

**Investigating Students' and Instructors' Perceptions of English-Medium
Instruction (EMI) at Tertiary-Level Science Education in UAE**

دراسة لاستطلاع آراء الطلاب و المعلمين حول سياسة اعتماد اللغة الانجليزية كوسط للتعليم
في دراسة العلوم للمستوى الجامعي في الامارات العربية المتحدة

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Abstract

In the absence of research-based policies and conventional practices in science education in the Arab region, the current study aims to shed light on the perceptions of both university students and instructors toward the educational policy of adopting English as the medium of instruction in teaching science courses in the UAE. At College of Health Sciences- University of Sharjah, one hundred students participated in the study through completing a self-assessment questionnaire on the impact of EMI course-taking experiences on their English academic skills. Semi-structured, individual interviews were conducted with ten students and four instructors in order to explore their perceptions of EMI in science classes. A convergent parallel mixed methods approach was employed to analyze quantitative and qualitative data. Using descriptive statistics, independent-samples t-tests, ANOVA, and Pearson correlation, the study revealed that the discrepancies in the students' acknowledgement of the impact of EMI on their learning experiences are due to a number of sociocultural and educational factors. However, most of the students and half of the instructors advocated the English-only science instruction.

Key words: English-medium instruction, science education, content-based instruction, constructivism, sociocultural theory

ملخص

في ظل غياب السياسات المستندة إلى الأبحاث العلمية، واعتماد الممارسات التقليدية في مجال تعليم العلوم في المنطقة العربية، فإن الدراسة الحالية تهدف لتسليط الضوء على المفاهيم المعرفية والوجدانية لدى كل من طلاب الجامعات والمعلمين الجامعيين فيما يتعلق بالسياسة التعليمية التي تعتمد اللغة الإنجليزية منفردةً كوسيط للتعليم في تدريس مواد العلوم في الإمارات العربية المتحدة والتحقق من جدواها. ولقد شارك في الدراسة عدد (100) مائة طالب وطالبة ممن يدرسون في كلية العلوم الصحية بجامعة الشارقة من خلال الإجابة عن أسئلة استبيان التقييم الذاتي الذي يقيس أثر الخبرات الأكاديمية المكتسبة نتيجة لاعتماد اللغة الإنجليزية كوسط للتعليم على مهارات الطلاب الأكاديمية و على مهاراتهم اللغوية الدقيقة. كما أُجري عدد من المقابلات الفردية مع عدد (10) عشرة طلاب و(4) أربعة معلمين لاستطلاع تصوراتهم عن استخدام اللغة الإنجليزية في تدريس العلوم. ولقد انتهجت الدراسة مدخلاً تقاربياً موازياً يعتمد على الأساليب المتنوعة في البيانات الكمية والنوعية. وباستخدام المنهج الوصفي في تحليل الإحصاءات، فقد اعتمدت الدراسة على سحب العينات المستقلة من الاختبارات، واعتماد أسلوب تحليل التباين (ANOVA)، ومعامل ارتباط بيرسون. ولقد أسفرت الدراسة عن بعض النتائج الرئيسية، وعزت الدراسة التناقضات في إفادات الطلاب أثناء المقابلات المتعلقة بأثر استخدام اللغة الإنجليزية في تدريس العلوم إلى عدد من الاسباب الاجتماعية و الدراسية. إلا أن الدراسة قد كشفت أيضاً عن دعم معظم الطلاب ونصف عدد المعلمين لاستخدام اللغة الإنجليزية منفردةً لتدريس العلوم.

العبارات الرئيسية : اللغة الانجليزية كوسط للتعلم ، الدراسة في مجال العلوم،

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Dedication

To the very special people in my life who made this possible...

To my soul mate and loving husband, Ayman, who made all my dreams come true.

To my wonderful parents, Dr. Abd El-Zaher and Dr. Nabilah, and siblings, Dr. Enas and Dr. Abdul Monem, who were always there to pick me up when I fell down.

To my amazing children who fill my life with happiness and who back me up in all the decisions I make.

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CHAPTER ONE: INTRODUCTION

1.1 Overview

Language is universally considered as a rudimentary vehicle of globalization, a term described by Doiz, Lasagabaster and Sierra (ed. 2013a) as a ‘ubiquitous concept’. Globalization is inextricably intertwined with the multifaceted process of academic internationalization which is in turn defined as “the policies and practices undertaken by academic systems and institutions-and even- individuals to cope with the global academic environment” (p. xvii). The galloping phenomena of globalization, internationalization or the “the implementation of specific measures to tackle the global context” (Doiz, Lasagabaster & Sierra 2013b, p. 1407), and modernization have elected the global English language as today’s lingua franca. A lingua franca is a commonly used language for inter-communicational functions among non-native speakers (Canagarajah 2006; Phillipson 2008; Weber 2011; Dahan 2013; Taguchi 2014; Dahan 2014; Chapple 2015).

1.2 English-Medium Instruction (EMI) at Tertiary Level

The social worth of higher education cannot be overlooked; there said to be a significant correlation between higher education, economic development, and family and cultural values. Among the intended benefits of higher education is the professional mobility, fine life quality, and advanced social status and knowledge of world affair (Doyle & Tagg 2014). In view of the fact that globalization and ‘Englishization’ are inseparable in many contexts (Marsh 2006), internationalization is claimed to be corresponding to English-medium higher education (Phillipson 2008). It has been evident in research that the English hegemony diffusion is deeply rooted in successful social, economic, and technological development as well as international communication (Shahzad et al. 2013; Fung & Yip 2014; Vu & Burns 2014; Huang 2015). Educational policy makers, thus, felt the compelling urge to prepare a knowledgeable, English-proficient labour force to compete in the global market (Troudi 2009). Consequently, English has evolved from being a foreign or second language to the language of academic disciplines at the tertiary level (Nadeem 2012; Ebad 2014; Chapple 2015; Moore-Jones 2015; Belhiah & Elhami 2014). As emphasized by Doiz, Lasagabaster and Sierra (2013a), the adoption of university study programmes being executed in a foreign language is one of the most substantial outcomes of internationalization. English has also become an influential means by

which people are to be included or excluded from further studies, social and occupational positions (Hopkins 2014).

1.3 EMI in Science Education

As a result of the supremacy of English that globally sweeps across the higher education landscape, English is seen to have played a crucial role in scientific literacy in its fundamental sense, coaching students on how to synthesize scientific texts, which would in turn pour into its derived sense, being well-founded and knowledgeable in science (Fung & Yip 2014). Many scholars believe that in order to attain scientific literacy, learners should be proficient in the language through which science is delivered. Remarkably, there is a growing consensus that English is the universal language of science and research, a phenomenon that is to be viewed as a by-product of the dominance of English as a global language (Amin 2009; Troudi & Jendli 2011; Fung & Yip 2014). Not to mention the macro-level educational policy that endorses employing a foreign language as the language of academia and science; not only do policy makers intrinsically associate academic success and development with the English language proficiency (Syed 2003; Moore-Jones 2015), but they also assume that inadequate English language proficiency is a negative indicator of the students' performance in science assessment (Maerten-Rivera et al. 2010). In international scientific activities, the use of English is inevitable; scientists intend to use English at a cost of surplus effort and time in order to be recognized for being internationally qualified and to secure their status "in the global scientific knowledge web" (Huang 2005, p. 393).

1.4 UAE Context

As stated by Hopkins (2014), English has not been pervasively used across the United Arab Emirates (UAE) until the oil discovery followed by the dramatic economic, social and infrastructural growth in the late 1950s. Since Emirati nationals make up almost 20% of the population residing in the UAE (Findlow 2006; Dahan 2014), expatriates are being imported from around the world to work in the fields of medicine, construction, education, business, and retail work; this situation has led to the current demographic and linguistic diversity. The drive to communicate has impelled such multilingual and multicultural communities to adopt English as the lingua franca while Arabic, the official language, has become the third most spoken language in the UAE (Hundley 2010, cited in Raddawi & Meslem 2015). Accordingly, English has become deeply ingrained in the educational system of the country (Al-Issa & Dahan 2011; Moore-Jones 2015; Boyle 2011; Dahan 2014). Findlow (2008) emphasizes the

centrality of higher education as a primary element in UAE's pursuit of an international identification with modernism, liberalism, power, and equality; regarding English as the language of science and academia, the UAE government has contributed to endowing the English language with legislative recognition through promoting it as the medium of instruction in UAE higher institutions (Belhiah & Elhami 2014; Al-Bakri 2013; Moore-Jones 2015).

1.5 Statement of the Problem

As put by Alhamami (2015), English is entrenched in a set of cultural, political, economic and even social practices; hence, endorsing an English-medium curriculum in order to guarantee access to a specific professional, cultural or economic status is equivalent to applying profound changes to domestic, religious, and social affiliations. Recently, universities across the Arab Gulf, where English is not the first language, have been progressively offering more English-medium degrees; local students are supposed to be taught solely in English by expatriate teachers as a means of coping with the global status of English (Chuang 2015, p. 63; Roche, Sinha & Denman 2015). Conforming to the fact that English plays a leading role in the global market, the UAE finds no choice other than preparing its workforce to function in the world economy through achieving a proper command of English (Troudi 2009).

English is the medium of instruction in most science subjects in almost all levels of education; such scientific courses are active areas of knowledge in which almost all new discoveries and relevant information are offered in English (Ismail et al. 2011). However, some studies contend that EMI courses might have a negative impact on the overall learning of science content subjects (Chuang 2015). Troudi (2009) questions the effectiveness of EMI in the UAE and the Arab world explaining that students are more eligible to excel in academic subjects when they are taught in their mother tongue as the most familiar language to them. Moreover, learning is believed to be a means by which students engage in learning activities, communicate, and interact in order to exchange knowledge. For sound learning, students should then be well-acquainted with the medium of instruction (Shahzad et al. 2013). Despite the fact that scientific knowledge is broadly offered in English, EMI "presents academic and social challenges in science education at university undergraduate level" as claimed by Alhamami (2015, p. 105).

More to the point, language policy of all academic institutions is often foisted by a governing body of authority which determines learners' academic performance in all content subjects including science. Teachers and learners, the two main stakeholders in this process, are equally

influenced by such policies and practices, yet their opinions and attitudes are “rarely considered, and usually excluded from this vital decision” (Alenezi 2010, p.2; Belhiah & Elhami 2014; Alhamami 2015).

1.6 Purpose of the Study

In the light of what Amin (2009) highlights in his study about the lack of research-based policies and conventional practices in science education in the Arab region, the current study aims to investigate and put a spotlight on the university students’ and instructors’ perceptions of the educational policy of adopting English as the sole medium of instruction in teaching science courses in the UAE. The ongoing debate between content and language learning provokes the urge to explore the effectiveness of EMI on the learners’ academic performance in science subjects (Doiz, Lasagabaster & Sierra 2013a). English as a medium of instruction is at the heart of the teaching-learning process at the university level; therefore, to what extent students would prosper in their academic attainment depends mostly on their English language abilities. This research is meant to delve into the associated problems and constraints caused by EMI.

1.7 Research Questions

The focal objective of this micro-level study is to tackle the following research questions:

1. What are the university students’ perceptions of employing EMI in science education at the tertiary level?
2. What are the university instructors’ perceptions of adopting English as the sole medium of instruction in science education?

1.8 Significance of the Study

In general, the purpose behind considering the issue of EMI is not whether or not to adopt it; it is rather to look into the perceptions of the two key pillars of the educational system, students and instructors, at higher education institutes. Probing into the practical implications of either legitimizing or disregarding such educational practices that might have a say in the efficient fulfillment of policy aims, avoidance of possible alienation of struggling students, and expanding the learners’ academic knowledge is another aim of the present study (Chang, Kim & Lee 2013). Highlighting the learners’ and instructors’ attitudes towards the language of

instruction is meant to fill a gap caused by the discrepancy between the learners' and the instructors' cognition, beliefs and practices regarding the issue of EMI.

1.9 Organization of the Study

The study comprises six chapters; the first chapter is 'Introduction' to the key concepts relevant to the research topic, statement of the problem, purpose, research niche and rationale, and significance of the study in the light of the research questions. The second chapter is the 'Literature Review' that demonstrates the theoretical framework within which the present study is situated as well as the results of key studies on implementing EMI with special regards to those conducted in the context of the UAE. Thirdly, the 'Methodology' chapter that outlines the research design framework with its underlying theories, data collection procedures, context and participants, instruments, sampling techniques, and ethical issues. Data analyses and results are presented in detail in chapter four. Chapter five, 'Discussion', provides explanations of the obtained results, compares and contrasts results from different tools, and rationalizes the relations between different data findings. Chapter six, 'Conclusion', discusses the limitations and implications of the study, and recommendations to future research on EMI.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

This chapter demonstrates the emergence of English as a medium of instruction. It provides a synopsis of the theories underlying EMI and thus guides the present research; it also offers a summary of previously conducted studies on the associated and consequential issues of EMI.

2.1 English-Medium Instruction (EMI) in the Global Eye

A medium of instruction denotes the language through which teaching “non-language academic/ content subjects”, such as science, takes place (Lo & Lo 2013, p. 47). In step with the escalating demand for globalization, English has become the chief foreign language used as a means of instruction at European and worldwide universities (Doiz, Lasagabaster & Sierra 2013a). Teaching English is sweeping across the educational system of many countries where English has no official status but bears symbolic supremacy as a global language that determines intellectual and social ranks in the international arena; the need for internationalization of the educational systems has compelled a number of countries to make English proficiency, which is the measurable performance on a real-world task that integrates a number of sub-skills (Nunan 2012), a national policy target. English-medium education represents academic programs being delivered in English in order to develop students’ English professional expertise, to expand their knowledge of different academic disciplines, and to prepare them to take part in the international community. In this context, English is considered as a tool rather than a subject; mastery of the English language is viewed as a by-product of obtaining academic knowledge in content subjects. EMI is used in many countries as an internationalization strategy in the higher-education context (Taguchi 2014).

2.2 Theoretical Foundation of the Study

The current study embraces “constructivism” as the umbrella theoretical framework in which the “sociocultural” and the “student-centeredness” theories of learning are embedded. Such theories are seen to have inspired much of the explanatory discourses related to participants’ attitudes towards the research topic. In addition, integrating elements of teachers’ beliefs and cognition is believed to have instigated the structure of the study and have revealed details that are meant to decipher the multi-faceted dimension of teachers’ perception of EMI.

2.2.1 Constructivism, Sociocultural, and Student-Centred Learning Theories

Constructivism as a theory is founded on observing and studying how people learn and its major construct lies with active learning in which the teacher engages in an active discourse with the learners to facilitate and regulate their learning. In the constructivist model, the educator assumes a distinctive role of assisting learners in constructing knowledge; students interact actively with the teacher as a mediator whose role is to scaffold students by bringing them closer to the content (Brandon & All 2010). In the same vein, social constructivism proposes the notion that knowledge is a socially and culturally-constructed human product. Social constructivist research draws attention to the motivational and affective dimensions of literacy as well as the role of family members, teachers, and peers in mediating learning and their impact on classroom pedagogical dynamics (Moll, 1990).

In teacher-student interactions, there is a substantial linguistic and conceptual gap that needs to be mediated by the use of tools such as language and cultural practices (Lantolf 2000). Mediation or the teachers' linguistic choices in content-based classrooms is a basic construct of Vygotsky's sociocultural theory. Similarly, Bransford et al. (2000) conclude that teachers should develop awareness of the theories of knowledge that inform the subject matter instruction and knowledge of how learners' cultural convictions and individual characteristics can shape learning. Scaffolding and contingency are two constructs that are deeply rooted in mediation; scaffolding is used by educators in order to depict the aided performance in relation to teacher-student interaction (Stalmeijer 2015). Contingency refers to how an educator gauges the amount, type and quality of assistance needed by learners; the distance between the teacher's and the learner's talk reflects the level of scaffolding being offered within the classroom setting (Gibbons 2003).

Constructivism has been considered as the domineering paradigm to inform science education in schools and colleges (Fensham 2004); constructivist pedagogy in science education fosters student-centeredness through valuing the importance of exploring the learner's existent knowledge, building on it, and clarifying misconceptions that might impede acquisition of target knowledge (Taber 2010). Constructivism is believed to align with various student-centred classroom practices; constructivism describes content as being the means to knowledge rather than the end-product (Weimer & Weimar 2002). As Harris and Cullen (2010) put it, learner-centred paradigms appreciate learners' individual differences and, thus, place learning, not knowledge, as the foundation of decision-making procedures; learners' backgrounds

should be utilized to enlighten the teaching-learning process. In addition, Paulo Freire (2003 cited in Harris & Cullen 2010) puts forward another educational philosophy that promotes student-centred learning and casts light on the concept of ‘conscientization’ or the students’ “awareness of the sociocultural reality of their lives and their ability to take action to transform that reality” (p. 43); ‘conscientization’ is believed to interpret much of the students’ attitudes towards EMI.

2.2.2 Teachers’ Beliefs

In the spirit of constructivism, the claim that there are interconnections between a teacher’s personal and professional lives have provoked interest in investigating the concept of teachers’ beliefs regarding applying EMI principles (van Huizen, van Oers & Wubbels 2005). According to Pajares (1992), teachers’ beliefs, though difficult to investigate, is a prominent psychological dimension of teachers’ education that is believed to dictate their instructional behaviours, planning, and decisions (Haney, Czerniak and Lumpe 1996; Pajares 1992). Kagan (1992) defines beliefs as a stimulating construct of personal knowledge that is shaped by context, content, and personality; contextual restraints including a bureaucratic administration that imposes particular rules related to institutional international ranking, e.g. EMI policy, are substantial contributors to such disparity (Cornbleth 2001). To sum up, any educational system being promoted in a society is inextricably connected to the cultural, political, and social contexts within which it operates (Mansour 2009).

In a similar manner, Borg (2003) uses the term ‘teacher cognition’ to point out teachers’ knowledge, beliefs, and thoughts and their impact on a teacher’s career. A teacher’s capability of making active instructional decisions is shaped to a great extent by their own learning experiences through schooling and professional development. Accordingly, Tsai (2002) disputes that teachers’ beliefs about teaching and learning science as well as the nature of science are rooted in their personal school experience including medium of science instruction.

2.3 Content-Based Instruction (CBI)

For ESL students to thrive in an English academic context, they need to be academically as well as functionally literate; ESL learners are required to utilize English to access, comprehend, and analyze relationships among a wide range of content concepts. ESL students join college to go beyond simply learning English; they need to acquire pronounced expertise in various disciplines which can only be achieved by becoming familiar with the linguistic register of

these content-areas through content-based courses (Kasper 2000). The recent pervasiveness of CBI through a foreign language in tertiary-level classrooms is in response to the status of English as the language of science, the changing demographics of students, and global communication needs (Grabe & Stoller 1997; Crandall & Kaufman 2002; Stoller 2008). As defined by Stoller (2008) “CBI is an umbrella term referring to instructional approaches that make a dual, though not necessarily equal, commitment to language and content-learning objectives” (p. 59). Content-based approaches support purposeful use of language in which language is the medium for content learning, and content is the resource for language learning (Kasper 2000). CBI seems to support synergistic, rather than sequential, mastery of both content and language; this is made possible through adopting an academic environment where students are exposed to meaningful content-related discourse conveyed in the second language. Stryker (1997) asserts that the separation between subject-matter and language instructions reflects “a lack of perceived need for integration of language and content, old teaching habits... and an educational bureaucracy mired in the past” (p. 7).

If well implemented, CBI is claimed to enable college ESL students to develop sophisticated literacy as well as English academic skills which should attend to their needs and prepare them to perform efficiently inside and outside the language classroom; such skills include reading, listening and taking notes, academic writing, and oral communications (Kasper 2000; Crandall & Kaufman 2002; Weimer & Weimar 2002). In content courses, students are supposed to think critically in order to direct questions as well as discuss, synthesize and evaluate information. In line with Vygotsky’s sociocultural approach to second language acquisition, communicative competence is naturally acquired while learning about specific subjects, e.g. science, as students need to negotiate language and content forms with their peers or with the teacher (Stryker 1997); teacher-student interactions in a content-based classroom enhance learners’ language proficiency because such interactions offer opportunities for developing new academic register being delivered in the second language (Gibbons 2003).

According to Babbitt and Mlynarczyk (2000), there are three approaches to CBI, namely theme-based courses, sheltered courses, and adjunct courses. While theme-based courses or multidisciplinary content-based ESL courses (Kasper 2000) are designed around content from other disciplines being delivered by language experts, sheltered courses are content courses that incorporate significant language skills being taught by content specialists; in both classes, ESL students only are included. On the other hand, adjunct courses associate language with a content course and might comprise non-ESL students. These three approaches correspond to

those suggested by Crandall and Tucker (1990, cited in Stryker 1997), namely ‘integrated language/content instruction’ taught by a language tutor, ‘integrated instruction’ delivered by a content teacher, and ‘parallel courses’ (p. 18). In the context of the current research, the implemented EMI is seen to be based in the sheltered-courses approach as it is conveyed by a science specialist, yet lacks the basic aspects of incorporating portions of language skills and being coordinated with language instructors.

2.3.1 Nature of Science and Linguistic-Scientific Literacy

The nature of science refers to the epistemology of science or science as an approach to gaining the knowledge, as well as the values and beliefs intrinsic to developing scientific knowledge (Abd-El-Khalick, Bell & Lederman 1998). In turn, science can be defined as ‘argument’ for its inimitable patterns of making hypotheses about problems and then establishing connections through argumentation. Science is distinguished from other epistemologies through employing experiential standards, rational justifications, sound arguments, and plausible analysis and reasoning (Kessier & Quinn 1987; Yore, Bisanz & Hand 2003; Yore 2012).

Scientific discourse implies utilizing distinct linguistic features that differ from everyday language use; it employs a variety of genres, each of which has certain linguistic aspects that contribute to communicating scientific knowledge and reasoning, e.g. exploration, decomposition and classification, explanation, drawing analogies, analysis, making inferences, and reporting. Similarly, student-student as well as teacher-student interactions in a science classroom demand practicing a range of language functions such as making observations, requesting, seeking clarifications, informing, and concluding. Besides the abstraction, formality, and precision of the nature of scientific register, scientists also use interpretive, investigative, and figurative language features while constructing and communicating scientific knowledge (Amin 2009). Therefore, a conceptual understanding of science goes beyond the mere acquisition of a body of science facts; it has to do with practicing knowledge production through using the appropriate linguistic aspects relevant to experimentation, presentation, negotiation of scientific interpretations (Yore, Bisanz & Hand 2003; Goldberg, Welsh & Enyedy 2009). Generally speaking, science provides ESL learners with the necessary input for developing scientific and linguistic literacy (Kessier & Quinn 1987; Lee 2005).

While linguistic literacy is defined as “the ability to consciously access one’s own linguistic knowledge and to view language from various perspectives” (Ravid & Tolchinsky 2002, p.

418), scientific literacy implies one's functional understanding of the theories, principles, concepts and processes of science and one's apprehension of the intricate relationship between science and culture (Abd-El-Khalick, Bell & Lederman 1998; DeBoer 2000). Norris and Phillips (2003) founded a persuasive claim about scientific literacy that is based on analysis of both language and nature of science; scientific literacy is represented in two senses: the fundamental sense that revolves around being a conventional scientifically-literate learner who possesses the basic linguistic abilities of speaking, reading, and writing science; and the derived sense that involves the learner's knowledge of science curriculum.

Scientific knowledge is co-constructed during social interactions that take place through language; language is a mediating tool and a semantic system for constructing scientific concepts and for developing language (Torres-Gúzman & Howes 2009). From a sociocultural perspective, science forms an optimal source of comprehensible language input, positive affective contexts of interest, and occasions for learners to engage in authentic communicative interactions (Reveles 2009). Thinking and reasoning processes relevant to science learning enhance the concurrent development of scientific concepts and language (Kessier & Quinn 1987; Stevens et al. 2009). Owing to the fact that scientific knowledge is communicated through language, students need to be linguistically and scientifically literate (Webb 2010). From a wider perspective, speaking, listening, writing, and reading skills are highly valued within the scientific community as students construct new understandings of scientific concepts, access information, and inform people about science (Yore, Bisanz & Hand 2003). Additionally, ESL students who do not possess the basic linguistic elements or unacquainted with their use are expected to face difficulties in reasoning scientific concepts in EMI contexts (Kessier & Quinn 1987).

2.3.2 Science Education and EMI

The growing diversity of the student-population in today's classrooms places challenges for teachers in terms of enabling students of diversified languages and cultures to gain academic content-knowledge. While literacy development is demanding for all students, the challenge is immense for those learners who need to develop language proficiency alongside academic knowledge. Thus, teaching practices that support content learning and promote English language proficiency simultaneously are endorsed (Lee & Fradd 2001). It is widely agreed by researchers that science pedagogy and English language development do not have to be treated as discrete forms of instruction; science students are not obliged to wait till they become

proficient English users before they gain knowledge of complex scientific content. As a matter of fact, science is believed to afford a highly communicative learning environment of hands-on activities that reduces the language burden for students. Besides, integration of science and English pedagogy can foster higher-order thinking (Zwiep & Straits 2013).

On the one hand, science students usually lag behind when they are not familiar with the academic register of science; the instructional discourse in science pedagogy is grounded in rhetorical and grammatical features of the English language that are not well-known to students. Science teachers, on the other hand, are not inclined to explain correlations between the language patterns and genres and the meaning of scientific concepts they represent. In order for students to internalize the scientific register they get exposed to in teacher talk, science teachers are required to mediate between the learners' present linguistic repertoire and science discourse. ESL learners who learn English-medium science need to be scaffolded as they become bilinguals in two senses: they acquire a second language, and they learn to use the scientific language which differs from everyday language (Huang 2005; Amin 2009). As a part of the scaffolding strategy, teachers need to combine language and science learning objectives so as to meet the literacy needs of acquiring the linguistic-scientific register by diverse learners, a notion that endows special prominence to content-based learning approaches (CBI) (Stevens et al. 2009; Torres-Gúzman & Howes 2009).

Success in science is said to be an influential gatekeeper to potential academic attainment (Ash, Tellez & Crain 2009). Science education in the Arab world, including UAE, is carried out in a complex multilingual context with the dominance of English-medium instruction in the science domain. The target population of any change in science educational policies is mainly English language learners (Maerten-Rivera et al. 2010); according to Boujaoude & Dagher (2009), the quality of science curricula and teaching methods are the two main issues that face ESL science students in the Arab region.

2.4 Key Studies on EMI Worldwide

Being a very lucrative market, international education has been promoted in many universities worldwide through increasingly offering English-medium courses; English as a medium of instruction has been playing an eminent role as a means by which governments pursue identification with international programs and thus increase the number of international students, facilitate staff and student mobility, and rise on the global ranking grid (Kirkpatrick 2014). World ranking or the institutional world-class position that depends on the number of

foreign students and faculty as well as the number of scholarly-cited publications has become an imperative (Salomone 2015). English, as a symbol of power, has prevailed as the language of global communication and education; mastering the English language should pave the students' way for educational attainment and career progression and, therefore, serve the governments' strategic plans of accomplishing educational modernization, economic globalization, and technological innovation (Nunan 2003).

2.4.1 Asian, African and European Contexts

Numerous studies probed into the issue of implementing EMI as an educational policy all over the world. In Hong Kong, a study conducted by Evans and Morrison (2011) examined the challenges caused by EMI from university students' perspective; the results revealed that Chinese students' primary goal was developing their English language skills in order to secure their places in the professional English-oriented context despite the language-related problems they experienced due to the transition to EMI. Lei and Hu (2014) investigated the influence of EMI on Chinese students' English proficiency level as well as English-learning and English-use anxiety. Adopting EMI was expected to improve students' English proficiency, facilitate their access to advanced knowledge available only in English, and equip the students with whatever it takes to place them on the global society educational and academic map; Lei and Hu found that the English-medium program had almost no positive impact on the students' English proficiency. Moreover, EMI was seen to have increased the study burden placed on the students. However, the students held positive attitudes towards EMI which was interpreted by researchers as related to the students' educational background and their individual abilities. University students' perceptions were highlighted in Taiwan by Chang (2010), Yeh (2014) and Huang (2015); most of the students in these studies perceived EMI policy as valuable for enhancing both English language skills and content-knowledge as well as augmenting students' employability and chances for further academic studies; such findings are found to agree with those of Ismail et al. (2011) after investigating Malaysian university students' inclination towards EMI in science education. Students imputed learning issues to their own inadequate English competency level which in turn raised their affective obstacles and to their professors' lack of adequate English. An additional sociocultural dimension was added to the feasibility of implementing EMI through the study of Shahzad et al. (2013) on Pakistani students; English-medium schooling background, convenient teaching and learning strategies, and encouraging home environment are among the significant contextual factors that can motivate students to progress academically. In like manner, Kagwesage's (2012) study on Rwandan students' views

of EMI policy revealed that university students were quite aware of the new demand for globalization so that they showed great willingness to work hard on refining their English language abilities. However, apart from comprehension problems caused by their low proficiency level, students mentioned other teacher-related factors that impeded their understanding of content instructions, e.g. speed and pronunciation.

Lecturers' perspective on EMI is addressed by Başıbek et al. (2014) in Turkey. Turkish lecturers' attitudes disclosed a degree of disparity as they were highly motivated to implement EMI rather than the Turkish medium of instruction for its widely perceived benefits of promoting learners' academic and social future lives; however, they were realistic about their students' ability to get deeper understanding of content knowledge through mother tongue. The study had implications not only on the students' readiness for EMI but also the teachers' preparedness to adopt a foreign language as the sole medium of instruction.

Another study by Guarda and Helm (2016) concerning lecturers' teaching practices after shifting to partial EMI was done in Italy; this study managed to establish a link between language mastery and methodological approaches on one hand, and challenges posed to both students and instructors on the other hand. Instructional language shift to a language other than mother tongue at advanced levels is said to have affected the instructors' pedagogical practices and teaching skills; thus, a call for an equivalent shift in teaching methodology that focuses on student centeredness and deals with anticipated cognitive problems is perceived essential. The impact of EMI on students' medical register and competence was explored by Hoekje (2011) and Olmstead-Wang (2011).

2.4.2 Arab World Context

Language barriers in medical education were tackled from students' and staff members' perspectives by Sabbour, Dewedar and Kandil (2010); the study results indicated that while most of the students did not regard EMI as an impediment to learning, almost half of them resorted to translating medical information to Arabic. Moreover, there was an overall rejection to the idea of Arabization of medical education in Egypt. Conversely, in Saudi Arabia, Alhamami (2015) conducted a research study on science Saudi instructors who admitted the negative influence of EMI which posed academic and social challenges on science undergraduate students; they also disclosed their preference for using Arabic as the pedagogical medium which is against the institutional policy. According to Abdel-Jawad and Abu Radwan

(2011), Omani students acknowledged the global role of English in education, yet they had cognitive and affective concerns regarding learning subject matter in a foreign language. Similar studies were administered in the UAE so as to explore stances held by both university students and lecturers towards EMI; in Findlow's (2006) piloted study, half of the participants preferred EMI over AMI for academic career goals. Troudi and Jendli (2011) investigated Emirati university students' perspectives on EMI policy and the results were relatively informative as it added contextual and sociocultural elements to the students' language preference. The nature of previous schooling experience, learners' English competence, parental background and beliefs about English-medium instruction determined the participants' attitudes. Emirati students demonstrated a realistic view of the debate on instructional language of content subjects; they associated English with employability and Arabic with religion, identity and culture discourses. Belhiah and Elhami's (2014) participants made it clear that EMI had considerable positive effects on their linguistic skills which would grant them a wider employment pool; nevertheless, the disadvantages of EMI for students with low language proficiency and poor command of academic knowledge as a result of applying such policy were asserted by both parties.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

In order to answer the previously stated research questions having obtained trustworthy and reliable data, the present study embraces a convergent parallel mixed methods approach, in which the researcher gathers qualitative and quantitative data concurrently or with a slight time lapse, analyzes them independently, and then compares the results to trace the incidence of any contradictions or incongruence to be further investigated through the study. The core assumption of the convergent parallel mixed methods approach is that qualitative data provide a different type of information than quantitative data, yet both yield comparable results (Creswell 2009; Mertens 2010; Creswell 2014); based on both types of data, researchers make inferences and integrate conclusions to make what Teddlie & Tashakkori (2008) call ‘a meta-inference’. Quantitative data requisite for responding to the first research question are gathered through a group-administered, cross-sectional or one-shot questionnaire among university students, while the qualitative data required for addressing the second research question are collected through personal or one-to-one interviews with volunteer students and instructors.

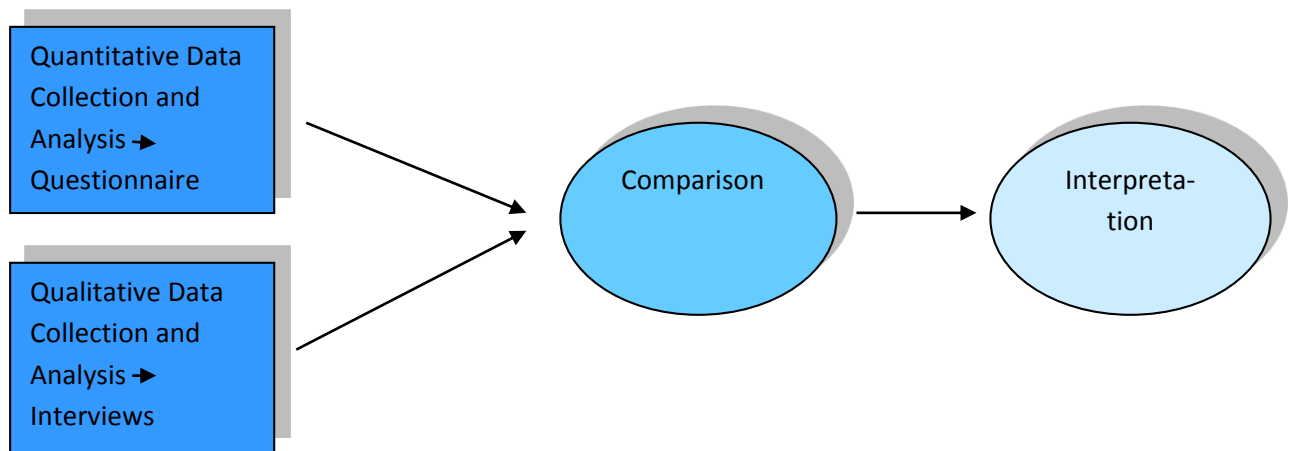


Figure 1: The Convergent Parallel Mixed Methods

(Adapted from Creswell 2014, p. 220)

On the whole, a mixed methods approach bears a more insightful and comprehensive conception of the research problem than does a single method (Johnson & Onwuegbuzie 2004). Relying on the existent literature, it is believed that mixed methods are the most advocated as the studies that employ only one method are more susceptible to errors related to that specific method than studies that use various methods, in which different types of data validate each

other (Ivankova & Creswell 2009) or what Jick (1979) calls ‘convergent validation’; Jick explains that deploying more than one method should enhance the validation of the research as the convergence of both methods would assert that the results are “not a methodological artifact [*sic*]” (p. 602). In addition, mixed methods approach is of paramount significance in science research in its way to improve the scientific power and quality of data (Klassen et al. 2012).

3.2 Philosophical Foundation of the Study

The study is seen to be conceptualized from pragmatism as a worldview that offers an excellent philosophical associate for mixed methods research (Hoshmand 2003; Johnson & Onwuegbuzie 2004; Lodico, Spaulding & Voegtle 2010). Working from a pragmatist paradigm, researchers need to use pluralistic approaches to obtain knowledge about the problem under consideration. Pragmatist researchers take a miscellaneous approach to selecting research methods and conducting research; they are concerned with how to study particular phenomena through utilizing various methods, diverse worldviews and assumptions, as well as several means of data collection and analysis, and thus answering significant research questions (Creswell 2014, p. 11). Moreover, Johnson & Onwuegbuzie (2004) argue that “epistemological and paradigmatic ecumenicalism is within reach in the research paradigm of mixed methods research” (p.15).

3.3 Sampling Procedure

For the present research, a concurrent mixed methods sampling procedure that “involves the selection of units of analysis...through the simultaneous use of both probability and purposive sampling” is used (Teddlie & Yu 2007, p. 89). Following this method, probability sampling techniques are employed to obtain quantitative data through administering the students’ questionnaire (N= 100), while purposive sampling techniques are used to obtain qualitative data through conducting students’ interviews (N= 10) and instructors’ interviews (N=4). Typically, the researcher seeks a sample that would propose a ‘thick description’ of the research problem for the QUAL strand, and a representative sample of the entire population of both students and university instructors for the QUAN strand; thus, by using mixed methods, the researcher aspires to find a sample that can offer significant information about the impact of EMI. Using mixed method sampling techniques is highly valued for focusing on both the depth and breadth of the information, addressing purposes relevant to the research questions, and aiming for generalizability, transferability, and external validity (Creswell et al 2003; Teddlie

& Yu 2007; Teddlie & Tashakkori 2008; Ivankova & Creswell 2009; Mertens 2010; Graff 2012).

3.4 Context and Participants

In the light of the concept that qualitative researchers opt to amass data at the location where participants confront the investigated issue (Creswell 2014), official permission to access the research site, College of Health Sciences (CHS) located in the campus of Medical and Health Sciences Colleges at the University of Sharjah, is obtained from the gatekeepers (Appendix 1). Gatekeepers are people with official roles that control access to people and places at the target site (Lodico, Spaulding & Voegtle 2010). The target population is science students from seven different departments: Clinical Nutrition and Dietetics, Environmental Health Sciences, Health Services Administration, Medical Diagnostic Imaging, Medical Laboratory Sciences, Nursing, and Physiotherapy. In addition, Instructors working at the same departments form the population required for collecting qualitative data. Arab and non-Arab students and instructors are included in the sample population to add to the representativeness of the data. The sample also comprises freshman, sophomore, junior, and senior students.

3.5 Data Collection Methods

Instrumentation or the research regulating factor is the process of selecting and designing the research instruments as well as considering the underlying conditions of administering those instruments. The tools a researcher utilizes in observing, measuring and making sense of the surrounding world determine his/her productivity (Fraenkel, Wallen & Hyun 2012); the study in hand relies on more than one tool for data collection.

3.5.1 Students' Questionnaire

Questionnaires, defined as written instruments that encompass sets of questions or statements to which respondents need to react, have become the most commonly applied systematic instrument in scientific research (Dörnyei 2003). Questionnaires investigate trends and attitudes of a specific population with numeric descriptions which is easy to score (McMillan & Schumacher 2010); mustering data via questionnaires is advantageous in terms of time and effort. Questionnaires can be administered to a large group of people and can collect a colossal amount of information in a short period of time (Dörnyei 2003). Moreover, questionnaire results can be generalized from a sample to the whole population (Fowler 2009; Creswell

2014). Among the strengths of using questionnaires is that they afford potential anonymity that many other research techniques lack (Munn & Drever 2004).

The students' questionnaire (Appendix 2) is a modified instrument drawn from the work of Belhiah and Elhami (2014); as mentioned earlier, it is a group-administered, cross-sectional questionnaire that gathers information from a predetermined population at one point of time with a possible interval that extends from one day to a few weeks (Fraenkel, Wallen & Hyun 2012). The questionnaire is designed to yield demographic data, behavioural data that covers the respondents' habits of using the English language, and attitudinal information about the participants' opinions, attitudes, beliefs, and interests regarding EMI. The questionnaire is divided into 6 thematic sections; the first section is demographics to collect relevant information about students. The second cluster is to indicate the students' perceptions of using English in academic writing, while the third part collects data about students' attitudes towards reading English academic and non-academic texts. The fourth section explores the respondents' attitudes towards carrying out oral interactions and in-class activities in English; the fifth cluster revolves around the difficulties students might find in attempting examination and assessment questions. The last group of items are designed to tackle the impact of instructors' English proficiency level on the students' understanding of content.

The four-page long questionnaire contains 41 questions of both close-ended (N=34) and open-ended (N=7) questions which took the participants 15-20 minutes to complete, a length that is recommended by Dörnyei (2003). Most of the closed questions, recommended for their uncomplicated coding and tabulation that eliminates 'rater subjectivity', are based on a 4 Likert rating scale which entails the students to "make an evaluative judgement of the target by marking one of a series of categories" (Dörnyei 2003, p. 35-36; Fraenkel, Wallen & Hyun 2012). Multiple-choice items, another sub-category of closed questions, are also used as they are straightforward as well as reader-friendly. Despite the merits of mixed questionnaires for providing participants with more space to better express their viewpoints than do fully quantitative questionnaires (Johnson & Christensen 2012), fewer open-ended questions were added to the students' questionnaire for the disadvantages mentioned by Reja et al. (2003) "the need for extensive coding and larger item non-response" (p. 159). The questionnaire items, as previously mentioned, are grouped and sequenced thematically so as to avoid any misinterpretation on the part of the respondents that might be caused by the context of a question.

The cover page includes the title, the name of the principal investigator, general instructions of what the study is about, the purpose of the study, the sponsoring organization, and a confidentiality statement, such information are considered 'sufficient' to enable the researcher to get an 'informed consent' from the students (Peterson 2000); the layout and overall format are in line with what is recommended by Dörnyei (2003), Lodico, Spaulding & Voegtle (2010), and Fraenkel, Wallen and Hyun (2012). Ethical issues such as promising that no harm is to come to the respondents as a consequence of taking part in the research, and preserving the respondents' rights to privacy in refusing to reply to questions and deciding to whom and how the data can be made accessible are properly fulfilled (Dörnyei 2003).

3.5.2 Students' Interviews

Semi-structured interviews, defined by Kvale (2008) as a purposeful everyday conversation that involves a certain technique, have become the commonest method of collecting qualitative data in many fields in the scientific landscape (Brinkmann 2013). Such a pivotal tool is utilized to understand different daily themes from the interviewees' perspectives while obtaining the participants' descriptions and interpretation of the target phenomena (Kvale & Brinkmann 2015). In general, interviews provide high quality data and adaptability is one of their major strengths (Drever 2003).

Individual, face-to-face semi-structured interviews are conducted with 10 science students, 2 male and 8 female students, among which are 4 non-Arabs and 6 Arabs. Individual interviews are considered advantageous in such contexts as they allow the interviewer to lead the discussion easily in the desired direction and create an atmosphere of discretion that helps respondents discuss their personal view openly. Face-to-face interviews are also considered more convenient in terms of observing non-verbal responses, e.g. body language, tone, hesitation and facial expressions (Bell 2005). According to Ritchie, Lewis and Elam (2003), qualitative research requires much smaller samples than does quantitative research; more data do not essentially mean more information because all is needed for a code or a piece of data is one occurrence to become part of the analysis framework. There is a general consensus that in qualitative research, sample size should follow the saturation theory in which collecting more data does not provide new cognizance of the topic under investigation (Mason & Brookes 2010; Lodico, Spaulding & Voegtle 2010). Thus, the researcher of the current study conducted 10 qualitative interviews before data saturation was achieved.

The purpose of employing semi-structured interviews in this research study is to access the students' experiences and to delve into their perceptions of EMI. The interview guide (Appendix 3) approach is followed in conducting the students' interviews where an outline form of the questions to be discussed is carefully planned prior to the interviews; since unexpected issues might be raised in the course of the interview, interview guides give room for flexibility on the part of the interviewer regarding the wording and sequence of questions. The outline increases the unity of the gathered data, promotes systematic data collection, and helps to anticipate and close logical gaps in data and thus adds to the reliability of the tool (Lodico, Spaulding & Voegtle 2010; Mertens 2010; Fraenkel, Wallen & Hyun 2012). As recommended for the interview protocol, the interviewer starts by establishing rapport with the participants through introducing herself and the purpose of the interview, eliciting the required demographic information, and stating a commitment to confidentiality; a few general open-ended questions were directed "to allow the respondent's concerns and interests to surface" (Mertens 2010, p. 371). Accordingly, follow up questions or 'probes' are asked to help clarify or elaborate and develop responses (Drever 2003).

To avoid the predicament Fraenkel, Wallen and Hyun (2012) mention that "all will be to no avail if the interviewer does not capture what the interviewee actually says" (p. 457) and according to what Creswell (2009; 2014) suggests as a part of the interview protocol of recording answers, a tape recorder is used as a method of exact recording. Tape-recording prevails over other traditional ways of taking notes as it does not alter or slowly record responses; however, it cannot replace those conventional ways entirely. Therefore, additional notes are taken during the interviews to keep track of the non-verbal responses (McMillan & Schumacher 2010). To maintain the credibility of the qualitative data, interviewees were made aware of the research topic, assured of the confidentiality of the disclosed data, ensured they were protected from vulnerability through the misuse of such personal data, and advised about their responsibilities to answer truthfully and of their right to refuse to answer questions prior to conducting the interviews; moreover, recorded oral consent to the use of the students' identities were obtained from interviewees (Bell 2005; Fraenkel, Wallen & Hyun 2012).

3.5.3 Instructors' Interviews

Similarly, the researcher conducted 4 semi-structured, face-to-face interviews with four instructors, who all work for the College of Health Sciences at the University of Sharjah, in order to check the consistency or discrepancy of their beliefs and the institutional policy of

adopting EMI. Three of the four lecturers are Arabs, 2 females and one male, while the fourth is a female non-Arab participant. All four interviews were tape-recorded to ensure accuracy of the qualitative data; an interview guide (Appendix 4) was used to help guide and probe into the participants' responses and to ensure the systematic and sustainable data collection. Recorded oral informed consent was obtained from each of the instructors who did not mind using their authentic names for the research purposes.

3.6 Pilot Study and Pre-Testing

Since it is hard to presume how questions might be interpreted in several ways by different respondents, a small-scale piloting that “involves getting a few individuals to work through the questionnaire in your presence and then talk it over with you” is crucial to figure out factors that can decrease the response rate on the part of the respondents (Munn & Drever 2004, p. 33). Pre-testing a questionnaire helps the researcher to “debug the questions” of any imprecision and ambiguity in the wording, terminology and instructions, to make sure questions are comprehensible for all participants, and to check whether questions are placed in the best order (Bell 2005).

A pilot study, the administration of the questionnaire to a small sample that resembles the potential population (Mertens 2010), is conducted on a sample of 25 students in order for the researcher to determine the questionnaire's validity and reliability. The reliability or dependability of a scale is equivalent to its uniformity in measuring what it is designed to measure. The internal consistency of a scale item is evaluated through coefficient alpha ‘Cronbach’ (Peterson 2000). Cronbach's Alpha reliability coefficient ranges from 0 to 1; the closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the scale items. George and Mallery (2003) present the following rules of thumb: “ $\alpha > .9$ – Excellent, $\alpha > .8$ – Good, $\alpha > .7$ – Acceptable, $\alpha > .6$ – Questionable, $\alpha > .5$ – Poor, and $\alpha < .5$ – Unacceptable” (p. 231). The initial reliability level of the students' questionnaire measured by SPSS software showed a strong one with Cronbach's Alpha = 0.913 on 30 items; however, four items were eliminated to increase the reliability level. Consequently, the reliability level of the questionnaire measured an excellent one with Cronbach's Alpha = 0.947 on 26 items (Appendix 5).

Another evaluation method of pre-testing the questionnaire through asking experts to review the questions and identify any problems or breakdowns is followed to spot any linguistic or classification problems with the survey that can be rectified prior to the administration phase

(Olson 2010). Three university professors in the fields of applied linguistics and science revised the questionnaire, a number which is seen as appropriate by Holbrook et al. (2007); in the light of the three expert reviewers' feedback, some classification and linguistic amendments, e.g. 'content subjects' were replaced by 'courses'...etc, were done which added to the questionnaire's content validity (Mertens 2010). The "Commensurability mixing validity", a sub-category of internal validity, applies to the students' questionnaire in which both close-ended and open-ended questions are included to allow the researcher to switch between qualitative and quantitative data tackling the participants' attitudes towards EMI (Johnson & Christensen 2012, p. 274). Ecological validity is also believed to apply to the present study as participants were visited by the researcher at their natural environment, classrooms, rather than a setting created by the investigator which promotes generalization across diverse settings (Johnson & Christensen 2012; Schmuckler 2001). Triangulation, which refers to using multiple sources of data and a variety of data collection methods to get an overall picture of what you are investigating, is believed to add to the internal validity of interpretations as well as the confirmability of the research instruments (Shenton 2004; Ivankova & Creswell 2009; Creswell 2014).

3.7 Ethical Considerations

It is imperative for a researcher to take research ethics into consideration; putting in place safeguards to protect participants' rights is a principal issue in the context of educational research. Informed consent from partakers and gatekeepers of the research site were attained prior to the study and before data collection, analysis, and dissemination. Contributors to this research were advised of the research purposes and data privacy was respected and secured through positive measures (Burgess 2005). To underline the participants' comprehension of the voluntary nature of the research study, a flexible withdrawal guarantee was contracted for participants in advance in order to keep the potential intrusiveness of the researcher to a minimum. The researcher acknowledged and appreciated the cultural and traditional aspects of the United Arab Emirates society.

As emphasized by Howe and Moses (1999), the issue of research misconduct refers to the way participants are treated as well as the deceitful and falsified practices in conducting research and reporting findings. Scholars, typically, seek new knowledge as they research for the purpose of improving educational policies and practices; thus, reliability and accountability "are central to the research enterprise" (p. 26). Research misconduct is referred to as the

intentional fabrication of research or plagiarism as well as the falsification and misinterpretation of the study results to meet the researcher's needs (Creswell 2014); researchers are to be considered morally responsible for such misconduct if the deception is intrinsic to the research. Aligned with Howe and Moses's (1999) proposed theory is what Rallis and Rossman (2009) call the 'Consequentialist' theory (p. 270) in which "ends justify means" compared to the 'Nonconsequentialist' ethic avowing that "if telling a lie is wrong, it is wrong in all possible cases" (p. 271).

According to Bell (2005), deception can go as far as misleading participants regarding the purpose of the study, and infringement of privacy, safety, anonymity, and confidentiality. Thus, to resolve such ethical dilemmas, "the ethic of individual rights and responsibilities" that promotes the absolute value of all human beings and the respect they deserve to be given, should be emphasized at every point of the research (Rallis and Rossman 2009, p. 271). Creswell (2014) asserts the significance of anticipating potential ethical dilemmas and resolving them as they emerge; to avoid such ethical dilemmas, the researcher in the current study was clear about the nature of the study on which she obtained consent from participants.

Chapter Four: Results and Data Analysis

In this chapter, both quantitative and qualitative data collected via questionnaire and interviews are analyzed, synthesized and thematically presented for the purpose of answering research questions regarding students' and teachers' perceptions of EMI in science instructions.

4.1 Demographic Information

Table (1) shows the participants' demographic and background information which constitutes the first section of the questionnaire.

Gender	Male	14%
	Female	86%
Nationality	Arab	92%
	Non-Arab	8%
Year	Freshman	36%
	Sophomore	3%
	Junior	58%
	Senior	3%
School	Private	63%
	Public	37%
Parents' Employment	Only Father/Mother	62%
	Both Parents	29%
	None	9%
Home Spoken Language	Only English	2%
	Only Mother Tongue	57%
	Both Languages	41%
Out-of-class Spoken Language	Only English	5%
	Only Mother Tongue	27%
	Both Languages	68%

Table 1: Students' Demographic Profiles

4.2 Basic Language Skills

The basic productive and receptive language skills and sub-skills are seen to be eminent indicators of language literacy; this section is meant to highlight the students' self-perception of their own English language skills with special emphasis on the scientific content. The first

two sections discuss the participants' productive skills, writing and speaking, followed by the receptive skills, reading and listening.

4.2.1 Writing Skills

This section shows how respondents self-perceive their productive skills of academic writing based on EMI; 44 out of 100 students report having no difficulties taking notes in English, 42% reveal encountering no difficulties in doing their assignments in the foreign language and 45% acknowledge being at ease while writing content-based English reports. Collectively, a majority of 81.3% of the whole sample have positive tendency towards writing skills parameters compared to 18.7% who disagree with the questionnaire statement (Table 2).

Writing	Statistics N = 100 (%)				M	SD
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)		
I find no difficulty taking notes in English	3 (3.00)	14 (14.00)	44 (44.00)	39 (39.00)	1.81	.787
I find no difficulty doing assignments in English	4 (4.00)	13 (13.00)	42 (42.00)	41 (41.00)	1.80	.817
I find no difficulty writing reports in English	4 (4.00)	18 (18.00)	45 (45.00)	33 (33.000)	1.93	.820
Collective "Writing" Construct	11 (3.67)	45 (15.00)	131 (43.67)	113 (37.70)	1.85	.748

Table 2: Academic Writing Skills- Descriptive Analysis

Correlation analysis determines a significant relation between the results of writing skill analysis and students' nationality; the Arab group has higher mean score than non-Arab group, $M = 1.91$ and $M = 1.13$, respectively; that is, Arab group is less likely to agree with the writing construct items; the small magnitudes of the p-values of .001 and lower indicate the strong evidence of the significance of results (Appendix 6).

Heba, a non-Arab and a third-year student, perceives no improvement whatsoever in her academic English skills as the instructors do not assign students much written work to do; such a practice is seen by Salwa, another junior non-Arab student, to be caused by the fact that assessing students' English writing skills is not one of the admission requirements to their college. Hauwa's attitude is no different as she notes that *"especially writing...because it's mostly multiple choice questions, it has just degenerated which is really unfortunate for me, honestly"*. As Arab students, Abeer and Siham, confirm taking notes in Arabic as they write their own interpretations of the lectures which are more accessible in their mother tongue; Siham goes on to say that despite her overall improvement, writing skill is the least to have

developed as it is the least practiced skill throughout her first three years in college. Dr. Muhammad, though aware of EMI policy objectives, insists that *“I do not look at their English, I look at the medical information”* explaining that the quality of the language his students use is not his area of interest while correcting their written work.

4.2.2 Speaking and Oral Communication Skills

This section demonstrates students’ English speaking practices, as the second productive skill, in EMI classrooms (Table 3); an overall percentage of 57% prefer delivering English oral presentations; however, 61% admit that when it comes to peer-interaction in group work, English only is not their first choice. Those who disagree with using English as the sole language of communication with instructors receive the highest percentage (44%). Though 42 out of 100 participants claim no problems in asking and answering questions in English during class time, 48% express their need to direct questions in their mother tongue and more than half (53%) support using the mother tongue to express themselves. While 53% feel that employing English in giving oral responses puts no strain on their performance, the majority of respondents (37% and 23%) are more disposed to using their mother tongue if it was allowed. A total of 52.9% show disagreement with employing English in oral communication.

Speaking	Statistics N = 100 (%)				M	SD
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)		
I prefer giving oral presentations in English	16 (16.00)	27 (27.00)	39 (39.00)	18 (18.00)	2.41	.965
In group-work, I interact with peers in English only	3 (3.00)	61 (61.00)	29 (29.00)	7 (7.00)	2.60	.667
In class, I interact with instructors in English only	2 (2.00)	44 (44.00)	37 (37.00)	17 (17.00)	2.31	.775
In class, I find no difficulty answering and asking questions in English	5 (5.00)	20 (20.00)	42 (42.00)	33 (33.00)	1.97	.858
I don't express myself better in my mother tongue	53 (53.00)	30 (30.00)	12 (12.00)	5 (5.00)	3.31	.873
I don't need to address questions in my mother tongue	28 (28.00)	48 (48.00)	19 (19.00)	5 (5.00)	2.99	.823
I don't feel that English is an obstacle to delivering proper answers to assigned questions	5 (5.00)	21 (21.00)	53 (53.00)	21 (21.00)	2.10	.785
If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	23 (23.00)	37 (37.00)	30 (30.00)	10 (10.00)	2.73	.930
Collective “Speaking” Construct	135 (16.88)	288 (36.00)	261 (32.63)	116 (14.50)	2.55	.585

Table 3: Speaking Skills- Descriptive Analysis

Independent samples t-test reveals significant relations between the students’ perception of classroom oral interactions in English and their schooling background. Public school group has

higher mean score ($M = 2.74$) than private school group ($M = 2.44$) and $p\text{-value} = 0.15$ indicating that private school graduates are more likely to agree with oral communication being in English. In the same way, one-way ANOVA is used to determine whether there are any significant differences between the means of the independent groups based on the variables of home and out-of-class spoken languages; the test shows that participants who speak only mother tongue at home have significantly higher mean score ($M = 2.88$, $SD = .420$) than those who speak both English and the mother tongue ($M = 2.11$, $SD = .478$) with $p\text{-value} < .001$. Comparably, respondents who speak only mother tongue with friends and colleagues ($M = 3.03$, $SD = .390$) are found to have higher mean score than those who speak both English and mother tongue outside the classroom ($M = 2.41$, $SD = .537$) with $p\text{-value} < .001$ (figure 2); consequently, students who converse with parents and siblings as well as their colleagues and friends in both languages are more likely to agree with employing only English for on-campus communication purposes than respondents who speak only mother tongue (Appendix 6).

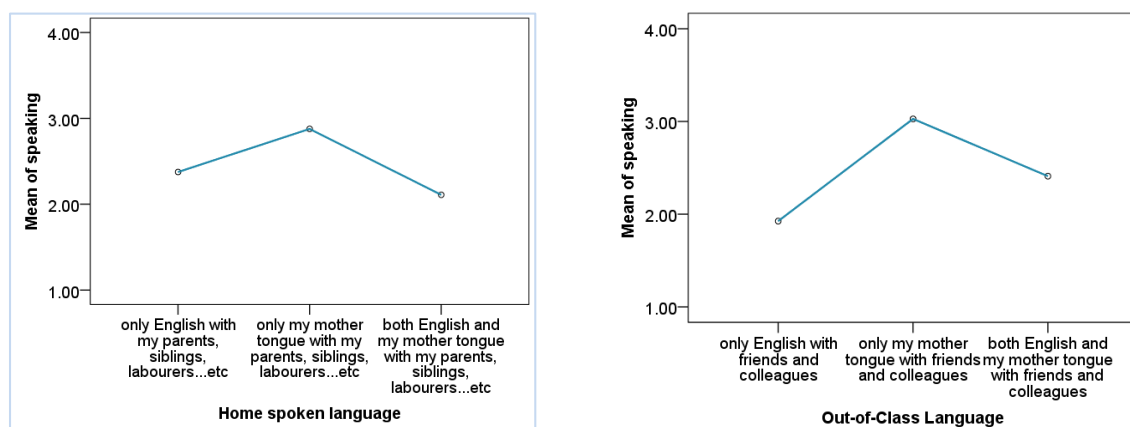


Figure 2: Means Plot- Speaking Skills

In response to the qualitative question regarding students' language preference in peer-interaction, 63 respondents assert their predilection for using their mother tongue. Reasons mentioned by participants are, *"I do not have to speak English while I have my mother tongue"*, *"I feel more confident because sometimes I find difficulty in finding the right English words"*, *"I do not want to forget the rich language we have"*, *"I know more vocabulary in Arabic and my English grammar is not that good"*, *"we are Arabs!"*, *"it is the language of Quran"*, and *"sometimes I am afraid I might use a wrong English word or mispronounce another"*. Those 17 respondents who prefer English as the language of peer-communication mention many reasons among which are, *"it helps people with poor English to improve"*, *"to increase my vocabulary"*, *"it is a common language that everyone understands"*, *"it is easier for me than*

my mother tongue”, and *“so I can practice my English”*; 20 students disclose no specific language preference.

Concerning the open-ended question about the language that students consider more convenient in discussing course materials with their instructors, 44 participants think English is more appropriate for academic discussions with their lecturers because *“all the books and materials are in English”*, *“it is more professional as all scientific terms are in English and need to be discussed in English”*, *“all courses are delivered in English”*, *“everyone needs to understand what is being discussed in class”*, and *“there might be some confusion if scientific terms are translated to another language”*. In contrast, 39 students believe their mother tongue is more advantageous as a channel of communication with their professors for many personal reasons such as, *“I can explain what I need more”*, *“I have limited English vocabulary”*, *“it is easier for me to discuss complicated materials in Arabic”*, and *“sometimes I do not understand what the doctors say”*; whereas 17% state that they are capable of using either language efficiently.

Stephanie, an Arab interviewee, confirms that she is quite comfortable using English for in-class communication and makes a statement saying that *“we have people from different nationalities, so we have to speak just one universal language that is ok with everybody”*. Budoor, as an Arabic-medium school graduate whose parents emphasize the role of the mother tongue in her daily life, is under the impression that she has the ability to communicate science topics in English *“but communicating things other than studies, English is an obstacle”*. Siham believes that her Arabic-medium schooling contributes to feeling more confident conversing in her mother tongue with her colleagues, friends and professors if possible; she tries to speak English in class but falls short of words and resorts to Arabic to get her message across. She remarks *“I am Arabic... they are too, so I speak Arabic”*. Abeer is of the opinion that despite being able to interact with her classmates in English, she is not at ease when she has a discussion with instructors; she sometimes restrains herself from asking questions because *“it is the speaking part that we lack”*.

Muhammad, an Arab junior student, sees English as no impediment to in-class communication; he never falls back on Arabic as *“it is an English-only class...people have to cope or find another place”*. Hatem thinks that *“one should use English to communicate with other cultures”*. Salwa emphasizes Hatem’s viewpoint saying:

"We feel excluded all the time, even the jokes...we feel like 'are we not here?' ...these people start thinking we do not even exist anymore...I need my respect...what about us? If they do not understand English, why are they studying here? It is not our fault."

Hauwa remarks that her speaking skills have been negatively affected because of her inability to engage with her classmates in English discussions. Heba discusses the same issue by wondering how her colleagues passed the TOEFL test, *"they come here and they cannot speak a single word in English"*; she expounds a powerful aspect of the problem, *"Arabic speaking scientists stay here...they are not welcomed elsewhere where people speak and understand only English...it is going to be a hindrance for their future"*. She stands firm against the idea of speaking Arabic in class whatsoever:

"If students have questions or doubts, they can ask in Arabic...but professors have to explain in English to encourage them to learn English; if a student asks in Arabic and being answered in Arabic, he would think 'ok! Arabic is enough for me.'"

Dr. Intisar, a non-Arab assistant professor, usually has recourse to rough-tuning or *"speaking simple English instead of the complicated words"*; she takes the same stance as some student interviewees regarding the issue of speaking Arabic in class, *"seriously, I find it offensive because some of the students are not Arabs...it feels like you are alone...it is hard to integrate."*

On the other hand, Dr. Helda, Dr. Muhammad, and Dr. Huda have a different perspective on that point; Dr. Helda contends that:

"In some situations, I have to explain in Arabic and English to ensure the knowledge is transmitted equally to every student...especially the way I want to introduce a concept, or make a comment, or add a sense of humour while teaching...it has to be done in Arabic, because if you translate it, it will lose its purpose."

She explains in English then translates the lecture to Arab students after assuring the non-Arabs that no new information will be added in Arabic. Dr. Helda sums up her opinion saying that *"you cannot force any of the two groups to speak the language of the other...you just have to make sure they get the information"*. Dr. Muhammad refers to the same point about the need to add a sense of humour in Arabic or to help students relate content to real life through incorporating culture-based proverbs, for instance; he considers 'joking' as a strategy that is capable of engaging students cognitively and affectively. Additionally, he believes that by prioritizing content, he enhances students' scientific foundation.

Dr. Huda, an Arab assistant professor, adopts the same teaching methodology of explaining in English followed by an Arabic translation; despite her awareness of the negative affective impact of that approach, she defends her attitude saying, “[i]n my class, I have one student who has zero Arabic knowledge and another with no English knowledge and I have to accommodate the class with the two extremes”. Dr. Huda foregrounds the nature of science discipline by noting that:

“I am a science teacher not an English teacher...I got to deliver information to students and it does not matter for me if I say Hydrochloric acid or /hemd il 'haidrɒkləʊri:k/...it is the same compound. The application of the compound is the most important”.

Students and teachers seem to be looking at the issue of incorporating Arabic in EMI classrooms through different binoculars which raises the question about the motivation of each party. Students’ analysis of their own receptive skills as a result of EMI policy is discussed next.

4.2.3 Reading Skills

This section introduces the students’ self-evaluation of their English reading skills (Table 4); the descriptive analysis reveals that a vast majority of students (46% agree and 37% strongly agree) aver not finding it hard to read through English textbooks and materials; and more than half of them (41% agree and 12% strongly agree) attempt to devote time for extra academic reading. Reading English books is claimed not to be time-consuming by 62% compared to 38% who believe reading in their mother tongue is faster; in addition, 61% believe that reading academic materials positively impact their English vocabulary repertoire. While 33% of the student participants maintain reading non-academic texts, 32% admit not reading books that are irrelevant to their scientific field. Taken as a whole, 70.6% of the students express a positive attitude towards English reading skills.

Reading	Statistics N = 100 (%)				M	SD
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)		
I find no difficulty reading textbooks and course materials	4 (4.00)	13 (13.00)	46 (46.00)	37 (37.00)	1.84	.801
I do extra reading through textbooks and course materials	8 (8.00)	39 (39.00)	41 (41.00)	12 (12.00)	2.43	.807
I don't feel reading in English is time-consuming compared to reading in the mother tongue	18 (18.00)	20 (20.00)	34 (34.00)	28 (28.00)	2.28	1.064

Reading textbooks and course materials expands my English vocabulary	0 (0.00)	2 (2.00)	37 (37.00)	61 (61.00)	1.41	.534
I read English books unrelated to my studies	11 (11.00)	32 (32.00)	33 (33.00)	24 (24.00)	2.30	.959
Collective “Reading” Construct	41 (8.20)	106 (21.20)	191 (38.20)	162 (32.40)	2.05	.536

Table 4: Reading Skills- Descriptive Analysis

In general, almost half (47%) of the participants’ responses to the qualitative questions reflect an aptitude for reading in their mother tongue, 53.2% of which come from public schools. They attribute such inclination to being time-saving, easier to understand, more accessible without using dictionaries, interesting and full of imagery, and “*more enjoyable*” as mentions one of the respondents. Those who prefer reading in English constitute 33% of the sample population, 87.9% of which come from private English-medium schools. They mention various reasons such as improving their language skills, expanding their English vocabulary, and finding it easier; others think “*it is much more useful*” for their career and that their “*mother tongue is not as strong as English*”. Only 20% reply as having no specific language preference or having no tendency to read in either language.

In her interview, Heba states that she deliberately reads medical English research papers and uses only English-English dictionaries to translate difficult linguistic or medical expressions as she believes that scientific content should only be approached in English. In the same manner, Muhammad replies “*of course! I learned like tons of new medical vocabulary*” when asked about the impact of reading on his English vocabulary repertory. Abeer in turn acknowledges that her medical vocabularies have expanded through reading and adds “*but not the ones necessary for communication and self-explanation*”; Salwa replies “*my vocabulary became really worse*” because of the noncommittal attitude towards EMI on the part of the instructors and students.

4.2.4 Listening Skills

Figure (3) demonstrates the descriptive results of question 37 in the students’ questionnaire; an overall percentage of 75 students (49% agree and 26% strongly agree) consider English as no obstacle to understanding content lectures being orally delivered by instructors; a total percentage of 25 respondents feel English forms a stumbling block to listening and understanding lectures.

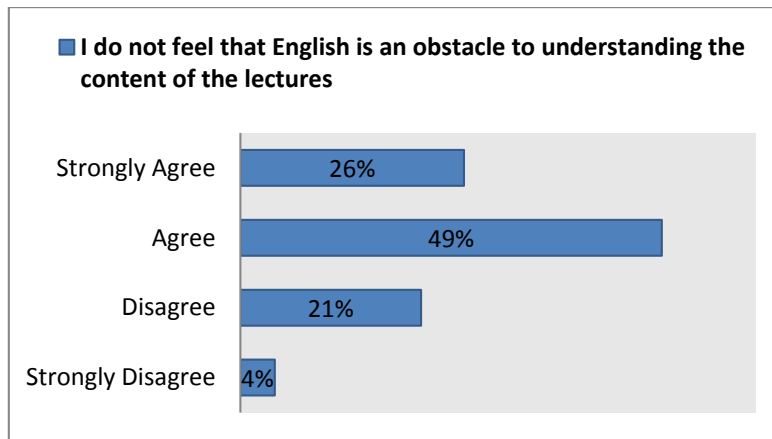


Figure 3: Students' Responses to Question 37- Descriptive Analysis

Private school graduates ($M = 1.86$, $SD = .780$) appear to have significant lower mean score than those from public schools ($M = 2.32$, $SD = .747$), $t = -2.936$, $p = .004$. This indicates that respondents from public schools are significantly more likely to feel that English is an obstacle to understanding the content of lectures. Respondents who speak only mother tongue at home ($M = 2.28$, $SD = .774$) are more likely to think that English is an obstacle to understanding lectures than respondents who speak both languages ($M = 1.68$, $SD = .687$) with $p\text{-value} = .001$; similarly, participants who speak only mother tongue with friends and colleagues ($M = 2.37$, $SD = .792$) are more prone to consider English as an impediment to comprehending lectures than respondents who speak both languages ($M = 1.93$, $SD = .759$), $p\text{-value} = .022$ (Appendix 6).

Among all interviewees, only few think their listening skills have improved; Hatem says *"I was zero in English...but my listening skills are much better now"*. Muhammad and Siham too believe their listening skills have developed as they are now used to listening to English lectures compared to high school. On the contrary, Hauwa appraises her listening and understanding abilities as diminishing and so does Salwa regarding her ability to use correct grammar and structure; both refer their problems to their instructors' low proficiency level in English and to their inability to implement EMI policy properly.

4.3 Assessment and Examination

As shown in Table (5), 91% of participants can read and understand examination instructions written in English, 89% have the ability to read and comprehend exam questions, and 82% are capable of answering exam questions in English. Sixty percent of respondents do not prefer essay question; however, 64% claim they can give detailed answers to essay examination questions. 44% show preference to oral assessment over written assessment and 62% state that

they can easily elaborate while answering oral questions. Though 34% disagree with using any language other than English in attempting written assessment questions, a total of 51% of the students insist on using their mother tongue upon having the chance. Analogously, 57% avow using their mother tongue in answering oral assessment questions if it was allowed. Significant relationships are spotted between the assessment and examination construct and participants' school type; private school group has a lower mean score ($M=2.13$, $SD=.608$) than public school group ($M=2.48$, $SD=.523$). Therefore, private-school group is significantly more likely to agree with examinations being administered in English (Appendix 6).

Assessment & Examination	Statistics N = 100 (%)				M	SD
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)		
I can read and understand examination instructions in English	2 (2.00)	7 (7.00)	47 (47.00)	44 (44.00)	1.67	.697
I can read and understand examination questions in English	1 (1.00)	10 (10.00)	47 (47.00)	42 (42.00)	1.70	.689
I prefer answering examination questions in English	2 (2.00)	16 (16.00)	44 (44.00)	38 (38.00)	1.82	.770
I prefer essay examination questions	28 (28.00)	32 (32.00)	27 (27.00)	13 (13.00)	2.75	1.009
In attempting essay examination questions, I can give detailed answers in English	6 (6.00)	30 (30.00)	44 (44.00)	20 (20.00)	2.22	.836
I prefer oral assessments to written assessments	15 (15.00)	44 (44.00)	26 (26.00)	15 (15.00)	2.59	.922
In oral assessments, I can fluently give detailed answers in English	6 (6.00)	32 (32.00)	43 (43.00)	19 (19.00)	2.25	.833
If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	25 (25.00)	26 (26.00)	34 (34.00)	15 (15.00)	2.61	1.024
If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	26 (26.00)	31 (31.00)	31 (31.00)	12 (12.00)	2.71	.988
Collective "Examination & Assessment" Construct	111 (12.33)	228 (25.33)	343 (38.11)	218 (24.22)	2.26	.601

Table 5: Assessment and Examination - Descriptive Analysis

Exclusively, Arab interviewees show inclination towards utilizing their mother tongue in answering assessment questions; Siham, for example, states that unless she calls for an exam invigilator to translate instructions and questions to Arabic, she is prone to losing marks based on lack of understanding. Dr. Helda confirms lending her students a helping hand by translating exam questions upon need, yet she does not allow them to answer in any other language but English. Dr. Muhammad, on the other hand, does not mind translating examination items to Arab students saying *"I am not testing their English, I am testing their medical knowledge"*; he is also willing to correct students' answers even when they incorporate some Arabic words within. Dr. Intisar avoids such predicament by giving clear and short instructions.

4.4 Teacher-Related Factors

With regards to the open-ended questions concerning the instructors' English proficiency and its potential impact on the students' ability to understand and acquire the foreign language, 59% of the participants rate their instructors as competent in English; whereas 41% think their instructors' English is not well-developed. However, 55% prefer native English speaking instructors for reasons as *"they will help us develop our English vocabulary and pronunciation"*, *"their accent is easier to understand"*, *"other nationalities make spelling and grammar mistakes"*, *"there will not be any Arabic translation that makes non-Arabs feel lost"*, *"the materials are in English, so they can explain content more effectively"*, *"they will force us to speak English"*, and *"to develop our listening skills"*. Those who favor Arabic speakers (25%) point out different excuses such as their own lack of English competence and their need to get the explanations translated into Arabic; 20% think the nationality of their lecturers does not matter as long as they are capable of delivering content effectively.

Heba states that she prefers English native lecturers to Arabs,

"It is nothing personal...it is just when they have an Arabic background...when they cannot find the word in English, it immediately becomes Arabic for the next two minutes."

She adds that if they had native English instructors, *"they would just explain in English but use simpler words"*; she also believes that the instructors' grammar and structure sometimes hinder their understanding. Salwa voices her discontent with having Arab lecturers as they often resort to Arabic to answer students' inquiries *"they say the important information and we get obviously lost and we come to know that we did not even know these things...it is really bad!"*

In the same vein, Hauwa makes the following comment,

"I think it has to do with the instructor's teaching skills as well as their language proficiency...it mixes up our understanding. When their grammar is bad, they write the wrong information."

Hatem's words reflect the same opinion, *"it is not our problem they cannot speak English"*; Muhammad too thinks that the instructors' thick accent plays a role in delivering the wrong content. Abeer proposes that,

"It is the university's responsibility to test the professors' English, especially pronunciation...we take that after them and when we join the work-field, we get mocked for our mispronunciation. You speak good English, so we learn from you!"

Siham attributes her lack of understanding to her limited English proficiency; however, she prefers English native professors to Arabs with poor command of the language. Stephanie's stance is made clear through her replies,

"When I first got into the university, I was shocked...like... I am listening to them and I feel this might influence my accent. I used to have this nightmare...what if I graduate and I start speaking their English...especially medical terminology, I have to check on YouTube."

Judi expounds her concerns saying that,

"Some of the doctors seriously have amazing English, but not all of them. Sometimes when I want to write notes...I am like, 'what are you saying? Just spell the word.'"

She believes that it is the instructors' poor English command that makes them turn to Arabic to explain.

Dr. Intisar postulates that the lecturers' attitudes make a big difference even if they speak both languages perfectly; she assumes that *"if the instructor is arrogant and self-centered, he will not be giving students as much information"*. Dr. Huda admits falling short of suitable English words while explaining and feeling in need of resorting to Arabic.

While many students tend to blame their instructors for not being able to cope with EMI, the instructors attempt to resolve such problems through using Arabic instead of revising their own teaching practices.

4.5 Preferences for Medium of Instruction

Students' and instructors' linguistic preferences for science instruction are demonstrated in the following section.

4.5.1 Students' Preferences

An overwhelming majority of 72 out of 100 students that constitute the research population approve of the organizational policy of employing English as the sole medium of instruction compared to 17% who favor their mother tongue and 11% that express their desire for bilingual education where both languages are employed. Respondents who prioritize English-medium education, amongst which are 88.7% Arabs and 69% private school graduates, list a wide range of reasons like *"it is the language of science"*, *"it is better to improve my English in case I want to travel abroad"*, *"medical programs are best taught in English"*, *"English helps secure better job opportunities"*, *"medical resources are all in English"*, *"we communicate in English with patients at hospitals"*, and *"medical terminology cannot be translated to Arabic"*. Other students prefer their mother tongue to be the instructional medium because of their inability to

understand scientific content in English, lack of English vocabulary necessary to express their needs, or desire to save the time they spend translating information. Those who propose bilingual education mention a specific role for each language; English is for medical terms and Arabic is for explanations.

As an advocate of EMI policy, Heba plans to travel abroad to pursue her career and obtain post graduate degrees; she believes that EMI would help her achieve her future academic goals or otherwise *“it will be like...just because I do not know English, I cannot go there”*. Knowing about the organizational policy of adopting EMI, Hatem reacts as, *“so, how come teachers speak Arabic? If there is a rule, they should stick with it”*. Hatem sees English as the only possible language of education and communication; He suggests offering communicative English preparatory courses. Muhammad contends that bilingual education is not the most strategic way to cope with the present situation; he is concerned with the trouble one might face abroad in translating from mother tongue to English. Budoor appreciates EMI *“because it is the universal language of science”*; Stephanie and Judi reject the idea of getting Arabic translation of content subjects.

On the other hand, Abeer highly recommends bilingual education explaining that,

“English is the language of science...we cannot ignore that, but if, for example, I could not get the idea in English, why not to translate it to Arabic. Since we are Arabs who live in an Arab country and the majority of us speak Arabic, the doctor has to explain in English for everyone and if I have difficulty, he would help me in Arabic.”

She also believes that endorsing bilingual instruction would facilitate it for both students and lecturers; Abeer discusses the affective dimension of EMI saying that she blames herself for not understanding the scientific content while it is not her problem. She argues that people coming from Western countries should strive to learn Arabic,

“You are in our country...it is not yours. You should learn our traditions and our language...it is not our problem! We can be good scientists in our own language; it would be more creative for us...we are shedding our skin to be in others' skin, why?”

By the same token, Siham opposes the English-only educational policy,

“How can I understand? Language obstacle might affect my GPA. Doctors need to give us both options...Arabic and English instruction. I do not want them to discard English for the sake of non-Arabs, but they should use Arabic for the sake of those who have deficiencies in their English knowledge.”

Students' cognizance of their future goals seems to have motivated many of them to overcome affective and cognitive issues associated with EMI.

4.5.2 Instructors' Preferences

Dr. Intisar, an exponent of EMI, starts her comment saying *“in the scientific world, I think it should be solely English”*; she refers to textbooks and medical references being offered in English and the difficulty of finding equivalent materials in any other language. She emphasizes the necessity of English for the integration of students who want to travel outside the region; she adds that the responsibility lies with the instructor in getting the message across to students,

“You will always find a way to introduce it clearly and smoothly without having those translational non-standard methods. The instructor needs to change the tone and stop looking from a superior level”.

Dr. Helda's viewpoint aligns with Dr. Intisar's, *“you have to empower students in English because later on they will be completing their studies and communicating with others in English”*. She is not a proponent of bilingual education for fear of people's misuse; her concern is how others might take advantage of such policy and start delivering lectures in Arabic and how that would negatively influence their students.

Dr. Muhammad holds a different opinion; he promotes bilingual instruction saying that it is illogical to apply English-only instruction in an Arabic country. Dr. Muhammad cites a personal experience to stress his point,

“I went to Germany for research purposes and I found out they do not accept anyone who does not speak German on the university campus; they know that English is the language of science and they publish research papers in English but they communicate in German and most of the lectures are in German”.

He assumes that if the system is bilingual, he would be able to save time by explaining in Arabic to Arabs who do not get the meaning in English rather than trying to convey the same information repeatedly in English. Dr. Huda in turn propounds the idea of bilingual education as *“it is easier for Arabic students and instructors”*; she acknowledges the English-only policy, yet she still resorts to Arabic when students approach her for translations.

4.6 Conclusion

Students and instructors happen to look at the issue of EMI from different angles; students, though encountering some obstacles based on EMI, recognize the full worth of English-medium science instruction. Despite their appreciation of the role of English in the science

arena, the instructors appear to deal with the consequences of EMI as they emerge in order to meet students' immediate needs with no previously set long-term plans. The next chapter will discuss the previously mentioned findings within the context of relevant literature.

CHAPTER 5: DISCUSSION

In this chapter, results of data analysis are discussed with reference to the research questions and are compared to the results of previously administered studies on EMI at tertiary-level educational institutes.

5.1 Science Students' Perceptions of EMI

Comparing quantitatively and qualitatively collected data reveals some discrepancies in the students' attitudes towards the effects of EMI on their English basic and micro skills and, as a result, on their inclination or reluctance to adopt English as language of instruction.

5.1.1 EMI Impact on Writing Skills

Unlike what was concluded by Evans and Morrison (2011) that writing was the most challenging skill, most of the students in the present study acknowledge facing no difficulties in their English writing skills; however, they admit that EMI has no positive impact on such skills. Such a finding can be attributed to the instructors' attitude of either ignoring the students' linguistic errors and giving feedback on the scientific content only (Evans & Morrison 2011) or applying the tentative policy of not assigning much written work to students (Chang 2010). The latter policy seems to be also adopted by the college administrators who, as mentioned by some interviewees, do not assess students' writing skills as part of the college enrolment requirements. Apparently, the disparity is between the policy makers' as well as instructors' acknowledgement of the importance of EMI policy and their blatant disregard of the students' writing skills. Additionally, Arab participants are found to be more likely to face difficulties with English writing which can be ascribed to their situation of being taught mostly by non-native English instructors and have the option of using Arabic scripts with almost no liability as disclosed by some of the interviewees; thus, students feel no obligation to strive in employing English scripts (Abdel-Jawad & Abu Radwan 2011). Race-related factors are found by Ismail et al. (2011) to have determined the students' instructional language preference.

5.1.2 EMI Impact on Speaking Skills

Although the majority of respondents concede encountering no trouble engaging in oral class activities in English, they admit being more articulate and eloquent while using their mother tongue. Most students prefer using their mother tongue in peer-interaction, the phenomenon that aligns with Butzkamm's (2003) concept about the mother tongue and how it is the learners'

“strongest ally” (p. 30) which they can fall back on to better express themselves. Nevertheless, students tend to avoid using it in discussing course materials with instructors as for their metacognitive awareness or ‘conscientization’ (Paulo Freire 2003 cited in Harris & Cullen 2010) of their future work field requirements; they are mindful of the fact that mastering the English language, especially the academic register, would guarantee elevated opportunities in the market. With regard to the clinical nature of their field, language influences the practice of medicine in many ways among which is discourse, register, grammar, and pronunciation in the medical students’ interactions with the heterogeneous patient-populations; students are conscious of the fact that their English language skills might affect their future patients’, not to mention employers’, perceptions of their adeptness (Hoekje 2011). Similarly, adequate language skills are fundamental to the presence in international medical communities, e.g. conferences and publications (Olmstead-Wang 2011).

In general, participants perceive no improvement in their speaking skills through the English medium of instruction; some even believe that their oral communication skills have deteriorated. This claim, which is found in line with that of Lei and Hu (2014), can be ascribed not to adopting the EMI policy but to the inappropriate application of EMI reflected in many instructors’ and, consequently, students’ classroom behaviours. As revealed by student interviewees, both Arab instructors and students have recourse to Arabic when they fall short of English words; this aspect of the problem is referred to by Huang (2015) and Guarda and Helm (2016) as the need for more effective teaching methodologies. The professors’ noncommittal attitude of relying on Arabic, as the shared mother tongue between them and many students, instead of English is caused either by their low English proficiency levels which would impel revision of recruiting policies as suggested by Belhiah and Elhami (2014) or by their personal beliefs about the effectiveness of the educational policy and their past experiences as learners (Tsai 2002; Borg 2003). According to some students, overlooking testing students’ speaking skills before joining the program is another aspect that contributes to the present predicament; such a problem lies with the policy makers who facilitate the enrolment of linguistically ineligible students into English-medium programs and thus aggravating the negative perception of the impact of EMI on the students’ affective and cognitive domains.

Results show that private school graduates are more inclined to adopt English in oral communications; this finding is understandable in the light of the fact that private schools in the UAE are mostly English-medium. Schooling background is considered by many as a

determining factor that shapes the students' educational experience and achievement at university level (Sabbour, Dewedar & Kandil 2010; Evans & Morrison 2011; Troudi & Jendli 2011). Comparably, those who speak only their mother tongue at home are found to be the least to agree with using English in daily conversations which emphasizes what Shahzad et al. (2013) mention about the influence of home environment and attitude on students' learning experience of a second language. Likewise, participants who speak only the mother tongue with their friends and colleagues outside the classroom seem to be less inclined to use English for peer communications inside the classroom setting; English-use anxiety is seen to be rooted in the students' self-perceived low proficiency of the English language and therefore affects their communicational linguistic choices (Ismail et al. 2011; Hashemi 2011; Lei & Hu 2014; Huang 2015).

5.1.3 EMI Impact on Reading Skills

In contrast to the results of the study by Sabbour, Dewedar and Kandil (2010), the positive attitude demonstrated by the majority of respondents towards reading academic texts offered in English by the college might be interpreted with reference to what junior interviewees mention about developing reading schemes throughout their freshman year. Using English-English instead of English-Arabic dictionaries is one of their coping strategies with the English-medium (Kagwesage 2012; Yeh 2014). Chang's study (2010) yields a similar finding concerning the students' self-perceived influence of EMI on their reading abilities; Chang attributes this result to the instructors' reliance on assigning reading tasks to their students which applies to the present study context too.

Nevertheless, the students' responses show discrepancy in terms of the impact of reading textbooks and course materials, which is part of the EMI policy, on their vocabulary repertory. While many believe that reading has expanded their English scientific vocabulary and medical expression repertoire, some think that academic reading has negatively impacted the vocabulary required for communication and self-explanation. A similar finding is found in Belhiah and Elhami's study (2014) which reveals that academic reading helps students to enrich their technical vocabulary. Such beliefs on the part of the students can be attributed to the academic nature of medical textbooks which lack English communicative and literary vocabulary; science students seem to be caught in the dilemma of reading only academic texts and focusing on scientific discourse which in turn affects their speaking, communicational, and writing abilities.

When asked about their language preference for reading non-academic texts, more than half of those who choose reading in their mother tongue are public-school graduates, the attitude that is self-explanatory as public schools in the UAE are Arabic-medium. On the other hand, almost all of those who prefer reading in English deliberately are English-medium school graduates. High school experience in terms of the language of instruction seems to have defined students' linguistic choice inside and outside the classroom (Troudi & Jendli 2011).

5.1.4 EMI Impact on Listening Skills

The general agreement among participants that English is no obstacle to understanding lectures being orally delivered is clarified through the interviewees' responses; Arab lecturers seem to have discreetly adopted the bilingual approach in explaining scientific and medical concepts. Lectures are being executed in two languages, English and Arabic; using only English medical expressions is another instructor-driven strategy to facilitate cognition and to avoid any confusion on the part of the students (Sabbour, Dewedar & Kandil 2010). Instructors are under the impression that the bilingual version caters for all students no matter what their linguistic backgrounds are. While Belhiah and Elhami's (2014) and Yeh's (2014) studies agree with the present study on how the majority of students barely face any problem following and understanding lectures, the reasons are entirely different; students in Belhiah and Elhami's research refer their stance to the lecturers' teaching methodology of rough-tuning and elaboration using accessible language and to their strong English background but not to employing bilingual education.

Private school graduates' tendency to appreciate English-medium lectures highlights the previously discussed point about the influence of high-school medium of instruction on the students' linguistic aptitude (Sabbour, Dewedar & Kandil 2010; Troudi & Jendli 2011). Correspondingly, those who prefer speaking only their mother tongue at home as well as with friends and colleagues tend to see English as a hindrance to comprehending content lectures compared to other groups (Shahzad et al. 2013). Troudi & Jendli (2011), in their study, discuss the role played by parental background and attitude on students' acceptance and use of English in their daily lives.

In many studies, students acknowledge the positive influence of EMI on their listening skills (Chang 2010; Yeh 2014; Huang 2015). In the current study, there is inconsistency between the standpoints of students coming from English-medium private schools who believe their listening skills are diminishing and the others from Arabic-medium public schools who think

their listening skills are improving as a result of EMI. This division in opinions is due to the analogy drawn by each group between their high school and university experiences; students from private schools are used to listening to English-medium classes intensively, whereas public school students' experience with listening and practicing English is limited to one class per day. When compared to their present situation, both groups put forward the amount and quality of authentic English language they get exposed to as the causes of the declination, stagnation or development in their listening skills. The relation between the amount of EMI and the desired effects on students' language skills is advocated by Lei and Hu (2014). Quality of English-medium instruction is also proposed by Kagwesage (2012) as a stumbling block to students' understanding of content lectures; Evans and Morrison (2011) also refer to the quality of EMI and its negative impact on students' language skills caused by teacher-related factors.

5.1.5 EMI Impact on Examination and Assessment

Most participants proclaim their capability of reading and understanding examination instructions and questions written in English and stress their ability of addressing such questions in English. Nonetheless, more than half of them choose to use their mother tongue in attempting both written and oral assessment questions if the institutional policy approves of it. These results are found to be aligned with what Abdel-Jawad and Abu Radwan (2011) and Belhiah and Elhami's (2014) state in their studies. A plausible justification of such discrepant responses is presented by Troudi & Jendli (2011) as the 'choiceless choice', a concept that best describes the students' present situation where they have to submit to the imposed policy of taking content examinations only in English in the absence of any other alternative. However, when they are given the option of resorting to their mother tongue in responding to assessment questions, they opt for it willingly. Motivation to achieve a high GPA is another conceivable reason introduced by Evans and Morrison (2011) for the students' incongruent linguistic choices; Shahzad et al. (2013) proposes that a highly motivated learner would aspire to quality education.

Similarly, more than half of the respondents show preference for oral assessment questions compared to written ones; the students' attitudes regarding their preferred types of examination questions can be attributed to the point raised earlier about their lack of the appropriate register and genre caused by the scarcity of assigned written work and the minor importance given by administrators and instructors to the language used by students and to prioritizing the scientific content in written assignments (Chang 2010). Private-school group is found to be more likely

to agree with examinations being administered in English than public-school group for the previously discussed relation between schooling background and students' linguistic preferences. Those coming from English-medium schools are used to taking content examinations in English compared to public school graduates (Troudi & Jendli 2011).

5.1.6 Students' Language Preferences for Medium of Instruction

Despite the inconsistent responses regarding the impact of EMI on the students' language skills and micro skills, the overwhelming majority, mostly Arab and private school groups, approve of the organizational policy of employing English as the sole medium of instruction. 'Instrumental motivation' is seen by Kagwesage (2012) as the driving force behind the students' endeavour to overcome the problematic aspects of EMI which applies to student populations in general and Arabs in particular in the present study. In parallel, school experience and competency in English are two educational factors that might have led private school graduates to favour EMI (Troudi & Jendli 2011). Pursuing sophisticated academic career opportunities through mastering English as well as content is the students' prominent long-term goal (Findlow 2006; Shahzad et al. 2013). Employability and internationalization of market forces are well-articulated reasons why undergraduates prefer English over their mother tongue as the medium of instruction in higher education (Başibek et al. 2014; Yeh 2014).

Unlike Belhiah and Elhami's (2014) results, the least number of students are in favour of bilingual education; bilingual instruction that utilizes both English and Arabic does not seem for most participants to be the best pedagogical practice in teaching health sciences. This viewpoint is ascribed to the students' awareness of the nature of the medical content knowledge and the clinical practice of such a profession that compels acquiring relevant technical vocabulary and register in English as the language of science (Hoekje 2011). In accordance with Yeh's (2014) study results, more than half of the students prefer native English instructors to ensure obtaining correct English knowledge and to eliminate the chances of turning to Arabic while lecturing.

5.2 Science Instructors' Perceptions of EMI

Interviewed instructors tend to have different views on the issue of adopting EMI policy at tertiary level. Two of the four interviewees advocate employing EMI in science education so as to equip the students with the required English skills that would help them achieve their future academic goals; this finding is congruent with that of Başibek et al. (2014). Emphasis is

laid on the requisite shift to proper teaching methodologies that put students at the heart of the teaching-learning process; addressing the diversified linguistic needs of students should be taken into consideration as a part of the teachers' role (Guarda & Helm 2016). On the other hand, the other two instructors promote a change in the educational policy towards bilingual education in order to scaffold students in dealing with the extra cognitive and affective burden of acquiring content-knowledge presented in a foreign language. This viewpoint is also proposed by Belhiah and Elhami's (2014). It is worth noting that personal beliefs and experiences as students and later as teachers seem to have influenced the interviewees' perception of instructional practices and classroom behaviours (Tsai 2002; Borg 2003). While the two instructors who are in favour of EMI cite memories of their own teachers as evidence of successful application of EMI, the other two teachers disclose being taught in both languages at the university level.

5.3 Conclusion

This chapter is meant to account for the potential explanations for students' and teachers' perceptions of EMI in science education so as to answer the study research questions. Most students, including those who face difficulties in acquiring language academic skills, favour English as the medium of instruction in science education. Students show willingness to overcome all linguistic barriers in order to achieve their future goals. On the other hand, more than half of the instructors tend to choose the easy path of offering bilingual-medium of instruction.

The next chapter will present conclusions based on the data analysis and discussion of results, will offer suggestions on the best pedagogical practices in EMI, and will demonstrate the limitations of the present study.

Chapter Six: Conclusion

In the present study, it is believed that the students' awareness of the fact that English "has become one of the most powerful means of inclusion into or exclusion from further education, employment, or social positions" (Pennycook 2001, p. 81) and "their sense of agency" (Troudi & Jendli 2011, p. 44) motivate their deliberate acceptance of EMI policy despite the cognitive and affective challenges. With globalization in mind, students show perseverance in

overcoming every obstacle that might be associated with implementing EMI in science education.

6.1 Content-Based Instruction and EMI

The very unique status of the UAE as a leading country in the Gulf region and its inimitable demographic context have led to the emergence of English as a lingua franca at all social levels (Boyle 2011). Bilingual education, though seems logical for many scholars (Raddawi & Meslem 2015; Troudi & Jendli 2011; Ellili-Cherif & Alkhateeb 2015), is not the best solution for the present educational situation in the UAE. According to the current study results, employing the bilingual model through utilizing the Arabic and English languages in science instruction appears to have manipulated some students affectively; this situation is perceived by many as adding insult to the injury instead of healing it. Students who do not speak Arabic feel insecure and undesirably stressed in a classroom setting where explanations are delivered in an unfamiliar language.

A more compatible alternative to bilingual education is a well-implemented content-based instruction through which long-term goals of EMI would be attained; CBI aims to enhance students' motivation, interest, and positive attributions in order to help them acquire content knowledge and language skills simultaneously. Considering such affective variables as students' emotional reactions plays a critical role in granting students' better learning opportunities. The approach of offering 'sheltered courses' or 'integrated instruction' that include considerable language skills and are taught by content specialists to ESL learners is seen to be efficient for equipping science learners with the required English academic skills and content knowledge (Stryker 1997).

6.2 Pedagogical Implications

Revisiting the current language educational policy, which is defined as "mechanism used to create de facto language practices in educational institutes, especially in centralized educational system" (Shohamy 2014), is the first step towards resolving the consequential issues related to EMI. Language proficiency, personal attitude, and effective teaching approaches are three pillars on which EMI rests (Werther et al. 2014); therefore, integrating objectives of content and language learning unveils many challenges for program planners, materials writers, curriculum designers, teacher supervisors, teacher educators, learners, and policy makers. Implementing CBI may also have implications on teacher recruitment, qualifications and target language proficiency, certification, training and assessment. Teachers' attitude toward CBI is

another inextricable obstacle; undervaluing language experts' role in the language-content teachers' partnership negatively impacts both language teachers and learners to whom these courses are presented in the first place (van Wyk 2014).

As an English teacher, the researcher has become more cognizant of the role of the English language as the medium of instruction in teaching content subjects. Cross-curricular activities that relate the foreign language to content knowledge should be an integral part of every language class.

6.3 Recommendations for Future Research

A further investigation of CBI assessment process is recommended; since it is hard to isolate content learning from language learning in the assessment procedure, teachers encounter the predicament of deciding whether students' failure to demonstrate knowledge is caused by linguistic obstacles or a deficiency in understanding the content materials (Stoller 2008). In addition, the approach of using learners as actively involved co-researchers would grant insightful understanding of problematic classroom behaviours. Taking into account the impact of the language of science instruction on classroom dynamics would inform policy makers.

6.4 Study Limitations

The sample population size is one of the study's considerable limitations; a larger and more diversified sample would have elucidated other variables on the part of both students and teachers. Conducting interviews with administrators, policy makers, and potential employers would also have added a new perspective of the investigated issue of EMI. Observing classes where EMI is implemented and spotting the shortcomings in the teachers' practices would have been a beneficial tool in interpreting students' and teachers' experiences with the English-only policy. Moreover, investigating students' learning outcomes through keeping track of the learners' grades or GPA throughout their college years could have provided more solid evidence on the effects and quality of EMI being offered to science students.

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Appendix 1

Research Site Permission



11 April 2016

To : University of Sharjah

This is to certify that Mrs Nesrin Abdel Zaher Tantawy with ID number 2014101035 is a registered part-time student on the Master of Education programme in The British University in Dubai since September 2014.

Mrs Tantawy is currently working on her research titled "English as a medium of instruction in science education". She is required to gather data through interviews and surveys and observations. Your permission to conduct her research in your organisation is hereby requested. Further support provided to her in this regard will be highly appreciated.

This letter is issued on Mrs Tantawy's request.

Yours sincerely,


Amer Alaya
Head of Student Administration



Hoda Hagrass, PhD
College of Health Sciences

Dr. Hoda Hagrass
assistant Professor
College of Health Sciences
University of Sharjah
101391

Appendix 2

Students' Questionnaire



English as a Medium of Instruction in Science Education

This questionnaire is conducted by Nesrin A. Tantawy, a Master's student at the British University in Dubai (BUiD); the purpose of the survey is to better understand the thoughts and beliefs of UAE university students regarding studying their courses in English.

This is not a test so there are no "right" or "wrong" answers. You do not need to write your name. Your answers as well as the results of this survey will be used exclusively for research purposes, so kindly give sincere answers. You may ask for help if you do not understand any of the questions. Attempting every question/statement is much appreciated.

Section A: Participant's Profile

1.	Gender	Male		Female	
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2.	Nationality	Arab		Non- Arab	
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*For non-Arabs	What is your nationality?	
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3.	I am a	a. Freshman (1 st year student)	
		b. Sophomore (2 nd year student)	
		c. Junior (3 rd year student)	
		d. Senior (4 th year student)	

4.	I graduated from a	a. Private high school	
		b. Public high school	

5.	Please tick one of the options	a. Only my father is employed	
		b. Only my mother is employed	
		c. Both of my parents are employed	
		d. None of them are employed	

6.	At home, I speak	a. only English with my parents, siblings, labourers...etc	
		b. only my mother tongue with my parents, siblings, labourers...etc	
		c. both English and my mother tongue with my parents, siblings, labourers...etc	

7.	When I am not in class, I speak	a. only English with friends and colleagues	
		b. only my mother tongue with friends and colleagues	
		c. both English and my mother tongue with friends and colleagues	

Please rate how strongly you agree or disagree with each of the following statements by selecting the response that best represents your view using the following scaling system:

Strongly Disagree	Disagree	Agree	Strongly Agree
<u>SD</u>	<u>D</u>	<u>A</u>	<u>SA</u>

Section B:

8.	I find no difficulty taking notes in English	SD	D	A	SA
9.	I find no difficulty doing assignments in English	SD	D	A	SA
10.	I find no difficulty writing reports in English	SD	D	A	SA

Section C:

11.	I find no difficulty reading textbooks and course materials	SD	D	A	SA
12.	I do extra reading through textbooks and course materials	SD	D	A	SA
13.	I do not feel reading in English is time-consuming compared to reading in the mother tongue	SD	D	A	SA
14.	Reading textbooks and course materials expands my English vocabulary	SD	D	A	SA
15.	I read English books unrelated to my studies	SD	D	A	SA

16. What other types of books do you read in English?

17. Do you prefer reading in your mother tongue or English? Why?

Section D:

18.	I prefer giving oral presentations in English	SD	D	A	SA
19.	In group-work, I interact with peers in English only	SD	D	A	SA
20.	In class, I interact with instructors in English only	SD	D	A	SA
21.	In class, I find no difficulty answering and asking questions in English	SD	D	A	SA
22.	I do not express myself better in my mother	SD	D	A	SA

	tongue				
23.	I do not need to address questions in my mother tongue	SD	D	A	SA
24.	I do not feel that English is an obstacle to delivering proper answers to assigned questions	SD	D	A	SA
25.	If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	SD	D	A	SA

26. Do you feel more comfortable interacting with your peers in English or your mother tongue? Why?

27. Do you feel more confident discussing course materials with your instructor in English or in your mother tongue? Why?

Section E:

28.	I can read and understand examination instructions in English	SD	D	A	SA
29.	I can read and understand examination questions in English	SD	D	A	SA
30.	I prefer answering examination questions in English	SD	D	A	SA
31.	I prefer essay examination questions	SD	D	A	SA
32.	In attempting essay examination questions, I can give detailed answers in English	SD	D	A	SA
33.	I prefer oral assessments to written assessments	SD	D	A	SA
34.	In oral assessments, I can fluently give detailed answers in English	SD	D	A	SA
35.	If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	SD	D	A	SA
36.	If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	SD	D	A	SA

Section F:

37.	I do not feel that English is an obstacle to understanding the content of the lectures	SD	D	A	SA
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38. Do you think your instructors are competent enough in English?

- a. Yes
- b. No

39. Do you prefer native English speaking instructors to other nationalities? Why?

40. Do you think the English proficiency level of your instructors affects your own English proficiency level? How?

41. Do you prefer to study your speciality content subjects in English or your mother tongue? Why?

Appendix 3

Students' Interview Guide

1. Introduce myself (researcher) and purpose of the study
2. Confidentiality commitment
3. Ask the interviewee to introduce herself or himself (name; nationality; faculty-department; year; educational background- English-medium/Mother tongue-medium high school)
4. TOEFL or IELTS? Difficult to achieve?
5. Parental educational background? Parents' employment? What jobs? Post graduate degrees? Where from?
6. What language is spoken at home? Do they encourage you to develop your skills and English proficiency levels? Siblings?
7. Do you have a maid? Nationality? Language of interaction?
8. What does your mother tongue symbolize in your life?
9. When do you use it?
10. Where do you see yourself in ten years?
11. Do you think studying your specialty-related content subjects in English will help you achieve your future goals? Job prospects? Post graduate studies?
12. In class, do you feel comfortable using English as the sole medium of interaction with peers and instructors?
13. Do you feel challenged with content being delivered solely in English?
14. Do you sometimes prefer if the instructor translates the lecture to Arabic?
15. Do you think English is an obstacle to understanding content or expressing yourself?
16. Do you feel you can elaborate more efficiently and fluently in your MT or in English?
17. Does the faculty educational policy allow students to use any language other than English inside classrooms?
18. If it was allowed, which one would you use? Why?
19. Have you perceived any improvement in your English proficiency level since the day you joined the faculty? Which skills have mostly developed?
20. Vocabulary/ lexical repertoire?
21. In-class interaction with peers/instructors? Outside?
22. Instructors' English proficiency level? Do you think it affects yours? Positively/negatively? How?

Appendix 4

Instructors' Interview guide

1. Introduce myself (researcher) and the purpose of the study
2. Confidentiality commitment
3. Ask the interviewee to introduce herself/himself (name; nationality; teaching experience; faculty-department; educational background- school, university, postgraduate degrees)
4. To what extent do you agree/disagree with the organizational policy of applying EMI? Why?
5. In class while explaining new concepts to students, do you feel you need resort to your shared mother tongue to get the idea across? Why?
6. Do you feel more comfortable explaining and elaborating using English or MT?
7. Do you feel the information you deliver is more accessible to your students in English or MT?
8. How would you rate yourself as a fluent English speaker (from 1-5)?
9. What does your MT symbolize in your life?
10. How do deal with the multilingual classrooms with students who speak different mother tongues?
11. Do your students find it easier to read, write, answer exam questions, and converse in English or MT?
12. Do you allow your students to ask questions in MT?
13. Have you ever come across a situation when a student answered exam questions in a language other than English? How did you react?
14. Outside the classroom, do you converse with your students in English or MT?
15. In your opinion, have your students' English skills improved since they first joined the department? How?
16. In which language do you think your students would learn better?
17. If you are to suggest a change in the organizational policy, would you recommend bilingual education? Why/not?

Appendix 5

Pilot Study: Questionnaire Reliability

Case Processing Summary

	N	%
Valid	25	100.0
Cases Excluded ^a	0	.0
Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.913	30

Item Statistics

	Mean	Std. Deviation	N
Q8. I find no difficulty taking notes in English	1.72	.678	25
Q9. I find no difficulty doing assignments in English	1.60	.577	25
Q10. I find no difficulty writing reports in English	1.88	.726	25
Q11. I find no difficulty reading textbooks and course materials	1.68	.627	25
Q12. I use dictionaries to translate textbooks from English to my mother tongue	2.24	1.012	25
Q13. I do extra reading through textbooks and course materials	2.40	.866	25
Q14. I only do the assigned amount of reading in textbooks and course materials	1.96	.676	25
Q15. I don't feel reading in English is time-consuming compared to reading in the mother tongue	2.40	1.041	25
Q16. Reading textbooks and course materials expands my English vocabulary	1.48	.586	25
Q17. I read English books unrelated to my studies	2.28	1.021	25
Q18. I prefer giving oral presentations in English	2.56	1.003	25
Q19. In group-work, I interact with peers in English only	2.80	.500	25

Q20. In class, I interact with instructors in English only	2.32	.852	25
Q21. In class, I find no difficulty answering and asking questions in English	1.92	.862	25
Q22. I can read and understand examination instructions in English	1.64	.569	25
Q23. I can read and understand examination questions in English	1.60	.577	25
Q24. I sometimes need the instructor to translate examination questions	2.48	1.005	25
Q25. I prefer answering examination questions in English	1.76	.779	25
Q26. I prefer essay examination questions	2.96	.978	25
Q27. In attempting essay questions, I can give detailed answers in English	2.28	.843	25
Q28. I prefer multiple choice questions (MCQs)	1.56	.712	25
Q29. I prefer oral assessments to written assessments	2.88	.927	25
Q30. In oral assessments, I can fluently give detailed answers in English	2.28	.792	25
Q31. I don't express myself better in my mother tongue	3.24	1.012	25
Q32. I don't need to address questions in my mother tongue	2.96	.935	25
Q33. I don't feel that English is an obstacle to understanding the content of the lectures	1.96	.735	25
Q34. I don't feel that English is an obstacle to delivering proper answers to assigned questions	2.16	.800	25
Q35. If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	2.56	.961	25
Q36. If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	2.52	1.046	25
Q37. If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	2.76	.970	25

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q8. I find no difficulty taking notes in English	65.12	167.943	.677	.908
Q9. I find no difficulty doing assignments in English	65.24	169.857	.672	.909
Q10. I find no difficulty writing reports in English	64.96	166.290	.721	.908
Q11. I find no difficulty reading textbooks and course materials	65.16	167.640	.756	.908

Q12. I use dictionaries to translate textbooks from English to my mother tongue	64.60	190.167	-.390	.926
Q13. I do extra reading through textbooks and course materials	64.44	174.840	.206	.915
Q14. I only do the assigned amount of reading in textbooks and course materials	64.88	179.777	.004	.917
Q15. I don't feel reading in English is time-consuming compared to reading in the mother tongue	64.44	171.673	.277	.915
Q16. Reading textbooks and course materials expands my English vocabulary	65.36	173.073	.447	.911
Q17. I read English books unrelated to my studies	64.56	161.590	.681	.907
Q18. I prefer giving oral presentations in English	64.28	160.960	.720	.906
Q19. In group-work, I interact with peers in English only	64.04	176.040	.303	.913
Q20. In class, I interact with instructors in English only	64.52	167.343	.555	.910
Q21. In class, I find no difficulty answering and asking questions in English	64.92	161.827	.809	.905
Q22. I can read and understand examination instructions in English	65.20	168.833	.755	.908
Q23. I can read and understand examination questions in English	65.24	169.773	.678	.909
Q24. I sometimes need the instructor to translate examination questions	64.36	187.990	-.315	.925
Q25. I prefer answering examination questions in English	65.08	164.910	.739	.907
Q26. I prefer essay examination questions	63.88	168.777	.416	.912
Q27. In attempting essay questions, I can give detailed answers in English	64.56	162.673	.787	.906
Q28. I prefer multiple choice questions (MCQs)	65.28	182.793	-.156	.919
Q29. I prefer oral assessments to written assessments	63.96	164.373	.634	.908

Q30. In oral assessments, I can fluently give detailed answers in English	64.56	165.507	.696	.908
Q31. I don't express myself better in my mother tongue	63.60	161.500	.692	.907
Q32. I don't need to address questions in my mother tongue	63.88	166.193	.549	.910
Q33. I don't feel that English is an obstacle to understanding the content of the lectures	64.88	167.110	.666	.908
Q34. I don't feel that English is an obstacle to delivering proper answers to assigned questions	64.68	164.477	.740	.907
Q35. If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	64.28	164.043	.623	.908
Q36. If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	64.32	159.143	.761	.905
Q37. If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	64.08	162.577	.679	.907

Note:

Items Q12, Q14, Q24, and Q28 need to be removed as they have zero or negative correlation with the overall questionnaire. As will be shown below, they will negatively affect construct reliability.

Case Processing Summary

		N	%
Cases	Valid	25	100.0
	Excluded ^a	0	.0
	Total	25	100.0

a. Listwise deletion based on all variables in the procedure.

Final Overall Reliability

Reliability Statistics

Cronbach's Alpha	N of Items
.947	26

Item Statistics

	Mean	Std. Deviation	N
Q8. I find no difficulty taking notes in English	1.72	.678	25
Q9. I find no difficulty doing assignments in English	1.60	.577	25
Q10. I find no difficulty writing reports in English	1.88	.726	25
Q11. I find no difficulty reading textbooks and course materials	1.68	.627	25
Q13. I do extra reading through textbooks and course materials	2.40	.866	25
Q15. I don't feel reading in English is time-consuming compared to reading in the mother tongue	2.40	1.041	25
Q16. Reading textbooks and course materials expands my English vocabulary	1.48	.586	25
Q17. I read English books unrelated to my studies	2.28	1.021	25
Q18. I prefer giving oral presentations in English	2.56	1.003	25
Q19. In group-work, I interact with peers in English only	2.80	.500	25
Q20. In class, I interact with instructors in English only	2.32	.852	25
Q21. In class, I find no difficulty answering and asking questions in English	1.92	.862	25
Q22. I can read and understand examination instructions in English	1.64	.569	25
Q23. I can read and understand examination questions in English	1.60	.577	25
Q25. I prefer answering examination questions in English	1.76	.779	25
Q26. I prefer essay examination questions	2.96	.978	25
Q27. In attempting essay questions, I can give detailed answers in English	2.28	.843	25
Q29. I prefer oral assessments to written assessments	2.88	.927	25
Q30. In oral assessments, I can fluently give detailed answers in English	2.28	.792	25
Q31. I don't express myself better in my mother tongue	3.24	1.012	25
Q32. I don't need to address questions in my mother tongue	2.96	.935	25

Q33. I don't feel that English is an obstacle to understanding the content of the lectures	1.96	.735	25
Q34. I don't feel that English is an obstacle to delivering proper answers to assigned questions	2.16	.800	25
Q35. If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	2.56	.961	25
Q36. If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	2.52	1.046	25
Q37. If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	2.76	.970	25

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q8. I find no difficulty taking notes in English	56.88	190.527	.659	.945
Q9. I find no difficulty doing assignments in English	57.00	192.417	.661	.945
Q10. I find no difficulty writing reports in English	56.72	188.043	.742	.944
Q11. I find no difficulty reading textbooks and course materials	56.92	189.327	.789	.944
Q13. I do extra reading through textbooks and course materials	56.20	200.000	.105	.951
Q15. I don't feel reading in English is time-consuming compared to reading in the mother tongue	56.20	193.083	.317	.950
Q16. Reading textbooks and course materials expands my English vocabulary	57.12	196.193	.414	.947
Q17. I read English books unrelated to my studies	56.32	182.477	.718	.944
Q18. I prefer giving oral presentations in English	56.04	182.873	.717	.944
Q19. In group-work, I interact with peers in English only	55.80	199.083	.283	.948
Q20. In class, I interact with instructors in English only	56.28	190.293	.524	.947
Q21. In class, I find no difficulty answering and asking questions in English	56.68	182.810	.848	.943
Q22. I can read and understand examination instructions in English	56.96	190.457	.800	.944

Q23. I can read and understand examination questions in English	57.00	191.667	.709	.945
Q25. I prefer answering examination questions in English	56.84	186.390	.768	.944
Q26. I prefer essay examination questions	55.64	190.657	.434	.948
Q27. In attempting essay questions, I can give detailed answers in English	56.32	184.143	.808	.943
Q29. I prefer oral assessments to written assessments	55.72	185.627	.667	.945
Q30. In oral assessments, I can fluently give detailed answers in English	56.32	187.727	.691	.945
Q31. I don't express myself better in my mother tongue	55.36	183.157	.700	.944
Q32. I don't need to address questions in my mother tongue	55.64	188.157	.558	.946
Q33. I don't feel that English is an obstacle to understanding the content of the lectures	56.64	188.073	.730	.944
Q34. I don't feel that English is an obstacle to delivering proper answers to assigned questions	56.44	185.340	.797	.943
Q35. If the use of the mother tongue was allowed, I would not use it in classroom daily interaction	56.04	185.123	.661	.945
Q36. If the use of the mother tongue was allowed, I would not use it in answering written assessment questions	56.08	180.160	.787	.943
Q37. If the use of the mother tongue was allowed, I would not use it in answering oral assessment questions	55.84	184.307	.687	.945

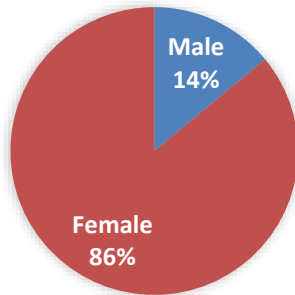
Appendix 6

Data Analyses

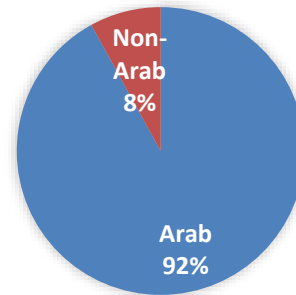
Section A: Demographics

Demographic Variable	Statistics (N = 100)	
	Count	Percent
Gender		
Male	14	14.00
Female	86	86.00
Nationality		
Arab	92	92.00
Non-Arab	8	8.00
Year		
Freshman (1st year student)	36	36.00
Sophomore (2nd year student)	3	3.00
Junior (3rd year student)	58	58.00
Senior (4th year student)	3	3.00
School		
Private High School	63	63.00
Public High School	37	37.00
Parents' Employment		
Only my father is employed	61	61.00
Only my mother is employed	1	1.00
Both of my parents are employed	29	29.00
None of them are employed	9	9.00
Home Spoken Language		
only English with my parents, siblings, labourers...etc	2	2.00
only my mother tongue with my parents, siblings, labourers...etc	57	57.00
both English and my mother tongue with my parents, siblings, labourers...etc	41	41.00
Outside Spoken Language		
only English with friends and colleagues	5	5.00
only my mother tongue with friends and colleagues	27	27.00
both English and my mother tongue with friends and colleagues	68	68.00

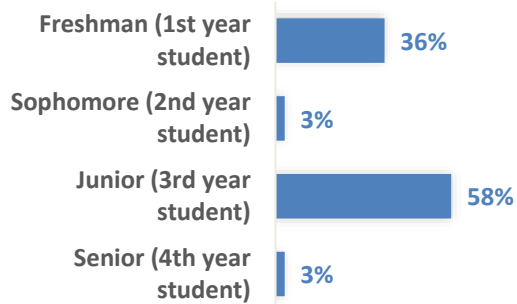
Gender



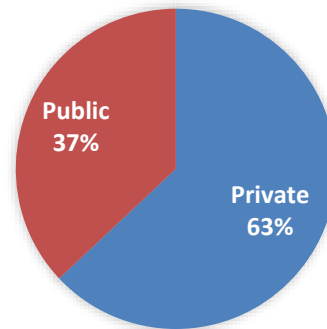
Nationality



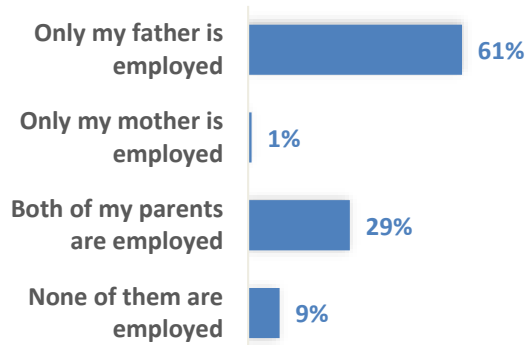
Year



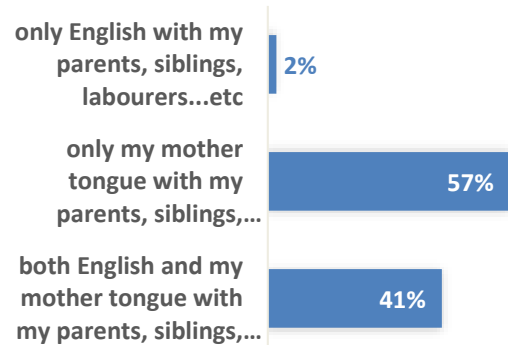
School

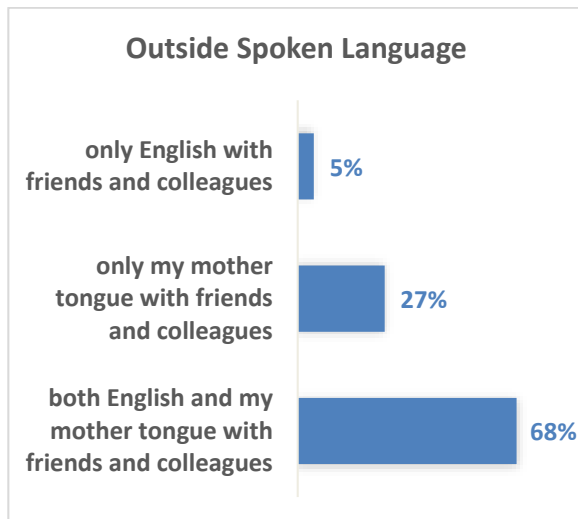


Parents' Employment

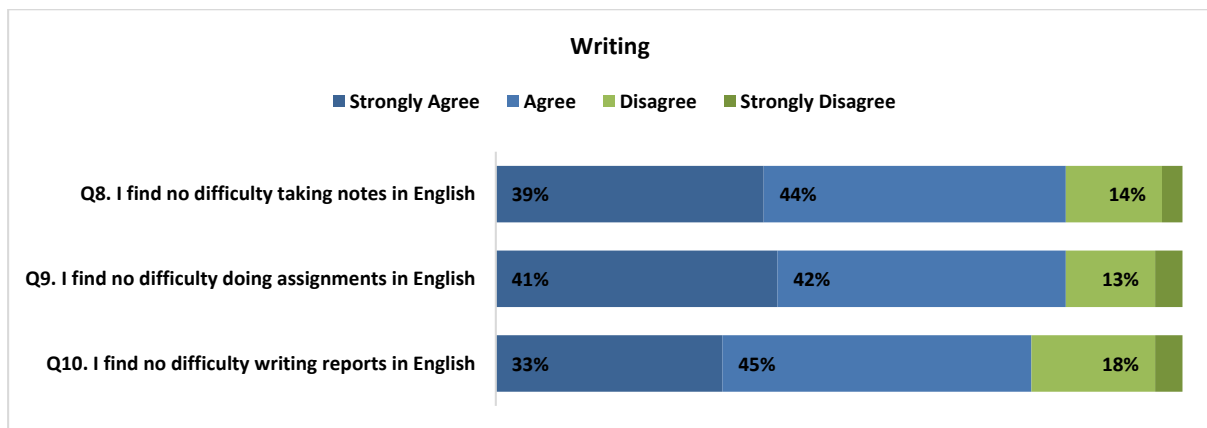


Home Spoken Language

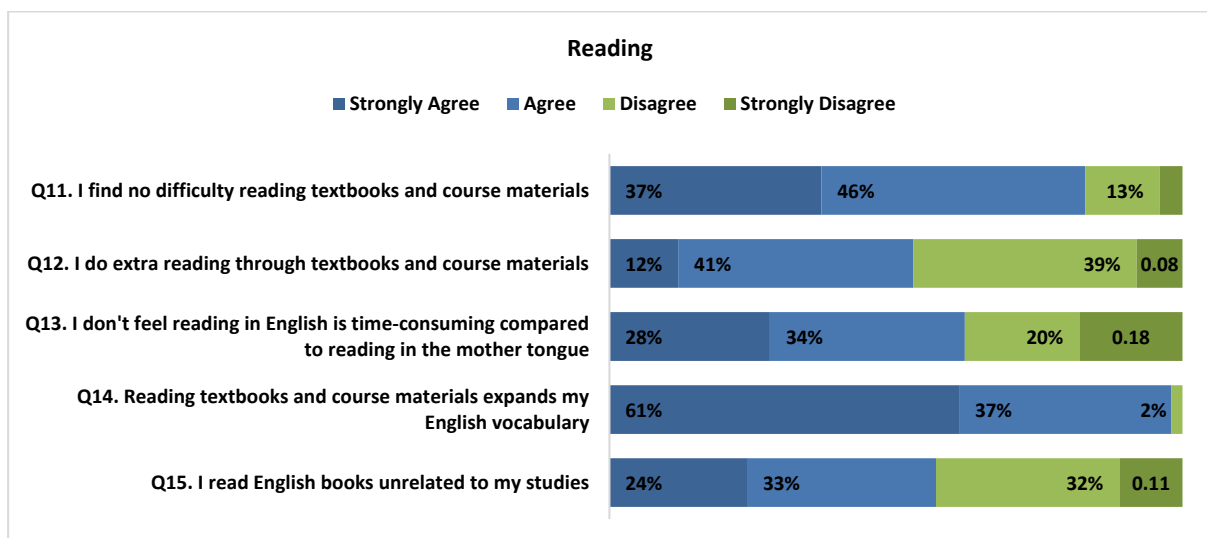




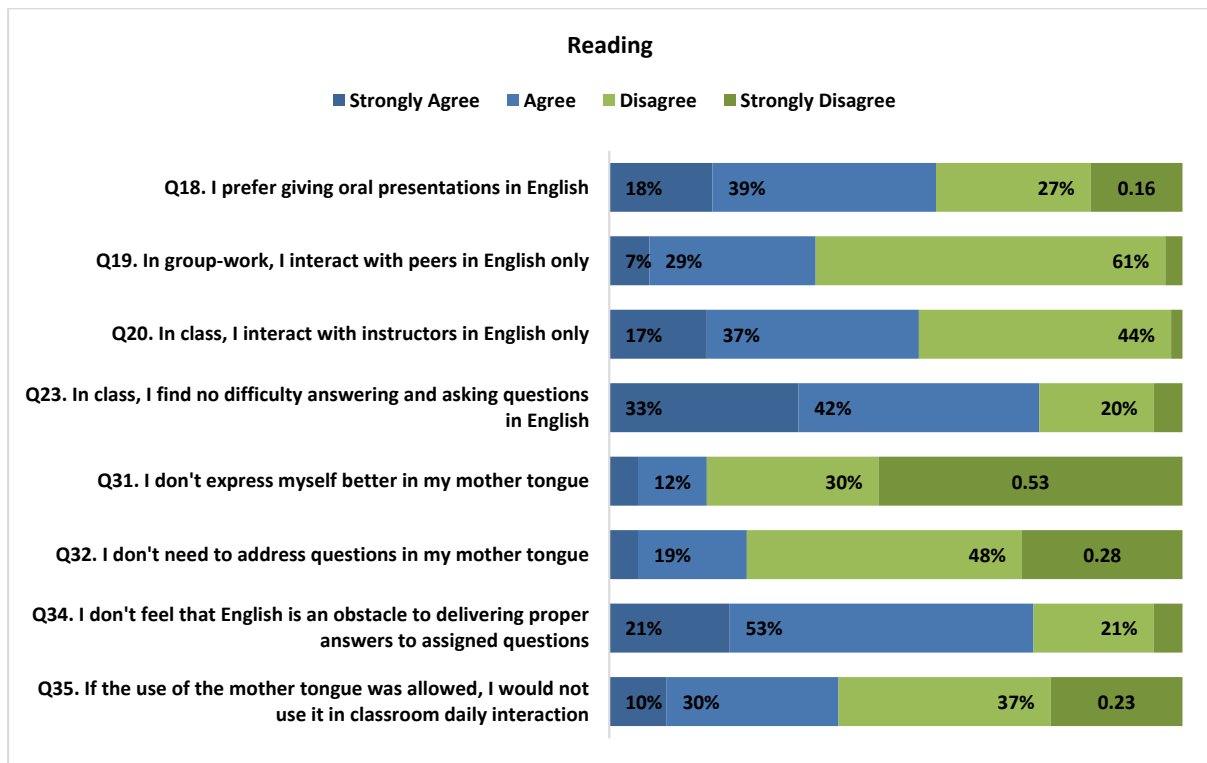
1.1 Section B: Writing



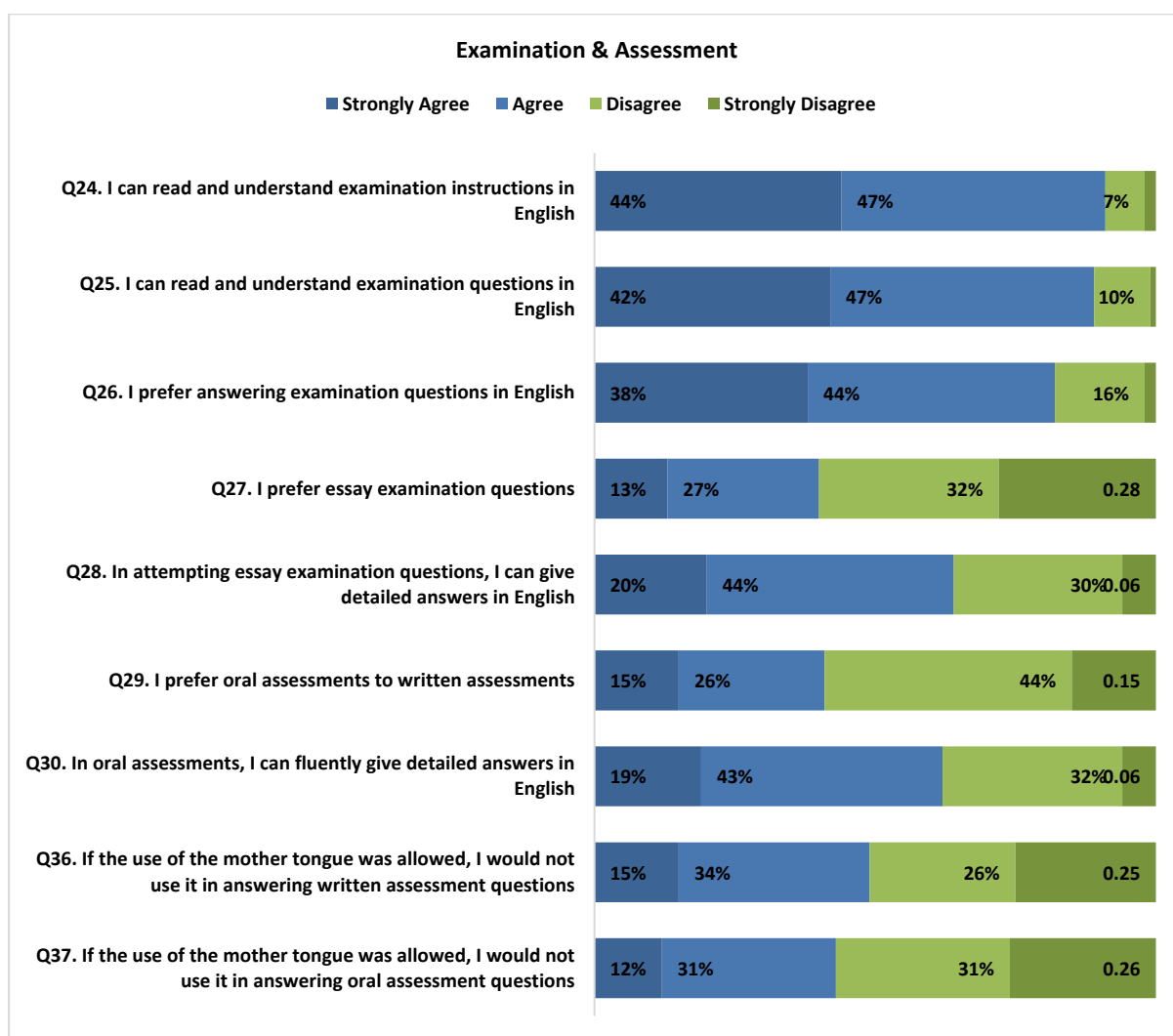
1.2 Section C: Reading



1.3 Section D: Speaking



1.4 Section E: Examination & Assessment



2 Correlation Analysis

Gender

Skills	Male N = 14		Female N = 86		Two-Independent Samples T Test	
	M	SD	M	SD	T statistic	Sig. (2-tailed) $\alpha = .05$
Writing	2.24	.947	1.78	.697	2.149	.034
Reading	2.24	.715	2.02	.499	1.444	.152
Speaking	2.81	.565	2.51	.581	1.813	.073
Examination & Assessment	2.41	.741	2.23	.577	1.040	.301

Nationality

Skills	Arab N = 92		Non-Arab N = 8		Two-Independent Samples T Test	
	M	SD	M	SD	T statistic	Sig. (2-tailed) $\alpha = .05$
Writing	1.91	.741	1.13	.354	5.337	< .001*
Reading	2.10	.517	1.45	.382	3.494	.001
Speaking	2.62	.555	1.81	.406	4.001	< .001
Examination & Assessment	2.30	.605	1.79	.305	4.053	.001*

* P – value reported as < .001 because its value is too small approaching zero.

School Year

Skills	Freshman (1st year student) N = 36		Sophomore (2nd year student) N = 3		Junior (3rd year student) N = 58		Senior (4th year student) N = 3		One-way ANOVA	
	M	SD	M	SD	M	SD	M	SD	F statistic	Sig. (2- tailed) $\alpha = .05$
Writing	1.78	.743	1.33	.577	1.91	.774	2.00	.000	.739	.532
Reading	2.03	.505	1.80	.400	2.06	.571	2.33	.306	.510	.676
Speaking	2.45	.635	2.21	.641	2.61	.544	3.13	.331	1.895	.136
Examination & Assessment	2.26	.579	2.11	.694	2.24	.620	2.78	.401	.825	.483

School Type

Skills	Private N = 63		Public N = 37		Two-Independent Samples T Test	
	M	SD	M	SD	T statistic	Sig. (2-tailed) $\alpha = .05$
Writing	1.75	.759	2.02	.707	-1.774	.079
Reading	1.98	.567	2.17	.462	-1.747	.084
Speaking	2.44	.606	2.74	.503	-2.470	.015
Examination & Assessment	2.13	.608	2.48	.523	-2.990	.004

Parents' Employment

Skills	Only my father is employed N = 61		Both of my parents are employed N = 29		None of them are employed N = 9		One-way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig. (2-tailed) $\alpha = .05$
Writing	1.79	.736	1.85	.780	2.07	.703	.568	.569
Reading	2.05	.533	2.01	.557	2.09	.470	.109	.897
Speaking	2.53	.596	2.58	.586	2.57	.573	.075	.928
Examination & Assessment	2.24	.617	2.26	.597	2.32	.560	.074	.929

*. The Group "Only my mother is employed" was excluded from the analysis as it contains only one case.

Home Spoken Language

Skills	Only English with my parents, siblings, labourers...etc N = 2		Only my mother tongue with my parents, siblings, labourers...etc N = 57		Both English and my mother tongue with my parents, siblings, labourers...etc N = 41		One-way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig. (2-tailed) $\alpha = .05$
Speaking	2.37	.884	2.88	.420	2.11	.478	34.556	< .001**

*. The Group "Only my mother is employed" was excluded from the analysis as it contains only one case.

** P – value reported as < .001 because its value is too small approaching zero.

Post Hoc Tests

Multiple Comparisons			
Dependent Variable: Speaking Skills			
Tukey HSD			
Home Spoken Language (I)	Home Spoken Language (J)	Mean Difference (I-J)	Sig.
only English with my parents, siblings, labourers...etc	only my mother tongue with my parents, siblings, labourers...etc	-.502	.275
	both English and my mother tongue with my parents, siblings, labourers...etc	.265	.697
only my mother tongue with my parents, siblings, labourers...etc	only English with my parents, siblings, labourers...etc	.502	.275
	both English and my mother tongue with my parents, siblings, labourers...etc	.767*	.000
both English and my mother tongue with my parents, siblings, labourers...etc	only English with my parents, siblings, labourers...etc	-.265	.697
	only my mother tongue with my parents, siblings, labourers...etc	-.767*	.000

*. The mean difference is significant at the 0.05 level.

Out-of-Class Language

Skills	Only English with friends and colleagues N = 5		Only my mother tongue with friends and colleagues N = 27		Both English and my mother tongue with friends and colleagues N = 68		One-way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig. (2-tailed) $\alpha = .05$
Speaking	1.93	.549	3.03	.390	2.41	.537	18.736	< .001*

* P – value reported as < .001 because its value is too small approaching zero.

Multiple Comparisons

Dependent Variable: Speaking Skills

Tukey HSD

Out-of-ClassLanguage (I)	Out-of-ClassLanguage (J)	Mean Difference (I-J)	Sig.
only English with friends and colleagues	only my mother tongue with friends and colleagues	-1.103*	.000
	both English and my mother tongue with friends and colleagues	-.485	.098
only my mother tongue with friends and colleagues	only English with friends and colleagues	1.103*	.000
	both English and my mother tongue with friends and colleagues	.618*	.000
both English and my mother tongue with friends and colleagues	only English with friends and colleagues	.485	.098
	only my mother tongue with friends and colleagues	-.618*	.000

*, The mean difference is significant at the 0.05 level.

Crosstabulation

\$writing*Q1 Crosstabulation

			Gender		Total
			Male	Female	
\$writing ^a	Strongly Agree	Count	12	101	113
		% within Q1	28.6%	39.1%	
	Agree	Count	14	117	131
		% within Q1	33.3%	45.3%	
	Disagree	Count	10	35	45
		% within Q1	23.8%	13.6%	
	Strongly Disagree	Count	6	5	11
		% within Q1	14.3%	1.9%	
Total	Count	42	258	300	

Percentages and totals are based on responses.

a. Group

\$writing*Q2 Crosstabulation

			Nationality		Total
			Arab	Non-Arab	
\$writing ^a	Strongly Agree	Count	92	21	113
		% within Q2	33.3%	87.5%	
	Agree	Count	128	3	131
		% within Q2	46.4%	12.5%	
	Disagree	Count	45	0	45
		% within Q2	16.3%	0.0%	
	Strongly Disagree	Count	11	0	11
		% within Q2	4.0%	0.0%	
Total		Count	276	24	300

Percentages and totals are based on responses.

a. Group

\$reading*Q2 Crosstabulation

			Nationality		Total
			Arab	Non-Arab	
\$reading ^a	Strongly Agree	Count	136	26	162
		% within Q2	29.6%	65.0%	
	Agree	Count	180	11	191
		% within Q2	39.1%	27.5%	
	Disagree	Count	104	2	106
		% within Q2	22.6%	5.0%	
	Strongly Disagree	Count	40	1	41
		% within Q2	8.7%	2.5%	
Total		Count	460	40	500

Percentages and totals are based on responses.

a. Group

\$speaking*Q2 Crosstabulation

			Nationality		Total
			Arab	Non-Arab	
\$speaking ^a	Strongly Agree	Count	90	26	116
		% within Q2	12.2%	40.6%	
	Agree	Count	234	27	261

		% within Q2	31.8%	42.2%	
	Disagree	Count	280	8	288
		% within Q2	38.0%	12.5%	
	Strongly Disagree	Count	132	3	135
		% within Q2	17.9%	4.7%	
Total		Count	736	64	800

Percentages and totals are based on responses.

a. Group

\$ass_exam*Q2 Crosstabulation

			Nationality		Total
			Arab	Non-Arab	
\$ass_exam ^a	Strongly Agree	Count	189	29	218
		% within Q2	22.8%	40.3%	
	Agree	Count	311	32	343
		% within Q2	37.6%	44.4%	
	Disagree	Count	220	8	228
		% within Q2	26.6%	11.1%	
	Strongly Disagree	Count	108	3	111
		% within Q2	13.0%	4.2%	
Total		Count	828	72	900

Percentages and totals are based on responses.

a. Group

\$speaking*Q6 Crosstabulation

			Home spoken language			Total
			only English with my parents, siblings, labourers...etc	only my mother tongue with my parents, siblings, labourers...etc	both English and my mother tongue with my parents, siblings, labourers...etc	
\$speaking ^a	Strongly Agree	Count	6	20	90	116
		% within Q6	37.5%	4.4%	27.4%	
	Agree	Count	2	130	129	261
		% within Q6	12.5%	28.5%	39.3%	
	Disagree	Count	4	192	92	288
		% within Q6	25.0%	42.1%	28.0%	
	Strongly Disagree	Count	4	114	17	135

	% within Q6	25.0%	25.0%	5.2%	
Total	Count	16	456	328	800

Percentages and totals are based on responses.

a. Group

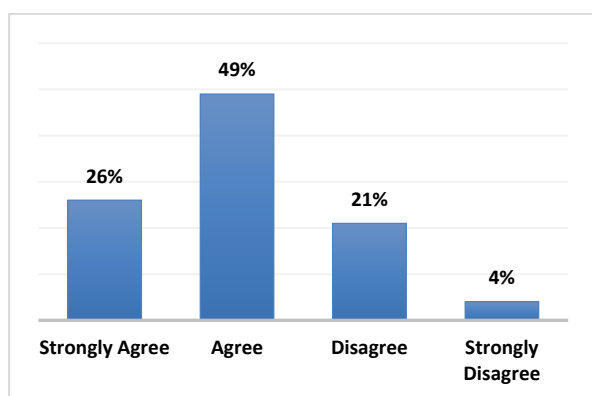
\$speaking*Q7 Crosstabulation

			outside spoken language			Total
			only English with friends and colleagues	only my mother tongue with friends and colleagues	both English and my mother tongue with friends and colleagues	
\$speaking ^a	Strongly Agree	Count	17	2	97	116
		% within Q7	42.5%	0.9%	17.8%	
	Agree	Count	13	54	194	261
		% within Q7	32.5%	25.0%	35.7%	
	Disagree	Count	6	96	186	288
		% within Q7	15.0%	44.4%	34.2%	
	Strongly Disagree	Count	4	64	67	135
		% within Q7	10.0%	29.6%	12.3%	
Total	Count	40	216	544	800	

Percentages and totals are based on responses.

a. Group

Section F: Listening (Q. 37)



Gender

Male N = 14		Female N = 86		Two-Independent Samples T Test	
M	SD	M	SD	T statistic	Sig. (2-tailed)

	$\alpha = .05$					
I don't feel that English is an obstacle to understanding the content of the lectures	2.50	1.160	1.95	.701	1.712	.108

Nationality

	Arab N = 92		Non-Arab N = 8		Two-Independent Samples T Test	
	M	SD	M	SD	T statistic	Sig. (2-tailed) $\alpha = .05$
I don't feel that English is an obstacle to understanding the content of the lectures	2.09	.794	1.37	.518	2.486	.015

Year

	Freshman N = 36		Sophomore N = 3		Junior N = 58		Senior N = 3		One-Way ANOVA	
	M	SD	M	SD	M	SD	M	SD	F statistic	Sig.
I don't feel that English is an obstacle to understanding the content of the lectures	1.89	.747	2.00	1.000	2.07	.814	3.00	.000	1.960	.125

School

	Private N = 63		Public N = 37		Two-Independent Samples T Test	
	M	SD	M	SD	T statistic	Sig. (2-tailed) $\alpha = .05$
I don't feel that English is an obstacle to understanding the content of the lectures	1.86	.780	2.32	.747	-2.936	.004

Parents' employment

	Only my father is employed N = 61		Both of my parents are employed N = 29		None of them are employed N = 9		One-Way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig.
I don't feel that English is an obstacle to understanding the content of the lectures	1.90	.810	2.17	.759	2.44	.726	2.521	.086

Home Spoken Language

	only English with parents, siblings, labourers...etc N = 2		only mother tongue with parents, siblings, labourers...etc N = 57		both English and mother tongue with parents, siblings, labourers...etc N = 41		One-Way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig.
I don't feel that English is an obstacle to understanding the content of the lectures	2.00	1.414	2.28	.774	1.68	.687	7.601	.001

Post Hoc

Multiple Comparisons

Dependent Variable: Q33. I don't feel that English is an obstacle to understanding the content of the lectures

Tukey HSD

Home spoken language (I)	Home spoken language (J)	Mean Difference (I-J)	Sig.
only English with parents, siblings, labourers...etc	only mother tongue with parents, siblings, labourers...etc	-.28070	.861
	both English and mother tongue with parents, siblings, labourers...etc	.31707	.829
only mother tongue with parents, siblings, labourers...etc	only English with parents, siblings, labourers...etc	.28070	.861
	both English and mother tongue with parents, siblings, labourers...etc	.59777*	.001
both English and mother tongue with parents, siblings, labourers...etc	only English with parents, siblings, labourers...etc	-.31707	.829
	only mother tongue with parents, siblings, labourers...etc	-.59777*	.001

*. The mean difference is significant at the 0.05 level.

Out-of-class Language

	only English with friends and colleagues N = 5		only mother tongue with friends and colleagues N = 27		both English and mother tongue with friends and colleagues N = 68		One-Way ANOVA	
	M	SD	M	SD	M	SD	F statistic	Sig.
I don't feel that English is an obstacle to understanding the content of the lectures	1.60	.894	2.37	.792	1.93	.759	3.989	.022

Post Hoc

Multiple Comparisons

Dependent Variable: Q33. I don't feel that English is an obstacle to understanding the content of the lectures

Tukey HSD

outside spoken language (I)	outside spoken language (J)	Mean Difference (I-J)	Sig.
only English with friends and colleagues	only mother tongue with friends and colleagues	-.77037	.107
	both English and mother tongue with friends and colleagues	-.32647	.635
only mother tongue with friends and colleagues	only English with friends and colleagues	.77037	.107
	both English and mother tongue with friends and colleagues	.44390*	.035
both English and mother tongue with friends and colleagues	only English with friends and colleagues	.32647	.635
	only mother tongue with friends and colleagues	-.44390*	.035

*, The mean difference is significant at the 0.05 level.