:



شكل (31) تطورُ عددِ السّكّانِ في دولةِ الإماراتِ العربيةِ المتحدةِ خلالَ الفترةِ (1968 - 2005)

التفكيرُ الناقدُ

بِمَ تفسرُ الزيادةَ السّكّانيةَ في دولةِ الإماراتِ العربيةِ المتحدةِ؟

مهارةُ البحثِ

ابحث في شبكةِ المعلوماتِ الإلكترونيةِ (الإنترنت) عن عددِ سكانِ دولةِ الإماراتِ العربيةِ المتحدةِ حسبَ تقديراتِ عامِ 2015م.

شهدتْ دولةُ الإماراتِ العربيةِ المتحدةِ خلالَ العقودِ الثلاثةِ الماضيةِ نموًّا كبيرًا في عددِ السّكّانِ، أدّى إلى ارتفاعِ عددِهم من مليونِ نسمةٍ عامَ 1980 إلى 4.1 مليونِ نسمةٍ عامَ 2005.

وتزايدَ عددُ السّكّانِ في دولةِ الإماراتِ لأسبابٍ عديدةٍ، منها الزيادةُ الطبيعيةُ والزيادةُ غيرُ الطبيعيةِ.

هيئة الإمارات للهوية
EMIRATES IDENTITY AUTHORITY

برنامجِ السّجلِ السّكانيِّ وبطاقةُ الهُويّةِ في دولةِ الإماراتِ:

تَعتبرُ هيئةُ الإماراتِ للهويّةِ جِهةً حكوميةً اتحاديةً تتكفلُ بالمهامِ التّاليةِ:

أبرزُ مهامِ هيئةِ الإماراتِ للهويّةِ

- تسجيلُ البياناتِ الشخصيةِ لجميعِ السكانِ بالدولةِ.
- تسجيلُ البياناتِ الإحصائيةِ الحيويةِ للسّكانِ.
- إصدارُ بطاقةِ الهُويّةِ والرّقمِ الموحدِ.

نشاطٌ:

◊ ما أهميةُ برنامجِ السّجلِ السّكانيِّ وبطاقةِ الهُويّةِ في دولةِ الإماراتِ؟

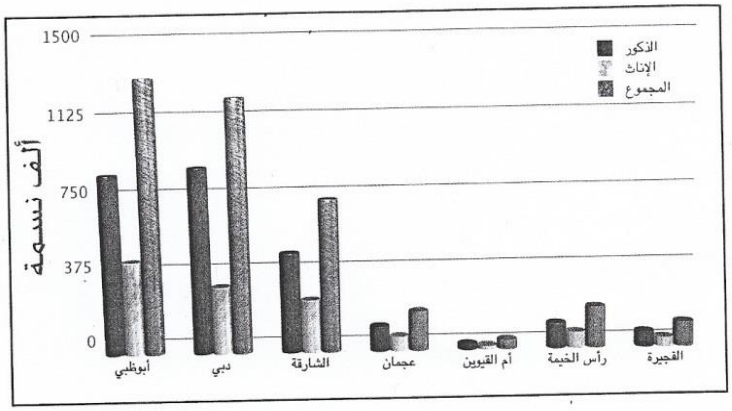
لمعرفة عدد السكان و احتياجاتهم.....

◊ حَدّدْ مسؤوليّتَكَ في المحافظةِ على بطاقةِ هُويّتِكَ.

أبادر في عمل بطاقة الهوية وأعطي معلومات صحيحة ودقيقة.

توزيعُ السّكّان:

لاحظِ الشّكلَ (32)، ثُمَّ استنتج ما يلي:



نشاطٌ:

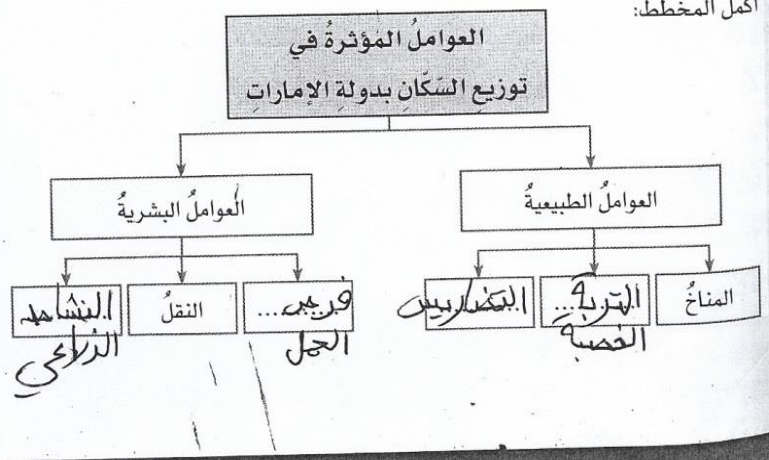
◊ ما أكثرُ إماراتِ الدولةِ سكّانًا حسبَ تعدادِ 2005م ..أبوظبي.....

◊ لماذا تزدادُ نسبةُ الذكورِ في دولةِ الإماراتِ العربيةِ المتحدةِ؟

- ..بسبب الحروب.....
- ..زيادة الهجرة اليها من الذكور.....

العواملُ المؤثرةُ في توزيعِ السّكّانِ في دُولةِ الإماراتِ:

أكملْ المخططَ:



GEOGRAPHY

نشاط:

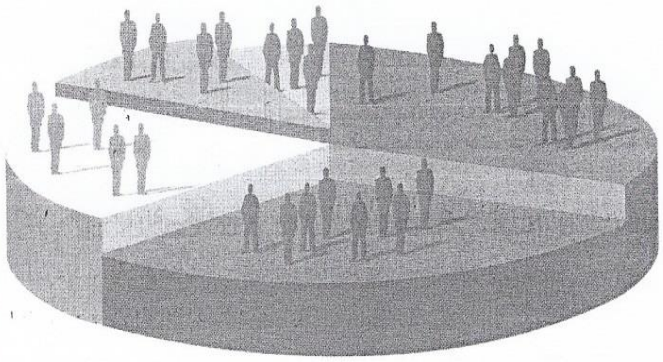
علل ما يأتي:

◊ أسبابَ تركزِّ السّكّان على السواحلِ في دولةِ الإماراتِ .

- اعتدال المناخ .....
- سهولة المواصلات .....

◊ سببَ ندرة السّكّانِ في المناطقِ الجبليةِ في الدولةِ .

- صعوبة المواصلات .....
- قلة الأراضي الزراعية .



Appendix E

Science Multiple Choice Question Test

Name: **10 Marks**

Circle the correct answer A, B, C, or D on the test paper

1. Which of the following is not a stage in digestion?

A. Exertion
B. Egestion
C. Ingestion
D. Digestion

2. Which of the following organs does allow food to pass through after is it swallowed?

A. Stomach
B. Gall bladder
C. Small intestine
D. Esophagus

3. Which of the following organs produce bile?

A. Stomach
B. Gall bladder
C. Pancreas
D. Liver

4. Which of the following is not a good source of protein?

A. Chicken
B. Milk
C. Potatoes
D. Eggs

5. The function of the small intestine is to

A. Crush and grind food
B. Absorb water
C. Absorption of nutrients
D. Produce enzymes

6. The table shows the nutritional given on the labels on two foods A and B.

Nutritional Information	Food A per 100 g	Food B per 100 g
Energy	1629 KJ	394 KJ
Protein	26 g	5.6 g
Carbohydrates	Nil	20.2 g
Fat	18.6 g	0.6 g

Freddie ate 100g of food A and 50g of food B, how much fat did he consume?

A. 19.2g
B. 18.9g
C. 9.9g
D. 19.8

7. A healthy diet needs a balance of many things, meat, fish, cheese are all good sources of?

A. Carbohydrates
B. Fates
C. Fibers
D. Protein

8. Which nutrient cannot be digested?

A. Carbohydrates
B. Fates
C. Fibers
D. Protein

9. What is produced when protein is digested?

A. Sugar
B. Fatty acid
C. Amino Acid
D. Starch

10. When they reach the stomach, mashed-up the food particles mix with:

A. Guava juice
B. Gastric juices
C. Mucus
D. Bile

11. Which organs with the absorption of nutrients'

A. Pancreas, liver, and gall bladder
B. Liver, heart, and spleen
C. Gall bladder, kidneys, and appendix
D. Kidney, liver, and bladder

12. Stores the liver's digestive juices until are needed by

A. The intestine
B. Stomach
C. Gall bladder pancreas
D. Liver

13. Most of the vital activities are performed when we are

A. Awake
B. Eating a lot
C. Sleeping
D. None of the above

14. Along the tube that carries food from the mouth to the stomach

A. Stomach
B. Gall bladder
C. Small intestine
D. Esophagus

15. Scurvy is caused due to the deficiency of…

A. Vitamin B
B. Vitamin D
C. Vitamin A
D. Vitamin C

16. Sunshine and irradiated milk are primary source of ….

A. Vitamin C
B. Vitamin D
C. Vitamin A
D. Vitamin B

17. Citrus fruits and other fresh fruits and vegetables are natural source of…

A. Vitamin B
B. Vitamin D
C. Vitamin A
D. Vitamin C

18. Enzymes are usually…

A. Carbohydrates
B. Fat
C. Protein
D. All of the above

19. ……enzymes break down starch to sugar

A. Protease
B. Amylase
C. Lipase
D. None of the above

20. A balanced diet for one person may be suitable for….

A. Growing children
B. All other persons
C. Pregnant women
D. No other person

Appendix F

Social Studies Multiple Choice Question Test

الاسم..... 10 درجة

ضع دائرة حول الاجابة الصحيحية:-

1- أكثر القارات سكانا في العالم هي:

-أوروبا -أفريقيا - أسيا - أمريكا

2- الوزارة التي تقوم بأحصاء عدد السكان:-

- وزارة التربية و التعليم - وزارة المواصلات - وزارة الاقتصاد و التخطيط - وزارة السكان

3- دراسة السكان يطلق عليها علم:

- البيولوجي – الجيولوجي – الديموجرافي – الفسيولوجي

4- أجري أول تعداد سكاني في الأمارات عام:

- 1968 - 1970 -1967 - A. 1980

5- أكثر أمارات الدولة سكانا:

- دبي -أبوظبي -الشارقة -الفجيرا

6- من العوامل الطبيعية المؤثرة في توزيع السكان في الأمارات:

-المناخ - الحرفة - النقل - الموارد

7- تجري دولة الأمارات تعدادا للسكان في فترات دورية منتظمة كل:

-11 سنة - 8 سنوات - 10 سنوات - 5 سنوات

8- يشمل التعداد السكاني كل من:

-الموطنين فقط - المقيمين فقط -الأثنين - المقيمين ما عدا الأطفال

9- من المقومات الرئيسية لقيام أي دولة:

-الأرض -الحكومة - الشعب - جميع ما سبق

10- يعد المصدر الأول لكل دولة للتعرف الي عدد السكان:

-الأحصائات الحيوية - التعداد السكاني - سجلات الهجرة - سجلات المواليد

11- تفيدنا خطوط الطول في معرفة:

-المناخ -الوقت - العمر - درجة الحرارة فقط

12- من أشهر دوائر العرض علي الكرة الأرضية:

-خط الأستواء - خط السرطان - مدار السرطان - كل ما سبق

13- يعد الركن الأساسي لقيام الدولة:

-الموارد - الأرض - الشعب - جميع ما سبق

14-يدل اللون الأخضر في الخريطة علي:

-الجبال -السهول -البحار -البراكين

15- أقل القارات سكانا:

-أستراليا -أوروبا -أفريقيا - أسيا

16- تفيدنا دوائر العرض في معرفة:

- تعين الموقع - المناخ -الوقت - كل ما سبق

17- هي انتقال السكان من مكان ألي أخر داخل الدولة:

الدافتر السكانية -الأحصائات الحيوية - الهجرة الداخلية - أحصائيات الوفيات

18- يبلغ عدد خطوط الطول :

-340خطا -360 خطا -350 خطا -320 خطا

19- من عناصر الخريطة:

-مقياس الرسم - عنوان الخريطة -الخريطة -جميع ما سبق

20- يدل اللون البني علي:

-الجبال -السهول -البحار -الغابات

The Translation of the Social Studies MCQ Test

Circle the correct answer:

1. The largest content of population:
- Europe - Asia - Africa -America

2. The ministry that counts the number of the population is:
- Ministry of Education - Ministry of Transportation
- Ministry of Economy and Planning - Ministry of Population

3. Studying populations termed as:
- Biology - Geological - demographic - physiology

4. The first census in the UAE was conducted in:
- 1968 - 1970 -1967 - 1980

5. The most populous emirates:
- Dubai -Abu Dhabi - Sharjah -Fujairah

6. Natural factors that influence the distribution of population in the UAE are:
-Weather - Job opportunities - transportation - Resources

7. United Arab Emirates conducts census at regular intervals each:
-11 Years - 8 years - 10 years - 5 years

8. The population in the UAE includes all:
-Citizens only -Residents - Citizens and residents - Residents except children

9. A key ingredient to any country:
-Resources -Government - People - All of the above

10. The first source for each country to identify the number of people:
-Biological Records - Census - Immigration records - Birth records

11. Meridians benefit us to know:
-Weather -Time - Age - Temperature only

12. One of the most popular Latitudes on the globe is:
- Equator - Cancer line - Tropic of Cancer - All of the above

13. The fundamental basis of the establishment of the state is:
- Population - Earth - People - All of the above

14-The green color in the map represents:
-Mountains -Plains -Deserts -Volcanoes

15. The Least populous continent is:
-Australia -Europe -Africa - Asia

16. Latitude helps in determining:

- Location -Time -Climate - All of the above

17. The movement of population from one place to another within a state is called:

-Touring -External immigration - Internal immigration - Mortality statistics

18. The number of meridians is:

-340 -360 -350 -320

19. Elements of the map are:

- Map key - The title of the map -Map key -All of the above

20. Brown color indicates:

Mountains -Plains -Deserts -Volcanoes

Appendix G

Teacher Questionnaire

Teacher's Perceptions & Experiences in CLIL

استبيان المعلمين عن كليل (استخدام اللغة الانجليزية للتدريس المواد العلمية)

Science Teachers

This questionnaire aims to identify CLIL teachers' perspectives towards the impact of CLIL on L2 learning, L1 knowledge, content subject learning in UAE context. CLIL is teaching content subjects (mathematics, science etc.…) by using English as the medium of instruction. The questionnaire will take about 15 minutes to complete. The information gathered will be used to aid in understanding the impact of CLIL in the UAE. Your questionnaire responses will be strictly confidential.

معلمين مادة الدراسات الأجتماعية

ان هذا الاستبيان جزء من بحث يتناول استخدام اللغة الانجليزية للتدريس المواد العلمية مثل الرياضيات والعلوم في مدارس الغد بدولة دولة الإمارات العربية المتحدة. اننا نثمن قبولكم للمشاركة في هذا الاستبيان الذي يتطلب 15 دقيقة لأستكماله. ومع العلم بأن المعلومات التي ستدلون بها في الاستبيان الخاص بك ستكون في موضع سرية تامة.

Part I: Personal Information

Please mark the box with an "X" against the option which represents your answer.

القسم الأول:المعلومات الشخصية

اختار الاجابة المناسبة

Demographic Information		المعلوم ت الديموغرافية	
Gender	□ Female □ Male	أنثي □ ذكر □	النوع
Age Range	□ 21-30 □ 31-40 □ 41-50 □ 51-60		الفئة العمرية
Mother Language (L1)	□Arabic □English □Other, Please specify……..	□اللغة الأنجليزية □أخري…. اللغة العربية □	اللغة الثانية أو الأجنبية
Proficiency of Arabic	□Advanced □Intermediate □Beginner □NA	متقدم □ متوسط □ مبتدأ لا ينطبق□	مستوي الكفاءة في اللغة الثانية

Proficiency of English	□Advanced □Intermediate □Beginner □NA		مستوي الكفاءة في اللغة العربية	متقدم □ متوسط □ مبتدأ□ □لا ينطبق
Teaching Experience			**الخبرة في مجال التدريس**	
Length of Teaching experience (in years)	□ 0-2 □ 3-5 □ 6-9 □ 10 -14 □ 15 or more		مدة الخبرة بالتدريس (بالسنوات)	
Length of Teaching in CLIL programs (in years)	□ 0-2 □ 3-5 □ 6-9 □ 10 -14 □ 15 or more		مدة الخبرة بالتدريس في مدارس الغد (بالسنوات)	
Length of Studying in English	□ 0-2 □ 3-5 □ 6-9 □ 10 -14 □ 15 or more		مدة الدراسة باللغة العربية	
Students' Level Taught	□ 7th □ 8th □ 9th		الصف الدراسي الذي تدرسة	
Subject taught	□ Science □ Math □ English	□ تاريخ □ الدين الأسلامي □	المادة التي تدرس	عربي□ جغرافيا □ التربية الوطنية □

Part 2: Perspectives of CLIL

Please answer the following questions.

1. In your teaching, do you focus on language in teaching scientific content? If yes, how often?

……

……

القسم الثاني:الرؤية الشخصية للمعلمين

الرجاء الإجابة على الأسئلة التالية .

1. من خلال خبرتك في مجال التدريس، هل تقوم بالتركيز على اللغة في التدريس أم المحتوى؟ أذا الأجابة نعم ما النسبة بينهم أثناء التدريس؟

……

……

2. What writing aspects do you focus on? Please rank one as the most important and 3 as the least important?
   - Vocabulary ……
   - Structures ……
   - Organization ……
3. Which skills of the English language are improved by studying science through English? Please tick all applicable.
   - Speaking.....
   - Listening.....
   - Writing.....
   - Reading.....
4. Which components of writing proficiency in English benefit most of applying CLIL? Please rank one as the most important and 3 as the least important?
   - Vocabulary ……
   - Structures ……
   - Organization ……
5. If you speak Arabic, would you use Arabic in the class to explain certain concepts the lesson? Why?

……

……

2. ما هي الجوانب الكتابية التي يتم التركيز عليها في الكتابة باللغة العربية؟ يرجى الترتيب حيث (1) للأهم و (3) للأقل أهمية.
   - المفردات الغوية .....
   - التراكيب اللغوية .....
   - تنظيم الكتابة .....
3. أي مهارات اللغة في اللغة العربية تحسنت من خلال دراسة التربية الوطنية ؟ يرجى وضع علامة على المهارة المناسبة.
   - التكلم .....
   - الأستماع.....
   - الكتابة.....
   - القرأءة .....
4. ما هي هي الجوانب الكتابية باللغة العربية التي أستفادت من تطبيق CLIL ؟ يرجى الترتيب حيث (1) للأهم و (3) للأقل أهمية.
   - المفردات .....
   - التراكيب اللغوية .....
   - تنظيم الكتابة .....
5. إذا كنت تتحدث الأنجليزية ،هل من الممكن ان تستخدام اللغة الأنجليزية في الصف لشرح بعض المفاهيم بالدرس ؟ لماذا؟

.....……

……

6. If you speak Arabic, would you like to teach science in Arabic? Why?

……

……...

7. Do you think students can describe scientific concepts in Arabic, Why?

……

……

……...

8. Do you think students prefer learning content via English rather than Arabic? Why?

……

……....

9. Do you find students understand abstract concepts easily or they would prefer to have an explanation in Arabic (if it is available) and why?

……

……

10. In your experience what are the challenges associated with teaching science concepts in English?

……

…….....

6. هل ترغب في تدريس التاريخ باللغة العربية أو الإنجليزية أو كليهما ؟ لماذا؟(أفترض أنك تجيد الانجليزية)

……

……...

7. هل تعتقد أن الطلاب يستطيعون شرح المفاهيم بالتربية الوطنية باللغة الأنجليزية، لماذا ؟

……

……....……

8. هل تعتقد أن الطلاب يفضلون دراسة المحتوى التعليمي عبر اللغة الإنجليزية بدلا من اللغة العربية؟ لماذا؟

……

.....……

9. هل تعتقد أن الطلاب يستطيعون فهم المعلومات بسهولة أم يحتاجون إلى شرح باللغة الأنجليزية (إذا كان ذلك ممكنا) ، وضح؟

……

……

10. في تجربتك, ما هي التحديات التي يقابلها التلاميذ المرتبطة بتدريس التربية الوطنية باللغة العربية ؟

……

……

11. What do you think are the advantages and disadvantages of teaching science in English?

……
……
……
……

11. ما رأيك هي مزايا وعيوب تدريس التربية الوطنية باللغة العربية؟

……
……
……
……

12. Which aspect of scientific skills do students find difficult to master? Please rank one as the most difficult and 3 as the least difficult?

- Defining ……
- Analyzing ……
- Explaining ……

12. ما هي جوانب المهارات الفكرية التي يجد الطلبة صعوبة في السيطرةعليها بمادة التربية الوطنية ؟ يرجى الترتيب حيث (1) للأهم و (3) للأقل أهمية.

- حفظ و سرد الأحداث .....
- التعليل وتوضيح الأسباب .....
- توضيح الأشياء المترتبة علي الأحداث .....

Appendix H

Analytic Grading Rubric for Student' Writing Proficiency

Adapted from Friedl and Auer (2007)

Grade Label	Mark	Descriptor
Organization	5	Clear overall structure, meaningful paragraphing; very good use of connectives, no editing mistakes, conventions of punctuation observed.
	4	Overall structure mostly clear, good paragraphing, good use of connectives, hardly any editing mistakes, conventions of punctuation mostly observed.
	3	Adequately structured, paragraphing misleading at times, adequate use of connectives; some editing and punctuating errors.
	2	Limited overall structuring, frequent mistakes in paragraphing, limited use of connectives; frequent editing and punctuation errors.
	1	Poor overall structuring, no meaningful paragraphing, poor use of connectives; numerous editing and punctuation errors.
	0	Not enough to evaluate.
Grammar	5	Accurate use of grammar and structures, hardly any errors of agreement, tense, word order, articles, pronouns, etc.; meaning clear, great variety of structures, frequent use of complex structures.
	4	Mostly accurate use of grammar and structures, few errors of agreement etc.; meaning mostly clear; good variety of structures, readiness to use complex structures.
	3	Adequate use of grammar and structures; some errors of agreement etc.; meaning sometimes not clear; adequate variety of structures; some readiness to use complex structures.

	2	Limited use of grammar and structures; frequent errors of agreement etc.; meaning often not clear; limited variety of structures; limited readiness to use complex structures.
	1	Poor use of grammar and structures; numerous errors of agreement etc.; meaning very often not clear; poor variety of structures.
	0	Not enough to evaluate.
Vocabulary	5	Wide range of vocabulary; very good choice of words; accurate form and usage; hardly any spelling mistakes; meaning clear.
	4	Good range of vocabulary; good choice of words; mostly accurate form and usage, few spelling mistakes; meaning mostly clear.
	3	Adequate range of vocabulary and choice of words; some repetitions; some errors of form and usage; some spelling mistakes; meaning sometimes not clear; some translation from mother tongue.
	2	Limited range of vocabulary and choice of words; frequent repetitions; frequent errors of form and usage; frequent spelling mistakes; meaning often not clear; frequent translation from mother tongue.
	1	Poor range of vocabulary and choice of words; highly repetitive; numerous errors of form and usage; numerous spelling mistakes; meaning very often not clear; mainly translation from mother tongue.
	0	Not enough to evaluate.

Appendix I

Holistic Grading Rubric for Students' Content Learning

Adapted from Coetzee-Lachmann (2007)

Grade Label	Mark	Descriptor
Level 5 Complete Content Learning	4	• Task fully achieved content entirely relevant; appropriate format, length and register. • Correct content was included that is related and central to the topic. • Correct and comprehensive descriptive explanation of the topic including the main and sub points or one of the sub-points may be lacking, or may not be expressed.
Level 4 Almost Content Learning	3	• Task almost fully achieved content mostly relevant; mostly appropriate format, length and register. • Correct and adequate content was included that is related and central to the topic. • Correct descriptive explanation of the topic includes, but one of the sub-points may be lacking,
Level 3 Advanced Content Learning	2	• Task adequately achieved some gaps or redundant information, acceptable format, length and register. • Sufficient correct descriptive explanation, yet some content may be included that is related to the topic, but not central to the content requirements of the task. • Sub-points may be lacking, or may be incorrect.
Level 2 Weak Content Learning	1	• Task poorly achieved, major gaps or pointless repetition; inadequate format, length and register. • A limited amount of content may be included that is related to the topic. • Sub-points are not included or incorrect.
Level 1 No Content Learning	0	• Not enough to evaluate • No or incorrect explanation of the topic. • None of the required content is realized.

Vita

Marwa Younes graduated from the University of Ain Shams with a Bachelor of Arts in English Language and Literature in 2004. She worked as English instructor at Berlitz in Egypt. She commenced her graduate studies at the American University of Sharjah (AUS) in 2013, and was awarded an MA TESOL in 2016. She worked as a research assistant in the AUS.