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Omani Engineering Students' Experiences of Learning through the Medium of English

Holi Ibrahim Holi Ali

A thesis submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Doctor of Philosophy

The University of Huddersfield

November 2017

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7. Presented a paper entitled: “Insights into English as a Medium of Instruction (EMI) Opportunities, Challenges & Controversies in Engineering Education: Omani Students’ Experiences”–*Rustaq-CAS Professional Development Academic Year 2014/2015*–19 May 2015, Rustaq CAS-Oman.
8. Presented a paper entitled: “Gulf Students’ Experiences in an English-Medium Engineering Programme”–University of Huddersfield, *PGR Conference*, 13 November 2015, UK, Huddersfield.
9. Presented a research paper entitled: “*Being a Student in English-Medium Engineering Programmes: Experiences and Challenges*”–*The 49th International IATEFL Conference*–11-14 April 2015, Manchester, UK.
10. Presented a research paper entitled: “Revisiting EAP to Meet Language Needs of Omani Engineering Students”–*The 48th International IATEFL Conference*–11-14 April 2014, HIC-Harrogate, UK.
11. Presented a research paper entitled: “Rethinking Omani Engineering Students’ Study and Workplace English Language Needs”–*The 5th Annual ESP Conference* –26 April 2014, Al-Hosn University, UAE.
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Abstract

The focus and the overarching aims of the study are to investigate Omani engineering students' perceptions of their learning experiences and the challenges which they face due to English being the medium of instruction in colleges of technology in Oman, as well as the strategies which they use to overcome their difficulties. This study also examines the views of engineering, EAP and subject teachers in Oman concerning the skills and attributes which they consider to be important for their students to succeed. Qualitative and interpretative methodologies were combined with a multi-theoretical framework to elicit the students' experiences and perceptions of study through English as the Medium of Instruction (EMI) provision as well as their responses to it. The data for the study was generated and gathered through semi-structured interviews, observations and the review of course-related documents. The study revealed that the participating students generally held positive views towards EMI, mostly on the basis that it would help them to improve their language skills, which would in turn enhance their employability. The students, however, encountered many EMI-related and non-EMI-related challenges. The most common problems related to lecture comprehension, oral and written communication, and discipline specific issues. Students developed a range of coping strategies, one of the most common being *translanguaging*. The study indicates that there are a number of issues which need to be considered to improve the in-session EAP courses in relation to EMI-related challenges. The interviews highlighted the role and importance of subject teachers in helping students. Engineering students need an array of skills and attributes to function well in engineering programmes taught through the medium of English, including sophisticated communication skills, transferable skills, critical thinking, resilience, flexibility and the appropriate language skills. The study underlines a need to review the pre-college schooling system and foundation programmes in Oman if they are to effectively prepare students for English-medium college programmes. It is also recommended that training to teach through the medium of English should be included in the induction process for new subject teachers in Omani colleges of technology.

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List of abbreviations

ABET	American Board for Engineering and Technology
AC	Air Conditioning
ACLITS	Academic Literacies
AMI	Arabic Medium Instruction
CBT	Content-based Teaching
CLIL	Content Language Integrated Instruction
EAP	English for Academic Purposes
EFL	English as a Foreign Language
ELT	English Language Teaching
EMI	English as Medium of Instruction
ESL	English as a Second Language
ESP	English for Specific Purposes
FAS	Faculty of Applied Sciences
GCC	Cooperation Council
GFP	General Foundation Programme
HCT	Higher College of Technology
HE	Higher Education
HEIs	Higher Education Institutions
ICT	Information Communication Technology
L1	First Language
L2	Second Language
MoE	Ministry of Education (Oman)
MoI	Ministry of Information (Oman)
MoMP	Ministry of Manpower (Oman)
NESB	Non-English-Speaking Background
OAAA	Oman Academic Accreditation Authority
PS	Public Speaking
SQU	Sultan Qaboos University (Oman)

TC	Technical Communication
TOFEL	Test of English as a Foreign Language
TW	Technical Writing
TWI	Technical Writing I
TWII	Technical Writing II
UAE	United Arab Emirates
VDI	The German Engineering Association
VTCs	Vocational Training Centres (Oman)
WID	Writing in the Discipline

Chapter 1: Introducing the Study

1. Introduction

Oman has formulated a number of strategic plans and policies for advancing and developing the country's economy, human resources and education sectors. Educational policies in Oman are based upon Sultan Qaboos's visions and instructions (World Data on Education, 2010/2011). In response, several technical and vocational training centres and colleges were established to meet the social and economic development needs of the country. This study is set in one of the public governmental colleges in the Sultanate of Oman to critically consider engineering students' experiences of learning through the medium of English within Oman, as well as the experiences of their teachers. The study was first conceived from general observation and practical experience in the field of teaching engineering students English for Specific Purposes/English for Academic Purposes (ESP/EAP) for a period of two years in Oman. It was noted that engineering students who studied ESP/EAP in the public governmental colleges at the post-foundation level in Oman faced many linguistic and academic challenges in their disciplinary courses, particularly engineering, after their completion of both foundation and the post-foundation technical English courses in a public college. These post-foundation EAP/ESP programmes are primarily intended to help students to progress to their academic departments where English is used as the medium of instruction. These courses are credited and they are mainly centred on report writing skills, presentation skills, technical communication and public-speaking skills. There are a number of survey-based and interview-based studies which have been conducted on the area of EMI in the Arab world, and in the Gulf in particular, but most of them have dealt with students' experiences during their pre-college stage rather than during their specialisation stage, for example, Solloway (2016), Al-Mahrooqi (2012) and Al-Husseini (2004). Therefore, this study sets out to investigate engineering students' experiences using an exploratory research design with qualitative data obtained through semi-structured interviews, classroom observations and document analysis. These experiences were inevitably shaped by the students' previous educational backgrounds in their primary and secondary schools, their previous language of instruction in their schooling, their linguistic identity and a number of other socio-cultural and educational factors.

1.1 General background to the study

The English language today is not only a language to be learned for pragmatic purposes, such as education and job prospects; it has gone beyond that to function as the effective lingua franca for the ever-changing globalised world (Al-Issa and Dahan, 2011). English as a medium of instruction (EMI) in higher education (HE) has become a common practice throughout most of the world to increase the internationalisation of education and to facilitate the global employability of graduates (Tatzal, 2011). There is a growing global tendency for English to be used as a medium of instruction in higher educational international contexts, even when the majority of the population speak a local language (Vu, 2014:2). It is generally believed that HE institutions using English as the medium of instruction will expand rapidly. There is intensified global competition for professionals, and particularly for engineers, in the labour market as international companies use communication in English as one of the major criteria for recruiting their staff (Cox et al., 2007). Most of the public and private HE institutions in Oman teach science-based and humanities majors in English (Al-Mahrooqi, 2012). The English language has institutional domains in the mass media, education and business in Oman (Al-Busaidi, 1995). Since the 1990s, English has been used as a medium of instruction in engineering and science-related disciplines to help students scaffold their English language competencies and to enable the country to succeed in implementing its vision in education and sustainable development (ibid., 1995). English-medium instruction (EMI) is usually associated with and traced back to the European content language integrated learning (CLIL) movement and content-based teaching (CBT), and to bilingual education in native English-speaking contexts. However, the concept of EMI is not restricted to teaching methodology but extends to cover policymaking and language planning (Vu, 2013). Additionally, Coleman (2011) asserts that English plays an important role in “increasing employability, facilitating international mobility, unlocking development opportunity, and accessing crucial information, and acting as an impartial language” (2011b, p.8).

The English language has a global impact on engineering and science-related programmes offered by HE institutions. Further, implementing EMI helps to instruct students according to international standards and helps them to become professionals who can compete in the international job market (Tamtam, 2010). The use of EMI has encouraged international cooperation and interaction between higher education institutions in various fields (Crystal, 2003), however, the adoption of EMI in the English as a Foreign Language/English as a

Second Language (EFL/ESL) context has created many challenges and difficulties for students. Therefore, this study was undertaken to explore Omani students' experiences and the challenges faced in coping with EMI in an engineering programme in a public governmental college in Oman.

1.2 Contextual background: the setting of the study

This section aims to provide contextual backgrounds within which technical and vocational education, and specifically engineering specialisations, are situated in Oman. The section will present some information about Oman and its geography, demography, educational system, engineering education and the status of the English language as a medium of instruction in tertiary education.

1.2.1 Sultanate of Oman: geography and demography

The Sultanate of Oman is an Arab, Muslim country located geographically at the mouth of the Arabian Gulf, specifically on the southern eastern coast of the Arabian Peninsula. It is bordered by the Kingdom of Saudi Arabia to the west, the United Arab Emirates (UAE) to the northwest, Yemen to the west, and it shares marine borders with both Iran and Pakistan. The Sultanate of Oman is a key member of the Gulf Cooperation Council (GCC) and it is an important ally of the West as it is located on the strategically critical Straits of Hormuz at the entrance of the Arabian Gulf (Barret, 2011, p.1). The Sultanate of Oman is the third largest country in the Arabian Peninsula with an area of 309,500 square kilometres of land (Ministry of Information (MOI)-Oman, 2006). According to the last census in 2003, Oman had a total population estimated at 2.23 million. Geographically, the country is divided into 11 governorates which are: Ad Dakhiliyah, Ad Dhahirah , Al Batinah North, Al Batinah South, Al Buraimi ,Al Wusta, Ash Sharqiyah North, Ash Sharqiyah South, Muscat Governorate, Musandam, and Dhofar. Public and private colleges and universities operate in most these governorates. Omani secondary school leavers compete for places at tertiary education institutions across Oman governorates in engineering, business, IT, education, law, modern languages, medical studies, accountancy and management. English is used as a medium of instruction in both private and public HE institutions across the country.

1.2.2 An overview of Oman's educational system

The modern education system in Oman began in 1970 when His Majesty Sultan Qaboos became ruler of the country (Al-Nabahani, 2007; Al Mamari, 2009). Since then Oman has witnessed great development and change in formal education. Before 1990 there was informal education which centred on religious education, but from 1970 to date the Omani education system has developed both quantitatively and qualitatively, and this has impacted on its economy and the entire country (Al-Hinai, 2006). The number of schools and HE institutions has dramatically increased during the last two decades in Oman. There are approximately 1,000 governmental schools and around 62 higher education institutions in Oman. In 1997, Oman introduced the 'basic education system' and this was implemented in the academic year 1998/1999 to replace the 'three level general education system' (primary, preparatory and secondary) as a reform to the whole of general education across the country. This reform was motivated by His Majesty the Sultan's directives to expand and reform, and to offer quality education to all Omani citizens. The basic education system consists of three cycles: the first cycle covers grades 1-4, which covers ages 6-10; the second includes grades 5-10 (ages 10-16), and the third cycle covers grades from 11-12 (age 17-18) (MoE, 2001). This reform was based on the country's strategic development plan from 1995-2020 under the 'vision of 2020' (Ministry of National Economy, 1999). The main reason for introducing the new basic education system was to improve the quality of education, and to enable students to acquire knowledge and transferable skills to assist them to cope with the higher and vocational education needs of Oman. Arabic is the approved medium of instruction at the school level and English is taught as a subject. However, some private schools use English language for teaching science-related courses, such as mathematics and science, and the use of English as a medium of instruction in private schools is subject to approval from the Ministry of Education (World Data on Education, 2010/11).

HE is relatively young in Oman and the first university was established in 1986. Afterwards, a number of public and private universities and colleges were established. HE in Oman has two major institutional structure levels, namely, the policymaking level, which is represented by the Council of Higher Education (which is the regulatory governing body which issues general policies of education and scientific research), and the policy-implementation level, represented by different institutions and ministries, which are responsible for implementing the policies, strategies and plans approved by the Council of Higher Education. The Council of Higher

Education supervises all education matters in Oman, including both Ministry of Education and Ministry of Higher Education (MoHE) levels. The Council was formed on 27 September 1998 by His Majesty's Royal Decree number 65/68 to strengthen the importance and position of this Council. It consists of the ministers of Higher Education, National Economy and Civil Services, the President of Sultan Qaboos University and representatives of different educational sectors. There are a number of ministries in Oman which own their own HE institutions. HE institutions admit students who successfully complete their secondary certificate. Tertiary education institutions are owned and governed by a variety of entities and organisations, including the Ministry of Higher Education (MoHE), which owns the colleges of applied sciences, The Ministry of Manpower (MoMP) owns colleges of technology and vocational training centres (VTCs), the Ministry of Defence owns the Command and Staff College, the Military Technological College, academies and training centres. The Ministry of Health owns nursing institutes and health science institutes. The Ministry of Awqaf and Religious Affairs owns the Institutes of Shari'a Sciences and the Central Bank of Oman owns the College of Banking and Financial Studies, The Royal Oman Police own the Royal Oman Police Academy. Private sector bodies own private colleges and universities which are independently run by the private sector. Sultan Qaboos University (SQU) is an independent governmental institution run by the Royal Diwan Court. Engineering programmes are offered in some of these institutions, which have the fundamental mission of producing highly qualified technicians, technologists and professional engineers, who have the underpinning knowledge of engineering to serve the Sultanate. Engineering education is of the utmost importance for development and Oman has made great efforts to ensure that it has well-established engineering education which could help in building the country. Engineering programmes were launched in SQU and in the seven colleges of technology and also in some of the public colleges of applied sciences. Moreover, many private universities and colleges were established and they have been offering degrees in most engineering specialities. Colleges of technology and some colleges of applied sciences in Oman offer a diverse selection of engineering specialisations.

The use of EMI is a common practice in college and university-based engineering education programmes in the Arab world and in the Gulf, and in Oman in particular (Al-Mahrooqi and Denman, 2016; Al-Bakri, 2013; Troudi and Jendli, 2011; Al-Busaidi, 1995). Higher education institutions in the Arabian Gulf use EMI as a 'gatekeeper' as students are expected to achieve certain language proficiency requirements in order to be admitted to some colleges and

universities (Al-Bakri, 2014; Troudi and Jendli 2011; Troudi, 2009). The college which was chosen as the focus of this study has three departments, and within each department there are specialisations. The three main engineering departments are: Civil and Architectural Engineering, which involves specialisations in civil engineering, architectural engineering, quantity surveying and land surveying. Secondly, there is Electrical and Electronic Engineering, which includes specialisms in electrical power engineering, computer engineering, electronics and telecommunication engineering, and biomedical engineering. Finally, there is the Department of Mechanical and Industrial Engineering, which covers mechanical engineering, chemical engineering, oil and gas diploma, and an AC/refrigeration diploma (<http://www.hct.edu.om/academic-departments/engineering>). Throughout the provision in all three departments English is used as a medium of instruction in the diploma, higher diploma and B.Tech levels. The vast majority of the students had their post-schooling in public schools where Arabic is used as a medium of instruction and English was taught only as a subject as opposed to being the medium of instruction. The present study attempts to explore engineering students' experiences and challenges with EMI in their engineering programmes because the lack of communication skills in engineering education has the potential to undermine the whole profile of the professional engineer (Riemer, 2002). Moreover, there is paucity of research on the use of EMI in engineering contexts worldwide, in the Arabian region, and particularly in Oman. This study intends to address these gaps by exploration of engineering students' experiences and the challenges that they encounter in an English-medium programme, and to contribute to the existing theory and knowledge on EMI in the Gulf and in Oman in particular, where EMI research is still in its infancy, especially from a pragmatic stance.

1.2.2 Engineering and technical education in Oman

The Ministry of Manpower supervises technical education and vocational training in Oman. The Omani government exerts its efforts to promote vocational education by establishing vocational training institutes and technical colleges. In 1991, five Technical Industrial Colleges (in 2002 the title was changed to Colleges of Technology) were established in five different regions in Oman and in 2006 and 2008 two more colleges were opened. There are also a number of vocational training centres (VTCs) across Oman to cater for secondary school leavers to prepare qualified Omani technicians to work for both the private and public sectors. The main aim of these colleges is to train skilled technicians who are able to hold posts in the

labour market. These colleges offer programmes such as business, engineering, information technology and laboratory science. The colleges are mainly for students who want to complete their post-secondary studies and these students must go through one-year foundation programmes which equip them with basic linguistic and study skills. After they finish their foundation programme they have to opt for English language courses (see appendix 6). The purpose of these courses is to help the students to function and communicate effectively in both their specialities and the labour market. However, most of the students face many challenges when they join their discipline area.

1.2.4 Why engineering?

HE in Oman is relatively young but it has witnessed dramatic development in recent years. The first public university was established in 1986 but there are now around 62 higher education institutions (Al Bandary, 2005; Al-Shmeli, 2009). Omani HE has seen significant reform in engineering as with other disciplines. Many private and public colleges were opened, which offer engineering and science-related programmes, in order to meet the demands of local and international industry in response to globalisation. The rationale behind choosing engineering as the discipline for the focus of this study is based on four factors. Firstly, I had taught engineering students ESP/EAP and academic study skills-related courses for a number of years and had observed that many Omani engineering students had been encountering language-related problems after they successfully completed their foundation (pre-sessional) and post-foundation (in-sessional) courses. Secondly, although there is a growing number of EMI research studies, and in the Gulf region in particular, there is a paucity of research on engineering students' experiences and perspectives with regard to the use of EMI and the challenges it presents. Third, the vast majority of EMI studies within the Gulf region were conducted on disciplines such as business and medicine, and most were survey-based and focused on students' attitudes and perceptions towards EMI rather than getting deeper into their experiences and the impact of EMI. Finally, engineering as a discipline is the most widely offered in the Gulf region, and this is particularly the case in Oman. Most of the higher education institutions (HEIs) in Oman, private and public, offer programmes in engineering.

1.2.5 The College of Innovation (Pseudonym)

Oman has adopted many strategies and policies for sustainable development and quality education since his Majesty Sultan Qaboos ascended to rule in 1970. As stated above, one of the key strategies is the 1996-2020 strategy. The Omani government has implemented a new strategy, *Visions of Oman's Economy: Oman 2020*. One of the objectives of this strategy is “the training of Oman’s citizens, promotion of their skills, as well as adoption of policies aiming for the promotion of each citizen’s standard of living” (Ministry of National Economy, 1999, p.51). Technical and vocational education has been given priority by establishing a number of public colleges across the country. A college of technology, the College of Innovation (pseudonym), is located in the interior and it was established in 1993 at the initiative of His Majesty Sultan Qaboos Bin Said to educate the citizens of Oman by implementing high quality programmes in various fields. It is one of seven colleges under the Ministry of Manpower (MoM) in the Sultanate. The colleges were intended to endow the Omani youth with knowledge and skills to face the challenges of the new era (<http://www.hct.edu.om/about/the-college>). The College of Innovation offers degrees in engineering and business. It has been observed that most of the students, however, face linguistic and academic challenges in their English-medium programmes as they graduated from schools with a low command of English (Al Mahrooqi, 2012a; Al Mamari, 2012; Sergon, 2011).

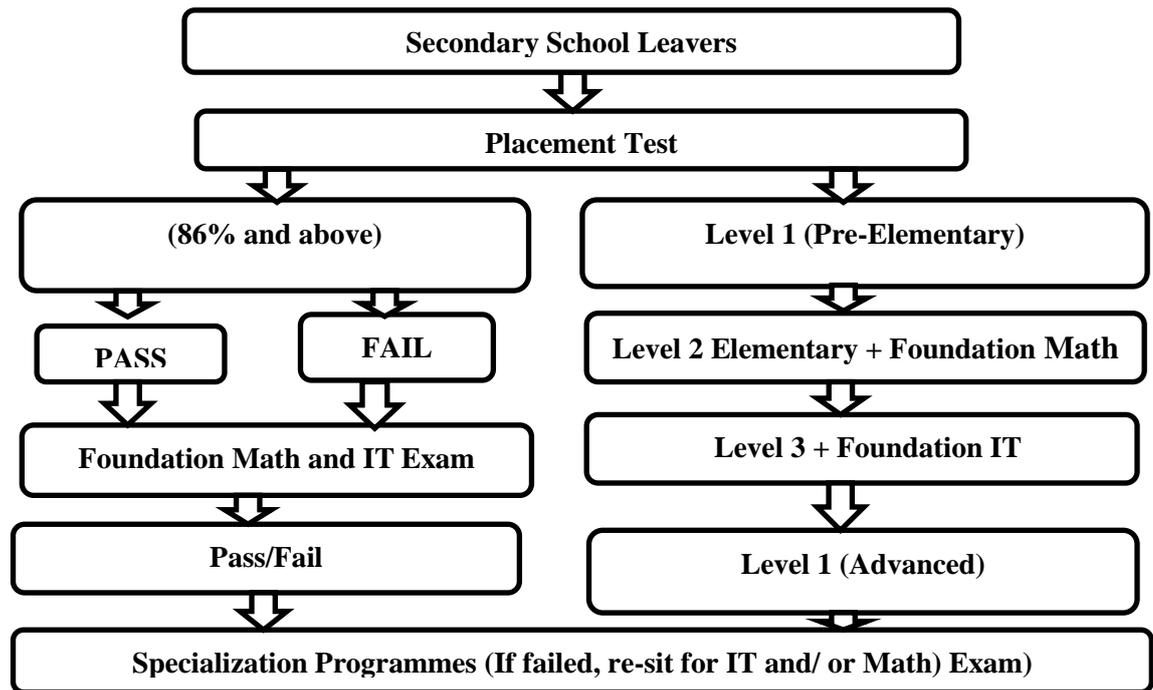
1.2.6 General foundation programme (pre-sessional and in-sessional) in the College of Innovation

The Higher Education Council in Oman and the Ministry of Higher Education issued guidelines in 2008 for establishing academic standards to be adopted by all General Foundation Programmes in all public and private HEIs operating in the Sultanate of Oman (Oman Academic Accreditation Authority [OAAA], 2008, pp.4-9). The Oman Academic Accreditation Authority (QAAA, 2008) emphasises in its strategic plan: “We will develop and implement a robust internationally-benchmarked external review process for General Foundation Programs which helps ensure that students are adequately prepared for their higher education studies”.

The academic year 2008/2009 was the first year for implementing the national standards for General Foundation Programmes (GPF) in Omani HEIs (Al-Mamari, 2012, p.1). The rationale was based on some of the learning outcomes which were tailored to enhance quality in General

Foundation Programmes (ibid., 1). The foundation programmes are run in all HEIs across the country. The foundation (pre-sessional) programme lasts for one to two academic years based on a student's score that he or she got on their placement or admission tests, whereas the post-foundation programme (in-sessional) runs concurrently with the specialisation or the content courses in some HEIs in Oman; some of them were offered for one to two years only during the specialisation study period. The General Foundation Programme offers four major areas of learning: English, maths, IT and study skills to support students' academic capabilities and to achieve its learning outcomes (Al-Mamari, 2012, p.2). 80% of higher education institutions' newly admitted students in Oman are first required to opt for a general foundation programme before joining their specialities (Carroll, 2007; Al-Mamari, 2012). Those students who achieved higher marks on their placement tests or have an IELTS score of at least 5.0 (with none of the four skills of writing, speaking, reading and listening below 4.5), or a TOEFL score of at least 500, will be deemed equivalent to passing English language standards (OAAA, 2008) and ICDL/IC3 certificates of information technology literacy will be exempted from the IT component (Al-Mamari, 2012, p.2). The structure of the foundation programme of the college in question consists of two major components, namely, foundation (pre-sessional) and post-foundation (in-sessional) programmes. The English programme at the foundation level (pre-sessional) consists of four levels: pre-elementary, elementary, intermediate and advanced. The newly admitted students are allocated to these levels based on the placement results (<http://www.manpower.gov.om/colleges>). Both foundation and post-foundation courses are delivered by experienced teachers coming from diverse national backgrounds with experience of teaching EFL/ESL students within the Gulf region and around the world. The structure of the foundation programme is shown below in the diagram:

Figure 1.2.6: General foundation programme (pre-sessional and in-sessional)



Source: <http://www.manpower.gov.om/colleges>

Having completed their general foundation programme (GFP) successfully, students are expected to enrol onto their speciality and the post-programme (in-sessional) courses. They need to opt for their post-foundation credited courses: Technical Writing I (TWI), Technical Writing II (TWII), Technical Communication (TC) and Public Speaking (PS) respectively (see appendix 6). All the students are taught these courses up to the second year of their degree courses. The main purpose of these courses is to equip students, regardless of their speciality, with the necessary skills that would help them to cope with their specialities and the potential challenges of EMI. However, engineering core subject teachers have repeatedly reported that some students who have undergone the foundation and post-foundation courses still encounter many difficulties with their specialities (Al-Bakri, 2017; Mouhanna 2016; Solloway 2016; Al-Mahrooqi and Tuzlukova, 2014; Belhiah and Elham, 2014). Therefore, this study addresses engineering students' experiences and perspectives on EMI in their engineering education and its impact on them and their studies.

1.2.7 Language policy in Oman

There are a number of languages spoken in Oman; however, Arabic and English are the most widely spoken. Omani policymakers maintain that the English language must be the medium of instruction in education and training in technology, the oil industry, commerce and business,

and in managing the country's natural resources (Al-Busaidi, 1995). However, Arabic is used as the language of education in public and private school education all over the country. Upon completion of their primary and secondary education, Omani students experience a radical shift from Arabic-medium in schooling to English-medium in their tertiary education. This shift has created problems which are usually related to English language proficiency and competence, lack of academic and study skills, and limitations in the students' abilities to perform well and to cope with the needs and challenges of an EMI environment. It is in this context that this study is primarily concerned with Omani engineering students' attitudes, experiences, perspectives and challenges in relation to the use of EMI in their engineering education. There is a dearth of studies on engineering students' experiences with EMI in vocational and higher education institutions.

Arabic is the official and national language in Oman, and is the most important language because it is spoken and understood by the vast majority of the population and it is the mother tongue of the majority. Arabic is the language of daily communication in Omani society, and it is the medium of instruction in all public schools. Arabic is used in religious practices, celebrations and ceremonies, and it is associated with history, culture, tradition and religious affairs. According to Al-Busaidi (1995), the Arabic language "represents the official identity, nationhood, ethnicity, culture and traditions of the Omanis; it has no indigenous rivals; it is understood and spoken by almost the entire population, though at varying degrees of proficiency" (p.134). There are other indigenous languages of the Omani ethnic communities, which co-exist with Arabic, such as Baluchi, Luwati, Jibali, Bautahari, Mahri, Harsusi, Shahari, Swahili, Kumzari and Shihuhi (Al-Issa, 2002). The Sultanate of Oman has chosen English to be the medium of instruction in most of its tertiary institutions, particularly in colleges of science, engineering, medicine, business, etc. According to Al-Busaidi (2003, 1), "In Oman English is mainly used for specific purposes; for academic and sometimes professional purposes". Moreover, English is widely used in banks, businesses, restaurants, hotels and insurance agencies.

Al-Abri points out that "English is now used more than Arabic in business, technology and higher education" (2011, p.499). Moreover, English is the modern language *lingua franca*, and it is now playing an essential and vital role in Oman and as a tool for the country's integration into the entire world and for the 'Omanisation' process as the government endeavours to replace the expatriate workforce with nationals (Al-Mahrooqi and Tuzlukova, 2010, p.13). EMI has become a common practice in many parts of the world to increase the

internationalisation opportunities of tertiary education and the global employability of graduates (Tatzal, 2011). Crystal (1997) and Graddol (1997) argue that English serves as a global language in academia and the workplace, and academic and non-academic resources on the internet are mainly in English. For instance, Graddol (1997) claims:

The need to teach some subjects in English, rather than the national language, is well understood: in sciences, for example, up-to-date text books and research articles are obtainable much easily in one of the world and most rapidly of all in English (p. 45).

The present study strives to look into engineering students' attitudes, experiences and challenges with regard to the use of EMI in engineering programmes at a public college in Oman to provide perspective and gain a thorough understanding from the use of EMI and the challenges which might be caused for EFL/ESL students in engineering and other science-related disciplines. The different role that English plays in tertiary education institutions and countries in terms of whether it is a foreign language (EFL), second language (ESL), lingua Franca (ELF) or additional language (EAL) may have a significant impact on students (Petrić, 2007).

1.2.8 The status of English in Oman

Abdel-Jawad and Radwan (2011) assert that “English is seriously competing with Arabic and gradually is overtaking its role in user, usages, and domains” (2011, p.123). They added:

English is not only the language of instruction in most departments and colleges but it also acting and competing official language, since most, if not all, documents such as basic laws, by-laws, regulations, and minutes of meetings are originally issued in English and then translated into Arabic. Publications of various types, including magazines, newsletters, and flyers are commonly published in English or in both languages. In addition, high proficiency in English is a basic university admission requirement not only for postgraduate but also for undergraduate programmes (p.123).

English is used as the major tool of communication due in part to the increase in the number of foreigners from non-Arabic-speaking countries in Oman. Further, Omanis learn the English language for several reasons, such as inter-lingual communication inland and abroad, conducting business, finding a white-collar job, pursuing higher education locally and internationally, acquiring science and technology skills, and analysing and understanding English language cultures (Al-Issa, 2014). According to Al-Busaidi (2003, p.1), “In Oman English is mainly used for specific purposes; that, for academic and sometimes professional purposes” (Al-Busaidi, p.1). Oman has recognised the importance of English and its influence on globalisation and this is clearly stated by the MoE:

The government recognises that facility in English is important in the new global economy. English is the most common language for international business and commerce and is the exclusive language of

important sectors such as banking and aviation. The global language of sciences and technology is also English as are rapidly expanding international computerized databases and telecommunications networks which are becoming an increasingly important part of academic and business life (Ministry of Education (MoE), 1995, p.1).

All the tertiary education institutions in Oman use English as a medium of instruction in their programmes to cater for the demands and the needs of the labour market in Oman and across the Gulf region (Al-Isaa, 2006). Further, English in Oman has ‘institutionalised domains’ like business, the education and media (Al-Busaidi, 1995). English is recognised as a tool for ‘modernisation’. The Omani government has given English political, economic and legislative power and substantial attention, and it is considered a fundamental tool that facilitates ‘Omanisation’ and is central to Oman’s continuous development (Al-Issa, 2002) as most of the locally advertised jobs in large oil and gas companies require Omani graduates with good English language proficiency.

1.2.9 The role of English in engineering education in Oman

In Asian and Gulf countries, policymakers responded to an initiative for educational reforms and the internationalisation of higher education by adopting the English medium of instruction despite the challenges it manifested (Nyguen et al., 2016). This motivated the GCC countries to expand their higher education and adopt EMI.

Higher education in Oman is undergoing rapid expansion and transformation in the GCC and in Oman in particular (Baporikar, 2012, p.10). This growth demands good English language education and resources, however, proficiency in English language and mastering its skills have been identified as a major challenge in HE (Al-Shemli, 2009). Public and private HEIs in Oman teach their science-based and humanities majors in English (Al-Mahrooqi, 2012) and English is playing a vital role in Oman as a tool for the country’s integration into the wider world and for the ‘Omanisation’ process as the government endeavours to replace the expatriate workforce with Omani nationals (Al-Mahrooqi and Tuzlukova, 2010, p.13). Advancements in engineering and technology are of the utmost importance for the 21st century in the globalised world (Tamtam, 2010) and it has been argued that “engineering graduates require an ever-increasing range of skills to maintain relevance with the global environment of the new millennium”. Multi-lingual skills are considered a salient element in the make-up of the new global engineer (Riemer, 2000, p. 91). Research has shown that there is a significant knowledge gap in relation to the requirement for international communication among engineering graduates in the Arab world (Tamtam, 2010).

In this global context of a growing tendency for English to be used as a medium of instruction in educational contexts, even when the majority of the population speak a local language (Vu, 2014:2), the English language has been receiving political, economic and legislative support from the Omani government (Al-Issa, 2014). The German Engineering Association (VDI) urges engineering graduates to have knowledge of foreign languages, cultural awareness and teamwork skills (cited in Schulz, 2008, p.146). Adopting English-medium higher education encourages universities towards internationalisation (Phillipson, 2009a). Moreover, research findings in EFL/ESL generally, and in the Gulf region in particular, assumed that learning core subjects through the medium of English will help students to develop their language mastery and proficiency (Chapple, 2015; Macaro, 2015; Al Mahrooqi and Tuzukova, 2014; Belhiah and Elham, 2014; Shohamy, 2013; Ali, 2013; Becket and Li, 2012; Chang, 2010).

When Omani secondary school graduates join colleges of technology to study on one of the technical courses they are expected to join their specialities on arrival, but because of the adoption of EMI in their target technical programmes and because their English language proficiency is often inadequate, they generally have to join the English foundation programme to improve their abilities in that language (Al-Husseini, 2009). Most of the Omani students entering HEIs are required to sit a placement test, however, students who perform exceptionally well on the placement test (86% or above) qualify to sit for a Level 4 Exit Exam. Upon passing this Exit Exam, students go directly to the credit programmes, provided that they meet all the other admission criteria for the target specialisation, including the minimum TOEFL score. If they fail to pass the Level 4 Exit Exam, students are enrolled in Level 4 and then take the general foundation programme which contains language skills, basic mathematics, IT and general learning skills (Carroll, 2009; Al-Mamari, 2011 cited in Baporikar, 2012:15). The aim of the foundation programme is to equip the students with the necessary skills to cope with their specialities and to meet a pre-requisite for the post-foundation programme. Upon their completion of their foundation programme, they need to opt for the post-foundation English for Academic Purposes (EAP) courses which are credit courses that function as an extension to the foundation programme. These EAP courses aim to provide students with report writing, presentation, public-speaking and communication skills (<http://www.hct.edu.om/centers/english-language-center/programs-and-courses>). Additionally, these courses are expected to bridge the gaps between students' existing proficiency and the linguistic demands of their specialisations and EMI challenges. Despite this, many Omani students have been experiencing multiple difficulties in coping with EMI in their academic

programmes. This study considers their experiences and perspectives on the use of EMI in their engineering education so as to better inform the EAP and EMI provision and pedagogy, and to gain greater understanding of the challenges they face.

1.3 Aims of the study and the research questions

The present study has the following aims:

- To identify and investigate Omani engineering students' perceptions about the challenges they face when English is used as the medium of instruction (EMI) in their engineering programmes.
- To identify how these challenges impact on students and their studies.
- To identify how engineering students cope with EMI challenges during the course of their studies.
- To offer some suggestions for overcoming the challenges presented by studying through the medium of English.
- To critically examine the concept of EMI in the context of Oman and identify engineering teachers', engineering students' and EAP teachers' views in relation to the skills and attributes that are important for success in the study of engineering through EMI.

The current study seeks to answer the following research questions:

1. What are Omani engineering students' perceptions of their experiences when English is used as a medium of instruction?
2. What challenges did engineering students in Oman encounter when English was used as a medium of instruction in their engineering programmes?
3. How did these challenges impact on these students and their studies?
4. How did these engineering students respond to these challenges?
5. What skills/attributes did these engineering students, engineering teachers and EAP teachers in Oman think are important for success in learning in the context of engineering taught through the medium of English?
6. What were the engineering teachers', EAP teachers' and engineering students' suggestions for overcoming the challenges presented by studying engineering through the medium of English in Oman?

1.4 The potential significance and contribution of the study

Many investigations have been conducted on the use of EMI worldwide; the present study derives its significance from the fact that one of the least studied aspects is the adoption of EMI in engineering in an EFL context. The study has been motivated by the paucity of research on the area of the adoption of EMI in engineering education in the Gulf in general, and in Oman in particular. It represents the first substantial attempt to explore and investigate engineering students' experiences and challenges in an English-medium engineering programme in Oman. The study directly addresses engineering students' experiences, and is also informed by the views of some education professionals working with these students. Investigating engineering students' experiences will inform engineering, vocational and technical education in general and EAP/EAP pedagogy, course design and delivery in Oman. Its pedagogical implications may be transferrable to some other similar EFL/ESL contexts. Moreover, the study is intended to serve both engineering and ESP/EAP pedagogy in Oman by providing insights for engineering teachers, ESP/EAP teachers and decision-makers. This study will contribute to understanding of EMI for learning engineering, and the associated challenges and problems for EFL students. The study also contributes to practitioners', teachers' and decision-makers' understanding of the challenges that EMI might cause in the EFL/ESL context, and how they could deal with these in their teaching and learning.

1.5 Conclusion

This study consists of 10 chapters. The first chapter has introduced the background to the study and the research questions. It also incorporated information about engineering education in Oman, the status of English language in Oman, the role of English language in engineering education in Oman, and some brief information about the specific context in which the fieldwork was conducted, which was a public governmental college in Oman. Chapter two undertakes the conceptual and theoretical framework. Chapter three provides a review of the relevant literature, which concentrates on the pedagogical merit of EMI and its challenges in EFL contexts, as well as relevant research on the discipline of engineering and in science-related disciplines in the Gulf, Oman and worldwide. Chapter four presents the methodology and outlines the data analysis techniques. Chapters five, six, seven and eight analyse the data. Chapter nine presents the discussion and the findings. Finally, chapter ten deals with the conclusion and the pedagogical and methodological implications of the study, including recommendations.

Chapter 2: Theoretical and Conceptual Framework

2.1 Introduction

It is important to provide an account of the key theories and concepts which underpinned the formulation of this study and have informed its implementation and development. This chapter incorporates three major sections. The first section deals with the socio-cultural theoretical underpinnings of the study and it elucidates the key concepts. It illustrates and discusses key issues related to the associated perspectives, and important attributes and principles that foster and mediate learning. Section two undertakes a review of some key theoretical issues in relation to classroom translanguaging. Section three is centred on academic literacies and some critical approaches to EAP. These factors have been employed to inform my thinking as a researcher, to analyse the data of the present study, and to inform my understanding of engineering students' learning experiences in their English-medium programmes.

2.2 The socio-cultural perspective

This study draws on a multi-theoretical approach which includes socio-cultural theory as an overarching framework of reference to help to illuminate, conceptualise and understand engineering students' learning experiences through EMI in HE in Oman. Other theoretical perspectives, which were also considered in order to make sense of the data in this study, were those associated with academic literacy, EAP and classroom translanguaging. Wang (2006) points out that socio-cultural theory draws heavily on the work of Vygotsky (1978) and others such as Lemke (1990), Rogoff (1990) and Wertsch (1991). Vygotsky viewed learning as something which is embedded within social events and which takes place when a learner interacts with people, objects and events in the environment. One of the fundamental concepts within socio-cultural theory is mediation, which refers to the part played by other significant people in the learners' lives, whereby their learning is enhanced by selecting and shaping their learning experiences (Vygotsky, 1978). This concept was used to inform my thinking about engineering students' learning experiences in the particular college which was the site for my fieldwork. There were a number of people who played a significant role in the engineering students' lives including, importantly, EAP teachers, family members, engineering teachers and the students' classmates in the context in question. Vygotsky (1978) claims that the secret to effective learning lies in the nature of the social interaction between two or more people who possess different levels of skill and expertise. Therefore, mediation and collaboration are of

vital importance in knowledge acquisition and appropriation through interaction. In the context of the present study, the world that socio-cultural theories refer to is the academic world, and the culture involved refers to the academic culture in which this study was conducted. Specifically, that is learning engineering through English as experienced by a group of students in a particular college in Oman. Fieldwork revealed that engineering students in the present study used their L1 in some situations in their classrooms as a means to mediate their learning and as a strategy to cope with their EMI challenges and difficulties. Socio-cultural perspectives on learning conceptualise learning as a social act and language is considered as the fundamental tool mediating knowledge acquisition and development. Issues related to interaction, collaboration and peer support that enable learners to be engaged in their learning are central to this study.

2.3 Translanguaging perspectives on learning

Learning experience is one of the main factors that influences students to study engineering in addition to the choice of careers in engineering after graduation (Balakrishnan and Low, 2016). Emergent bilingual students face the challenge of developing their disciplinary knowledge and this can be particularly challenging in content areas such as science (Esquinca, 2014). There are two main types of classroom translanguaging: student-directed and teacher-directed. They both have pedagogical value in the bilingual classroom, and they are used to scaffold and enable learning and promote dialogic teaching (Melo-Pfeifer, 2015). Therefore, exploring Omani engineering students' learning experiences through the medium of English is of vital importance for informing EMI pedagogy in general and the EAP in particular. One aspect of the Omani engineering learning experience is the students' use of L1 and translanguaging to cope with their English-medium engineering programmes and to communicate with their classmates. Translanguaging is increasingly used within the academic community as a medium of communication and as an approach to the teaching of science-related courses in the field of bilingual education (García, 2009). It is defined by Canagrajah (2011) as "the ability of multi-lingual speakers to shuttle between languages, treating diverse languages that form their repertoire as an integrated system" (p. 401). Moreover, it refers to the interrelated discursive practices and "forms of hybrid language use that are systematically engaged in sense-making" (García et al., 2011. p.5). However, it has moved away from the traditional terms code-switching, code-mixing, code-meshing, borrowing, etc. Translanguaging can facilitate

communication and interaction among students and their teachers, and it can also help students to express their ideas. In this regard, as García and Leiva state:

The concept of translanguaging goes beyond code-switching. Code-switching refers to the mixing or switching of two static language codes. Translanguaging, resting on the concept of transculturation, is about new languaging reality, original and independent from any of the 'parents' or codes, a new way of being, acting languaging in a different social, cultural and political context. Translanguaging brings into the open discursive exchanges among people in ways to recognize their values of languaging. In allowing fluid discourses to flow, translanguaging has the potential to give voice to new social realities (García and Leiva, 2013, 216).

Researchers have claimed that translanguaging opens the door for new understandings of the bilingual classroom and learning in general (Mazak and Herbas-Donoso, 2015). Translanguaging is different from code-switching and code-mixing. In this regard, García and Sylvan (2011) state:

Translanguaging includes code-switching – defined as the shift between two languages in context – and it also includes translation, but it differs from both of these simple practices in that it refers to the process in which bilingual students [and we would add, teachers] make sense and perform bilingually in the myriad ways of the classroom – reading, writing, taking notes, discussing, signing and so on (2011, p.389).

According to García and Kleifen (2010) and Esquinca et al. (2014), translanguaging mediates learning for bilingual learners and includes practices such as shifting between text in one language and discussion in another language, discussing in one language but checking comprehension in another language, and using both languages flexibly. It has potential pedagogical implications (Gort, 2015). As mentioned above, the Omani engineering students who participated in this study were using both English and their L1 (Arabic) during their engineering lectures to communicate and help each other to understand concepts and instructions. Translanguaging practices could become mediational tools to create and expand zones and opportunities for learning (Martin-Beltran, 2014). Additionally, it seeks to promote pedagogical practices that consider bilingualism as a positive resource rather than as a problem (Lasagabaster and García, 2014). It goes beyond the traditional concept of bilingualism as it seeks to include the minority language and its community whilst ensuring that it and the language of instruction are not seen as competing. It claims that bilingual speakers have a unique repertoire which they can use strategically to facilitate effective communication (ibid., 2014). Translanguaging is not just about mobilising one language to reinforce the acquisition process of another, or to enhance the understanding of unknown structures or words by relying on familiar ones. It is crucially about employing multiple semiotic resources to create meaning and to give meaning to the learning and teaching process. It has the potential to empower the

critical voice and consciousness of the learner and to impact classroom participation positively (Melo-Pfeifer, 2015). It can help learners to figure out the meaning of a particular vocabulary item or scientific concept (Sayer, 2013). Moreover, Baker (2001 and 2006) suggests potential educational and pedagogical advantages of translanguaging, namely, it may promote a deeper understanding of the subject matter; it may help in developing the language; and it may help to bridge and create cooperation between home and school. Further, Lewis et al. (2012) claim that translanguaging promotes biliteracy.

The present study draws on the theoretical perspective on translanguaging due to its pedagogical value for developing teachers' and learners' awareness to the importance of students' L1 as a mediating tool which fosters learning and the teaching process (Langman, 2014). Wahi (2013) conducted a study on ESL engineering English language academic literacies in Malaysia and noted that in the process of struggling to understand the course materials and unfamiliar subjects, students adopted translation strategies and other strategies, such as relying heavily on dictionaries, to aid comprehension and construct their utterances and compositions. Students acknowledged the fact that they were thinking cognitively in their mother tongue and subsequently translated their ideas into English to meet their academic requirements (Wahi, 2013). The study suggests that learning English language literacy is a complex and highly contextualised process, particularly in the multi-lingual context of Malaysian engineering education (Wahi, 2013).

It could be argued that EFL/ESL higher education institutions need to accept the need to adopt a policy which accommodates L1 use, particularly among learners with a low level of L2 proficiency. This could ease the transition for the students into tertiary education, which requires them to adapt to a very different culture of learning to their previous Arabic-medium schooling (Mouhanna, 2010). A study conducted by Kim, Kweon and Kim (2016), investigated Korean engineering students' perception of EMI and L1 use in three major engineering universities. Their results make compelling arguments against EMI while demonstrating students' invariable support for LI use in the EMI classroom. Most of the students did not select EMI classes voluntarily. They showed low confidence in their English ability and consequently did not feel that their English skills were sufficient for EMI classes. Additionally, many students were not convinced that EMI classes helped them to improve their English skills. The study suggested that students' and their teachers' involvement in EMI must not be compulsory as their English might be inadequate for EMI classes. Furthermore, the benefits of

L1 use in EMI classes need to be clearly recognised by instructors, students and administrators. They argued that from second language acquisition, L1 use has been considered detrimental to learners' acquisition of L2 limiting their exposure to L2. However, numerous studies have shown that L1 can function as an effective academic tool for clarification, emphasis and repetition of important content, as it may help to strengthen the rapport between students and their instructor, which is a key strategy for classroom management. They argued that the use of Korean in EMI engineering classes would accelerate students' comprehension of complex materials. They claimed that L1 use in a bilingual and multi-lingual situation is a natural phenomenon and must be recognised and utilised as a legitimate, effective instructional strategy (Kim, Kweon and Kim, 2016). L1 use in EMI classes has always been fraught with controversy; however, both L1 and L2 can provide important communicative support for both students and teachers (Lasagabaster, 2013). Moreover, Auerbach (1993) claimed that L1 use in the classroom provides a sense of security and validates the learners' lived experiences, allowing them to express themselves clearly. Macaro (2009) states that the position against the use of L1 in teaching has been challenged by research findings. Firstly, because it has been observed that the vast majority of teachers use L1 to varying degrees, even in those contexts where an only-L2 language policy is expected to be implemented; secondly, because the L1 can function as a cognitive tool in L2 learning and teachers can facilitate learning by making reasoned references to the L1; and thirdly, because code-switching is a natural part of bilingual interaction. So, the use of L1 in EMI classes can tackle many disciplinary issues (Lasagabaster, 2013).

Despite research findings which demonstrate that teachers make ample use of the L1 (Littlewood and Yu, 2011), practices such as code-switching and translanguaging are still controversial. The use of L1 EMI and CLIL, if judicious, can serve to scaffold language and content learning in EFL/ESL contexts, as long as learning is maintained primarily through the L2 (Lasagabaster, 2013). Teachers need to be able to appropriately interpret bilingual phenomena and use students' L1 as a resource for learning in their classes (De Jong and Harper, 2015).

2.4 The academic literacy perspective

Academic literacy skills are of the utmost importance for EFL/ESL students given the challenges presented by the use of EMI in their tertiary education. This section will now examine the theoretical perspective of academic literacy in relation to the current study. There

is a growing realisation that students are entering HEIs unequipped with appropriate skills and unable, without support, to acquire academic literacies which they will need to navigate their degree (Murray and Nallaya, 2016). Language and the academic literacy in HE have become prominent issues (Klinger and Murray, 2012). Academic literacy skills have been defined as types of reading and writing required in HE (Lillis and Scott, 2007). One of the fundamental shortcomings of academic literacy studies is their focus on writing tasks alone (Braine, 2002). However, academic literacy refers to an individual's conversancy in specific and specialised vocabularies, concepts and knowledge associated with particular disciplines, as well as their distinctive patterns of meaning-making activities (genres, rhetorical structures, argument formulations, narrative devices, etc.) and ways of contesting meaning (Rex and McEachen, 1999; Neumann, 2001; Hirst et al., 2004). Conversancy in the discourses means the ability to appropriately and effectively understand and use spoken and written languages, which are specifically required to take on different roles, and to behave successfully in different contexts (Klinger and Murray, 2012). Scholars such as Kiili, Makinen and Coiro (2013) proposed a multi-dimensional framework for academic literacies which includes five domains: disciplinary literacies, argumentative literacies, collaborative literacies, digital literacies and innovative literacies. 'Disciplinary literacies' refers to advanced literacy embedded within subject matter content. 'Argumentative literacies' refers to students' abilities to identify, evaluate and produce argument with a wide range of individual and social literacy events and they are considered one of the most essential skill sets that students need to succeed in the tertiary college (Conley, 2003). 'Digital literacies' deal with the diverse meaning-making practices across disciplines wherein digital tools and multiple digital sources are used for literacy purposes to make sense of the world, such as blogging, tweeting and online discussions. 'Collaborative literacies' refers to those literacy practices in which two or more persons are engaged in reading and writing together, and are equally responsible for negotiating meaning of the discussion for the purpose of producing a joint interpretation of a text. Collaborative literacies are vital in preparing a generation of students to work together as active citizens. Finally, 'innovative literacies' are types of literacies which encourage students to become problem-solvers and critical thinkers (Kiili, Makinen and Coiro, 2013). Additionally, Secker and Coonan (2011) categorise academic literacy skills into new literacies which include multi-modal learning, information literacy (which involves critical thinking and evaluation); critical analysis; research skills; digital literacy (such as computer literacy); media literacy (which includes the critical use of non-textual communication formats); and academic literacies (which involves study skills and academic writing). In other words, academic literacy is a tool that enables

students to understand the specific disciplinary discourses associated with a given discipline, such as engineering, and to negotiate the academic and professional demands of that particular discipline successfully (Klinger and Murray, 2012). Academic literacy is also defined as a means for students to obtain “membership in communities of academic readers and writers” (Leki, 2007, p.1). To gain such membership, they:

need to go beyond producing received knowledge to gathering new information to date, developing critical judgement, engaging in discussions and decision-making, and applying knowledge to new situations and problems (Bazerman, Bonini and Figueiredo, 2009, p.ix).

Key aspects of academic literacy skills, which were considered in this study, go beyond transitional skills to include transferable and communication skills, which are important to succeed in higher education. Students need academic literacy skills to learn their disciplinary subject and to demonstrate their technical knowledge and what they have learned (Lea, 2004). Engineering students ideally need to be exposed to academic literacy skills in the early stages of their study during their pre-university courses in order to be prepared for their subject content and their discourse community, and to become academically socialised by the time they reach higher education (Lea and Street, 2006). Moreover, the engineering profession is becoming increasingly global (Sun, 2010) and professional engineers are nowadays likely to communicate with people from diverse linguistic backgrounds and they need to do this effectively with both technical and non-technical audiences (Speight, 2012). Additionally, they need to be able to write technical reports, give clear instructions, analyse information, propose work, manage projects and interpret the results of research (Pearsall, 2010). Therefore, mastering academic literacy skills and possessing the ability to communicate effectively in different settings have become essential for a professional engineer (Nguyen, 1998; McGregor, 2000).

There are a number of practices which support the development of students’ academic literacy skills. For example, ‘writing in the disciplines’ (WID) is of vital importance in HE, and it tends to focus on the differences between discourse communities (McLeod, 2002). The purpose of this kind of writing is to help students to immerse themselves in their disciplinary community (Ochsner and Fowler, 2004). Incorporating academic and disciplinary epistemology in writing would therefore help students to be familiar with their discourse community (Thaiss and Porter, 2010). Lea and Street (1998) identified three main approaches for studying learning processes in higher education that underlie their framework of academic literacies (ACLITS): *the study skills approach*, *academic socialization* and the overarching

concepts *academic literacies*. The study skills approach in ACLITS views academic literacies as skills which can be learned and transferred to other contexts (Street, 2009). These skills can be embedded and taught within the discipline. Further, academic socialisation within ACLITS encompasses the notion of study skills and the extent to which students are responsible for their own learning when they join the higher education system (Lea and Street, 1998). However, most Omani engineering students are likely to encounter a series of challenges with academic socialisation. First, students need to shift from a teacher-centred approach to a more learner-centred approach in HE. Second, students need to adapt to moving from their L1-medium instruction to an English-medium one. Finally, students need to develop the kind of academic literacy skills which will help them in their disciplinary subjects and later in their workplace.

Academic socialisation is of paramount importance for enabling EFL/ESL engineering students to cope with the academic demands of their English-medium speciality. The ACLITS framework has provided a useful tool to understand academic literacy skills through the lenses of study skills and academic socialisation approaches (Lillis, 2003; Street, 2009; Wingate and Tribble, 2012; Turner, 2012). Whilst ACLIT was fundamentally focused on native speakers of English, many EFL/ESL students struggle with the acquisition of academic literacy skills and the use of EMI. ACLIT was conceptualised by Lea and Street (1998) as a pedagogical model that goes beyond the learning of formal features and socialisation into disciplinary writing by “paying particular attention to the relationships of power, authority, meaning making, and identity that are implicit in the use of literacy practices within specific institutional settings” (Lea and Street, 2007, p. 370). Academic literacy stresses that learning academic literacies involves a dialogic process of knowledge production in which students play an active role (Lillis, 2003). Research on students’ academic literacies and academic writing in particular demonstrated the importance of students’ prior experience and their literacy histories (Barton et al., 2007; Lillis, 2001; Paxton and Firth, 2014). Therefore, teachers need to be aware of and clear about the epistemology and concepts of the subject they are teaching, and it would be enormously helpful for students to be socialized in their academic community (Hodgson, 2012).

Davies and Cousin (2002) identified three main approaches to teaching academic literacy skills to engineering students which are: the embedded, integrated and separate course approaches to developing individual skills. The embedded approach implies that academic

literacy skills can be included implicitly in disciplinary subject content (Lea and Street, 1998). The integrated approach is that whereby the disciplinary subject teachers work together with EAP instructors to improve students' skills in order to enable them to cope with their technical specialities. In this approach the academic literacy skills are explicitly integrated into the technical and academic content (Davies and Cousin, 2002). The separate course is to teach the academic literacy skills explicitly in separate courses or modules (Davies and Cousin, 2002; Drury, Airey and O'Carroll, 2010; Wingate and Tribble, 2012). In many higher education institutions this is typically implemented through EAP/ESP courses. The demands of acquiring academic literacy skills are often considerable, and there are some contexts (disciplinary, national and cultural) where they are likely to present particular challenges. This study will argue that Omani engineering students need to be exposed to EAP and academic literacy skills both during their pre-sessional and in-sessional courses to foster students' acculturation into disciplinary-specific discourses and genres. This practice would enable them to better cope with the demands and the learning challenges that arise in English-medium engineering classes more effectively.

2.5 Importance of EAP/ESP in developing students' academic literacy skills

EAP courses aim at socialising students within the discourses of their disciplines in a way that enables them to consider the nature of student writing in relation to institutional practices, power relations and identities, as well as the complexities of meaning making (Murry and Nallaya, 2016). Scholars such as Canagarajah (1999) and Benesch (2001) took a critical approach to EAP. There are three approaches to teaching academic writing: pragmatic EAP, critical EAP and critical pragmatic EAP (Harwood, 2004). Firstly, pragmatic EAP is concerned with teaching EFL/ESL students a set of common discourse norms with the aim of preparing them for the literacy demands at the tertiary level. This approach is a skills-based, instrumental approach that attempts to familiarise students with dominant conventions in Anglo-American writing (Harwood, 2004). Critical EAP, on the other hand, deals with critiquing existing educational institutions and their practices. A critical approach condemns pragmatic EAP for not questioning the predominant norms of writing and reinforcing them, expecting international students to passively adapt these Anglo-American norms of writing (Harwood, 2004). The pragmatic approach to EAP tends to view learners as passive receivers of knowledge, while a critical approach views them as active participants in social struggle (Ivanic, 1998, cited in Harwood, 2004, p.347). Critical pragmatic EAP "attempts to reconcile these seemingly irreconcilable approaches" (Harwood, 2004, p. 357). It supports pragmatic

EAP as it stresses that students should be exposed to dominant discourse norms; while on the other hand, it acknowledges that students have choices and should be free to adopt and subvert the dominant practices as they wish. Critical pragmatic EAP, therefore, has two main objectives: to help students to function effectively in their content courses and to encourage them to question and shape the education they are being offered (Benesch, 2001, p. xvii, cited in Harwood, 2004, p. 357). Benesch claimed that critical EAP widens the lens of academic purposes to take the socio-political context of teaching and learning into account (Benesch, 2009). Harwood argued that critical EAP and pragmatic EAP provide practitioners with the better insights of the two approaches to EAP (Harwood, 2004). Harwood suggests that we need to strike a balance between critical pragmatic EAP and critical EAP to help students to handle their academic writing tasks. Critical EAP provides insights into academic writing practices that pragmatic EAP does not do by problematising the pragmatic aspects and tenets of academic discourse which are not monolithic (Harwood, 2004). Pragmatic EAP assumes that every student can and should conform to the established practices and discourse conventions. On the other hand, it rigorously questions the pressure on students to accept the discourse conventions without any good reason. Harwood claimed that by incorporating and integrating both critical EAP and pragmatic EAP in our EAP pedagogy, the weaknesses of both approaches will be avoided and they can complement each other. This integration would help students to acquire the necessary academic skills that they need in their specialities and other disciplinary courses.

In short, engineering students in EFL/ESL contexts need EAP assistance in order to improve their academic and literacy skills so that they are better able to be successful in their disciplinary studies. EFL/ESL students need academic literacy skills to learn their disciplinary subjects and to demonstrate what they have learned in ‘real-life’ tasks (Lea, 2004). Therefore, the overarching aim of EAP as a branch of ESP is to demystify academic genres (Hyland, 2003), and to facilitate students’ transition from novice into accepted members of their disciplinary discourse communities (Swales, 1990). EAP is a means for helping students to develop control over the specific genres they require in order to be successful in the higher education institutions (HEIs), and within their specific disciplinary context (McGrath and Kaufhold, 2016). EAP can be taught as for General Academic Purposes, with focuses on skills and language used across the academy, or English for Specific Academic Purposes where learning is more targeted to the discourse of particular disciplinary contents (McGrath and Kaufhold, 2016).

In the colleges of technology in Oman the EAP/ESP courses are currently offered as post-foundation courses (in-sessional) to help students to develop disciplinary knowledge and communication skills. The in-sessional courses which are offered are: Technical Writing I (TWI); Technical Writing II (TWII); Technical Communication (TC) and Public Speaking (PS) (see appendix 6). The main objectives of these courses are to foster disciplinary skills, critical thinking, knowledge and academic literacy skills. Engineering students need to be exposed to academic literacy skills early on in their studies in order to be able to learn different subjects and develop their critical thinking and communication skills, as “each discipline has its own discourse community, a shared way of using language and constructing knowledge” (Rainey and Moje, 2012, pp. 73-74). The engineering students need to gradually become a part of that community by first becoming academically socialised (Lea and Street, 2006). They need to be familiar with academic discourse and become able to use it so that they can gradually learn how to function effectively in their future academic community. “The engineering as a profession is becoming increasingly a global job, it moves from domestic operations to global outsourcing (subcontracts), [and] global offshoring (overseas divisions)” (Sun, 2010, p.76). This makes engineers more likely to work in multi-national companies with people from different ethnic groups and cultures. Therefore, they need to acquire multi-cultural communication skills in both technical and non-technical settings (Speight, 2012; Rajala, 2012; Grasso and Burkins, 2010).

The notion and concept of academic socialisation was invoked by Vygotsky (1978), who spoke of scaffolding and learning as social activities. Academic literacies are fundamental components of the process whereby students become integrated into their community of practice. This can be promoted through a well-structured curriculum and a pedagogy that involves modelling, feedback, reinforcement, questioning, task structuring and direct instruction (Whipp and Lorentz, 2009). Discipline-specific demands may require EFL/ESL students to be fluent in more specific genres, even when they are capable of producing other generic text types (Johns, 1997, cited in Gimenez, 2008, p.152). The important academic literacies which they need include, vitally, high level oral communication and writing skills (Speight, 2012). Engineering students are expected to produce reports which require them to “instruct, analyze information, propose work to be done, report progress on work and report and interpret the result of research” (Pearsall, 2010, p. 123). This kind of technical communication has to be free of errors, clear and concise (Martinez et al., 2011; Riemer, 2007).

Communicating effectively in English has become an essential requirement for native and non-native speakers of English as professional engineers (Nguyen, 1998; McGregor, 2000; Rajala, 2012). EFL/ESL students entering into English-medium higher education institutions (HEIs) need EAP, which is a prominent branch of ESP, whose pragmatic focus is on coping with specialised subjects (Hyland, 2006). EAP has its own roots in register analysis, rhetorical analysis, study skills needs analysis and genre analysis (Benesch, 2001). All this aims to assist students in carrying out research-related tasks. In Oman and elsewhere, EAP courses are basically offered to EFL/ESL students prior to entry to their English-medium degrees to help them acquire “specific skills and appropriate language use for such context” (Hyland, 2006, p.4). EAP should deal with common core academic discourse, with features of writing typical to the kind of formal writing, which consists of high lexical density, high normal style and impersonal constructions in English-medium related programmes (Hyland, 2006). Focusing on the study skills model, which has been adopted in many EAP courses, will not help students to become academically better socialised and more aware of the register of their discipline (Wingate, 2006). Researchers such as Wingate and Tribble (2012) advocate that the practical pedagogical guidelines provided by EAP researchers and practitioners should be utilised in conjunction with the ACLITS model which may help students to understand various discourses related to their specialities. There have been a number of studies in support of the integrated approach to teaching where EAP instructors and core subject teachers cooperate and collaborate to integrate the domain-specific knowledge and academic literacy skills to help students cope with English-medium engineering programmes (Mudraya, 2006; Archer, 2006; Carter, 2007; Dury, Airey and O’Carroll, 2010; Morgan and O’Gorman, 2011; Armstrong, Dannatt and Evans, 2012; Clughen and Connell, 2012; Lievens, 2012).

Omani engineering students are expected to write an investigative report in which they should make suggestions for the development of a particular area or to solve a certain technical problem (Archer, 2008). The format and layout of the report must have certain pre-established sections which are to be explicitly taught. The sections include: terms of reference, a synopsis, a table of contents, an introduction, the findings, an analysis and discussion section, conclusions, recommendations, acknowledgements and a bibliography (Archer, 2008, p.258). Therefore, students are required to draw on their own discourses and write their reports accordingly. This kind of writing can represent a real challenge for students if they are not trained in their foundation and in-session courses to carry out such tasks.

Hodgson and Harris (2012) argue that students' challenges in managing their reading are linked to their difficulties with their writing. The kinds of writing required across disciplines vary epistemologically (Lea and Street, 1998). Additionally, the most salient difficulties that students encounter in their academic writing are rarely technical but mostly epistemological, as they know and understand the knowledge that underpins their disciplinary epistemologies (Hodgson, 2011; Hodgson & Harris, 2010).

EAP has traditionally been viewed as the sole responsibility of EAP teachers rather than one that should also engage the subject teachers. However, it seems there has been a shift in responsibility due to the recognition of the role of subject teachers as insiders and informants in the teaching and learning process (Pawn and Ortloff, 2011). As a result, the current new responsibility should be shared between both language and subject teachers as this will help subject teachers to deliver their content classes successfully. This content-based instructional approach to EAP has increasingly been supported by academic literacy research on teaching and learning in higher education. Scholars like Wingate (2006) have critiqued the study skills approach to EAP as opposed to the embedded or built-in approach. Wingate argued that the study skills approach is not effective in helping students to cope with the demands and needs in their relevant discipline as this approach does not consider the actual demands made on students on their disciplinary courses. So, Wingate believed that learners should be exposed to authentic academic tasks as required in their discipline of study in order to achieve realistic goals and learning outcomes. Learners should reflect on metacognition within these tasks and give feedback so as to develop their own awareness and strategies to better negotiate future similar tasks. Arguably, language and study skills support in general should be linked to actual demands on students and the associated and needs which arise in their courses. EAP/ESP schemes, whether pre-sessional or in-sessional should, therefore, be based on students' course objectives to help them to function effectively in their domain-specific content. Therefore, there is a growing body of literature that supports embedded approaches, whereby the genres of the discipline and academic literacies are to be embedded within the degree programmes to promote students' mastery of them and to socialise students into the discourse and the epistemology of their discipline area. As a result, it is hoped that students will be socialised into their community of practice and enabled to cope with their English-medium programmes (Wingate, 2006; Kennelly, Maldoni and Davis, 2010; Murray, 2013; Gunn, Hearne and Sibthorpe, 2011; Hocking and Fieldhouse, 2011).

In light of the above, language instructors' collaboration with academic content tutors is of vital importance. This will help the academic content staff and course teachers to identify the genres relevant to their discipline, how language is used to communicate meaning in those genres, and what the potential learning outcomes should be, and what type of assessment could best measure the extent of learning. This endeavour can help academic literacies to be articulated sufficiently and taught explicitly (Murray and Nallaya, 2016). However, it is not always easy for the two parties to collaborate as academic content staff may be reluctant to cooperate with language instructors as they feel fully occupied by more traditional aspects of their duties. Some content teachers do not perceive themselves as language teachers and they expect students to be linguistically prepared and to have the adequate language proficiency before joining their specialities (Dearden, 2015; Ali, 2013; Wilkinson, 2013; Airey, 2012; Rogier, 2012). However, this cooperation between EAP/literacy teachers and disciplinary academics has great potential capacity to enhance the provision of EAP and disciplinary subjects (Green, 2016). Further, Dudley-Evans and St John (1998) pointed out that there are three levels of cooperation between EAP teachers and subject teachers, namely: cooperation, collaboration and team teaching. Cooperation involves information-gathering from the relevant departments about the nature of tasks, syllabi and other components useful for EAP course design. Collaboration involves the EAP and subject teachers working together in order to develop EAP courses in support of the subject course. Finally, team teaching involves the two parties teaching together in the classroom.

The collaboration between EAP instructors and subject teachers can be done in different phases. First, EAP instructors teach writing on the basis of subject-specific texts and materials that they receive from the lecturer. Second, EAP instructors and subject teachers plan writing activities together. Third, they engage in team teaching (Dudley-Evans and St John, 1998). However, there are also factors that impact the level of cooperation, such as the institutional context, differences in teaching methodologies and philosophies, the low status of the EAP teacher in some context, and power-related issues (Harwood and Petrić, 2008). Finally, there are universities which seek to promote collaboration between EAP instructors and disciplinary teachers by opening writing centres, in which writing in the disciplines underpins pedagogy that fosters collaboration (Wingate and Tribble, 2012). However, disciplinary teachers' inadequate linguistic and pedagogic competence may not enable them to deliver their content courses in English or to effectively collaborate with the language specialists. Many disciplinary teachers in EFL contexts reported that they have limited language

proficiency which may not allow them to teach in English (Zacharias, 2013; Hamid, 2011). Additionally, most of the content teachers in an EFL/ESL context lack training in the pedagogical aspects of how to teach through the medium of English and this will inevitably have a negative impact on the quality of their teaching and delivery (Williams, 2015; Dearden, 2015; Zacharias, 2013).

2.6 Chapter summary

To sum up, this chapter has dealt with the underlying theories and concepts, and some key issues related to the theoretical and conceptual framework were discussed. A number of relevant learning aspects related to socio-cultural theories, classroom translanguaging, academic literacy and EAP were reviewed and discussed. One of the main suggestions was that the use of multi-dimensional conceptual and theoretical frameworks would constitute a significant way to explore Omani engineering students' learning experiences through the medium of English. The literature review underpins this study including its design, data collection and the transformational approaches to be outlined in the next chapter within the overarching qualitative case study methodological approach.

Chapter 3: Literature Review

3.1 Introduction

To make sense of this study requires knowledge of the concepts and literature that underlie it. To put the study into perspective, and to build a conceptual framework, it is imperative to review the existing literature to make sense of what is already known, to understand how it has been addressed methodologically, and to understand more about the topic under investigation. This chapter incorporates sub-sections, which deal with major themes related to EMI, and it elucidates the key studies. It illustrates and discusses key issues related to EMI and the associated debates, considering important attributes and skills for the engineering profession and undertakes a review of the key relevant studies on EMI. It sheds light on survey-based studies and interview-based studies on EMI in both EFL and ESL contexts. Studies were reviewed on a number of themes which are relevant to the present study: students' attitudes towards EMI; students' challenges; difficulties experienced; students' coping strategies in relation to EMI; EFL/ESL students' lecture comprehension problems in English-medium programmes; survey-based studies; interview-based studies; and students' experiences on non-engineering English-medium programmes. The overarching aim of this chapter is to justify this study and to situate it within the existing relevant literature. Additionally, it aims to establish the existence of a knowledge gap which the study addresses. Some pros and cons of previous studies in terms of their scope, methodologies, research designs, key findings and their pedagogical and theoretical implications will be discussed. Kachru's (1992) three concentric circles model of World English usage: the inner, the outer and the expanding were used to organise the existing relevant literature.

3.2 Review of the literature relating to EMI

This section is concerned with EMI-related studies, both survey-based and non-survey-based, in the Arabian Gulf, Arab world and worldwide using Kachru's outer and expanding circles. According to Kachru (1992), the inner circle comprises countries where English is used as the mother tongue and it includes Britain, the US, Australia, Ireland, New Zealand and Canada. Whereas, the outer circle comprises countries where English is used as an additional institutionalised official language, but not a mother tongue, and people in these countries use English fluently, such as India, Sri Lanka, South Africa and Tanzania. Finally, the expanding circle includes countries where English is used as a foreign language, such as China, Korea,

Saudi Arabia, Oman and the UAE. In this study the outer and expanding circles were considered for organising the existing literature.

3.2.1 English as a medium of instruction: Opportunities, controversies, debates and threats

English has become a global medium of instruction, and it has been increasingly used in EFL/ESL contexts to deliver engineering and science-related courses. There are a number of studies which support the use of English as a medium of instruction for the sake of future employability of the students, internationalisation of tertiary institutions and meeting the demands of globalisation.

A study conducted by Ibrahim (2001) supports the implementation of EMI in the Indonesian context. He claims that bilingualism has been correlated with divergent and critical thinking. Moreover, EMI provides exposure to English and motivates both teachers and students to improve their English language skills. Therefore, EMI is adopted in many EFL contexts for pragmatic and other reasons. Omanis learn the English language for several reasons, such as inter-lingual communication inland and abroad, conducting business, finding a white-collar job, pursuing higher education locally and internationally, acquiring science and technology, and analysing and understanding English language cultures (Al-Issa, 2014). However, it is widely believed that the adoption of EMI at school level could threaten the religious and cultural heritage of the country (Ryhan, 2014); English has become such a pervasive power (Crystal, 2002). Moreover, English has gained a reputation as a threat to the identity of those whose mother tongue is not English (Belhianh and Al-Hussien, 2016). English has been viewed as a window on the rapid progress of technology and scientific knowledge; however, using English as the sole medium of instruction has been received with doubt and controversy (Wong, 2010). The adoption of English as a medium of instruction in tertiary education in multi-lingual countries is raising and increasing concern, debate and controversy (Ahmed, 2011; Coleman, 2006). Despite the unceasing international debate on English, the adoption of EMI has been sweeping across tertiary education institutions all over the world (Coleman, 2006, cited in Ryhan, 2014). Moreover, “the English language is continuing to establish itself as a global lingua franca in a period of unprecedented globalization” (Marsh, 2006, p.29). It has been seen as the ‘queen of languages’ and a passport to getting a job locally and internationally. It has been seen not only as a useful skill, but as a symbol of a better life, a pathway out of poverty

and oppression, and it occupies a highly important position in the national and international scenario (Begum, 2014).

Further, a global language is necessary for maintaining international dialogue between countries and HEIs and keeping pace with the changing standards of the industry and it can improve the quality of education in engineering and science-related disciplines (Tamtam et al., 2010). It is important for the concerned authorities to recognise the role of communicative competence played in professional success within the engineering industry and many researchers believe that an inter-disciplinary approach to the teaching and learning of engineering, which combines engineering communication with engineering design, is a must (Missingham, 2006). In addition, English has been an integral part of education policy in Oman since a modern education system was introduced by his majesty Sultan Qaboos in 1970 (Al-Mashikhi and Al-Mahrooqi and Denman, 2016). Many studies have confirmed that using EMI in tertiary education is considered to be one of the most effective ways to improve students' language proficiency by capitalising on their experiences of using English to acquire their subject knowledge (Wesche and Skehan, 2002, cited in Joe and Lee, 2013, p.201). Therefore, most of the Arab world tertiary education institutions are concentrating on the implementation of EMI in their educational systems and engineering education to enable their engineering graduates to be able to meet the challenges that are faced by engineers (Al Jarf, 2004).

English has become an increasing concern for engineering colleges to enable their graduates to become suitably employed within an acceptable time span after achieving their degrees (Sivaraman et al., 2013). Employability has been defined as “a set of achievements, skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in the chosen occupations. These skills include: communication, leadership, problem solving and team working” (The Higher Education Academy Engineering Subject Centre 2011, cited in Sivaraman et al., 2013: 34). Additionally, research has shown that modern engineering graduates should be proficient in oral communication and these employability skills if they want to be successful in the workplace, excel in job promotion and play multiple roles in promoting the business of their organisations (Kekepotu, 2012). Moreover, EMI would help students and teachers in exploring English in depth and having more chances to learn it well (Tamtam et al., 2010). Further, Hu and Lie (2014) claim that English competence and EMI are perceived as beneficial at the institutional level. A strong EMI model or system is widely seen as a contributing factor for an institution towards internationalisation and this may benefit universities and enhance their position in university

league tables. Moreover, Ibrahim (2001) claims that there are four factors which support the possible implementation of EMI at university level, namely, bilingualism offers cognitive advantage for learners; the important global role of English will motivate the students and teachers to learn better; EMI enables students and teachers to get more exposure to the language and more chance to acquire it; and students can transfer their literacy skills and strategies acquired in a learner's native language to the foreign language.

Research has shown that the rapid spread of EMI does not imply immediate success (Vu, 2015). Hamid et al. (2013) examined the use of EMI policies in 10 Asian countries and concluded that the implementation of EMI is "fraught with difficulties and challenges". Researchers such as Coleman, (2011a), Coleman (2011b), Hamid et al. (2013), Kennedy (2011), Kyeyune (2010), Manh (2012), Sert (2008), Shohamy (2012), Meganathan (2011), and Vinke, Sinippe and Jochems (1998, cited in Vu, 2014), claim that the implementation of EMI leads to social division, inequitable resource allocation, 'language apartheid', difficulties such as a shortage of competent teachers and learners, inadequate resources and support, content and language trade-offs, and inappropriate language methodologies.

Lau and Yuen (2011) examined the impact of EMI on student learning of computer programming in Hong Kong. The findings revealed that Chinese-medium-instructed students tended to outperform their English-medium counterparts and the middle and low-achieving English-medium students were at risk. In view of their findings, they argued that the EMI issue is further complicated by student ability. They called for rethinking of the EMI model in that particular context. Moreover, De Wid (2011) pointed out some of the unintended negative effects of EMI as it may lead to decline the quality of education because of the decreasing focus on other foreign languages and insufficient focus on the quality of the English spoken by students and teachers whose native language is not English. It may also create serious divisions between Western-trained and local scholars, and it may endanger the indigenous cultures and languages (Shi, 2003). Social inequality could be another aspect with EMI – students from wealthy families are more likely to succeed in English-medium universities as they have better access to resources and technology (Manh, 2012). Additionally, Kim and Sohn (2009) pointed out that there are some problems raised by EMI in Korea, such as English being treated as more important than the content of the lectures and students who were not competent in English found it hard to participate in the lectures. Moreover, many studies have indicated undesirable effects of EMI, such as EMI minimises interactions between faculty and students; reduces the level of comprehension of the content of the course; impedes discussions among

students in class; disadvantages students with low proficiency; and it lowers graduation rates (Airey and Linder, 2007; Collins, 2010; Byun et al., 2011).

Vu (2013) claims code-switching in EMI remains controversial and EMI pedagogy does not provide clear guidance on the appropriate teaching methods to compensate for language difficulties, EMI teacher proficiency in English, as well as the implementation problems such as limited resources. Moreover, a lack of clear guidelines on how to deliver education through EMI, lack of a standard level of English for EMI teachers, and a shortage of EMI qualified teachers are reported to be problems which face EMI implementation in many non-English-speaking countries (Dearden, 2014). Moreover, researchers such as Al-Bakri (2014), Troudi (2009), and Williams and Cooke (2002) assert that EMI should be challenged for three different reasons. Firstly, EMI disadvantages students with low proficiency in English because it has negative effects on their learning experiences and on the quality of education. Secondly, EMI does not develop Oman towards modernisation and development because economic and human developments depend on effective education. Finally, EMI has detrimental effects on the status of the Arabic language. However, teachers and students in EFL/ESL contexts generally hold positive attitudes towards EMI regardless of its challenges. For example, Chang (2010) surveyed EFL students' perceptions on EMI at a private university in Taiwan and it was found that they held positive attitudes towards EMI and they believed that EMI helped them to improve their English skills, particularly listening, but they reported some problems with lecture comprehension. Similarly, Byun et al. (2011) studied EMI policy in Korean HE and found that students show positive attitudes towards EMI, and it was also found that EMI helped students to improve their English language proficiency, though some challenges were reported such as students' and instructors' inadequate language proficiency.

Floris (2014) studied students' attitudes towards EMI in a large college in Indonesia and the findings show positive attitudes towards EMI. Further, Belhiah and Elham (2015) studied students' attitudes to EMI in six universities in the UAE. Students and teachers showed positive attitudes towards the use of EMI, however, a number of challenges were reported by teachers due to learners' inadequate proficiency in the English language. However, the majority of teachers were in favour of the dual-medium of instruction. Moreover, Teng (2009) found empirical evidence from teachers' attitudes, which were positive, and supported the implementation and the advantages of the EMI programmes. Teachers in Teng's study agreed that using EMI could sharpen students' English language skills and facilitate their acquisition of the professional knowledge at the same time. It was found that teachers had benefited from

the use of EMI, particularly in their English proficiency and abilities. Some teachers reported a number of teaching strategies which benefit them in delivering the content of courses and facilitate its comprehension by using simple words, body language, visual aids, lesson reviews and other techniques.

Wu (2006) surveyed Taiwanese private college students' attitudes towards EMI from the perspectives of the feasibility and obstacles of EMI in an EFL learning environment. The survey findings showed that most of the students in the study recognised and appreciated the benefits of studying their courses through the medium of English. However, they reported a number of difficulties with their English-medium classes, such as difficulty in understanding the content and learning materials, and difficulty in interacting with their teachers and classmates in English. Further, Huang (2015) investigated Taiwanese students' perceptions and perspectives of the English medium in the Southern Taiwan University of Science and Technology (STUST) in terms of their learning motivation, learning anxiety and achievement. One hundred and fifty-seven students, including 93 local and 64 foreign students, took part in Huang's study by completing a self-assessment questionnaire on EMI course-taking experience. The key findings were: most of the participants agreed and appreciated the helpfulness and benefits of EMI courses, and most of the participants were willing to opt for EMI courses to strengthen their English and professional abilities. The major anxiety experienced by local students was due to their self-perceived low English proficiency. Although Huang's study may suffer from methodological drawback, such as it relied on surveys only to collect data, it supports the existing literature which shows EFL/ESL students' positive attitude towards EMI despite the challenges and difficulties that it poses.

In a qualitative study, Findlow (2006) carried out an employment survey and semi-structured interviews to explore 500 Arab students' perceptions in relation to EMI. The results showed that the participants tend to associate English with notions such as secularism, prestige, internationalism, successful business and modernity, while Arabic was closely linked to local traditions and religious aspects. Findlow's study relied heavily on surveys to collect its data from student participants; however, it shares contextual and social aspects with the present study which was conducted in the UAE.

The adoption of EMI in HE was identified as one of the most important strategies to internationalise HEIs and the number of EMI courses and degree programmes has been

growing in the ESL and EFL contexts despite EMI challenges and the difficulties it presents to students (Hou et al., 2013).

3.2.2 Studies on EMI in relation to non-engineering disciplines

This section considers studies on EFL/ESL students' experiences with EMI in the context of non-engineering disciplines within the outer and expanding circles (Kachru, 1992). There a number of such studies, including Shamim et al. (2016), Belhiah and Elham (2015), Chuang (2015), Al-Hassan (2104), Vu (2014), Ryhan (2014), Al-Mashikhi (2014), King (2014), Goodman (2014), Tamtam et al. (2013), Tatzl (2011), Troudi and Jendli (2011), Evans and Morrison (2011), Chang (2010), Mouhanna (2010), Brock-Utne (2007), Jackson (2005), Wilkinson (2005), Bielenberg (2004) and Kyeyune (2003).

A study conducted by Al-Hassan (2014), which was on an English-medium MBA programme in Sudan, used a multi-faceted approach to investigate business students' experiences, problems and needs. A qualitative ethnographically-oriented methodology was adopted, involving three tools of data collection: interview, document analysis and classroom observations. A total of 31 participants took part in the study. The results showed that students experienced many problems which impacted on their academic performance negatively. Students experienced difficulties attributed to the use of EMI, including coping strategies, understanding business terms, problems with in-class tasks, meeting deadlines, assignment writing and plagiarism issues.

A study made by Vu (2014) focuses on the challenges of the use of EMI in Vietnamese tertiary education. Seventy-one lecturers filled in a questionnaire in phase one of the study and this was followed by an interview with the staff as phase two. The findings revealed that lecturers were challenged by their own language abilities, by students' language competence and learning styles, and by pedagogical issues, as well as resource availability. In Vu's study, both interviews and surveys were used but students' views were not involved in the investigation.

A study by Ryhan (2014) looked into the adoption of English as a medium of instruction across the Kingdom of Saudi Arabia. The researcher found that the sudden shift from instruction in Arabic created a barrier which resulted in an element of chaos in relation to teaching and learning, knowledge acquisition and overall understanding of the subjects through English among students. A study by Wong (2010), based in Hong Kong, on the effectiveness of English as a medium of instruction from students' perspectives, found that students were

indeed generally in favour of English as a medium of instruction, and their preferences were positively linked to their own English proficiency.

Al-Mashikhi (2014) surveyed 60 undergraduate colleges of science students (30 males and 30 females) at a public university in the Sultanate of Oman. The findings showed that a large number of participants accepted that English is the global language of science and technology, although more than half indicated a preference for Arabic-medium instruction. However, participants did not show negative attitudes towards EMI itself. Further, the respondents identified several ways in which the potentially negative impacts of EMI could be dealt with. These included increasing the quality and quantity of their English courses, using code-switching between English in the classroom, and designing Omani-specific teaching materials. Al-Mashikhi's study was focused on undergraduate college students in general, however, the present study moves to address Omani engineering students' experiences in relation to a range of issues, among which is the language-related difficulties they encountered in relation to EMI. Methodologically, the present study takes into consideration students', EAP teachers' and engineering instructors' views on their experiences of engineering programmes to inform EAP provision and support the delivery of EMI classes. Al-Mashikhi's method of data collection was the questionnaire only, and both English language teachers and engineering students did not participate in the study. Teachers' involvement in the study might have provided a wider picture and offered deeper insights into the problem. Additionally, although the study covered a range of science-related disciplines, it did indicate, for instance, the percentages of participants from each individual discipline and thus provides a more precise picture of students' attitudes in each of these disciplines.

Another study on students' experiences with EMI in an EFL context was conducted by Kyeyune (2003) at Makerere University in Uganda. Teachers and students were interviewed in relation to ways of using EMI. Kyeyune argues that while the option for change may include adopting the mother tongue as an alternative medium, there are theoretical reasons for believing that it would not necessarily lead to a great improvement. It is argued that the problem is not merely one of linguistic competence but it has deeper roots in dominant modes of teacher-student communication. Additionally, there are serious practical difficulties with education through a mother tongue. Kyeyune claims that the option of a careful bilingual-based and communication-based instruction would help in improving students' English proficiency. He suggests that to facilitate learners' comprehension and analysis of classroom talk; teachers should have the necessary skills for supporting learning through an analytical understanding of

language-related barriers and challenges. Moreover, they should be fluent in the two critical skills of questioning and explaining. Interestingly, Kyeyune's (2003) study raised a very important and crucial issue, which is the English proficiency of EMI teachers. Kyeyune appears not to have observed classes to see what was going on in the classroom but rather relied on interviews.

Wilkinson (2005) explored Dutch content lecturers' perceptions about their use of EMI and he found that lecturers had to spend more time in using EMI, and that communication became 'poorer' as a result of their weaker ability to use the instructional language, which impacted negatively on the quality of education. His findings suggest that EMI can lead to effective content learning if the instructional technique of code-switching between L1 and L2 is adopted, but code-switching still remains a controversial issue. Wilkinson's study has provided significant insights into content lecturers' experiences with EMI and its pedagogical challenges.

Vu's (2014) study attempted to answer the question: what challenges do stakeholders face in the implementation of EMI? It was a two-year project that investigated a newly-implemented EMI undergraduate programme in Vietnam. Selected findings from the study's interviews revealed that lecturers were challenged by their own language abilities, students' language proficiency and learning styles and modalities, pedagogical issues and resources availability. Only lecturers' views were reported but other important stakeholders, such as students, were not included by Vu. A study by Jackson (2005) focused on business lecturers' perceptions of linguistic and conceptual difficulties encountered by Chinese undergraduate business students enrolled on English-medium programmes in Hong Kong. Semi-structured interviews and group discussions were used to collect data. The reported problems were: students were not very independent in their study; they lacked good study habits; and they had problems with classroom participation and discussion in English. Additionally, they reported that students had difficulties in asking questions in the classroom, exhibited weak interpersonal and communication skills, and were incapable of giving a confident, clear oral presentation to the class. Lecturers believed that these problems were caused by inadequate preparation during their schooling and pre-university courses, and these had negative impacts on both their academic and workplace performance. Jackson's (2005) study shares some methodological orientation with the present study, however, it was focused on the business discipline only and disciplines such as engineering and other science-related disciplines, which are generally thought to be more challenging (in terms of technical terms), than business-related disciplines.

Jackson's (2005) study offered good insights into the types of difficulties that business students encounter in an outer/expanding circle context. However, only lecturers were involved in Jackson's study; involving students might have given further comparative and contrasting analytical perspectives.

Tatzl's (2011) study surveyed eight lecturers and 66 students on two masters degree programmes, namely, Business and Engineering at FH Joanneum University of Applied Sciences, Graz, Austria. The purpose of the research was to identify the stakeholders' attitudes, experiences and challenges regarding EMI in higher education and to propose measures that would better facilitate the English-taught masters programmes. The results showed that both students and lecturers were in favour of EMI. The study revealed that the major areas of concerns were: the feelings of dissatisfaction among stakeholders, different levels of students' prior knowledge and the reduction in the amount of content that could be taught. The study confirms the importance of ESP instruction within the curriculum. Tatzl's (2011) study only used surveys to collect data from students and lecturers. Moreover, the study did not state whether or not there were differences between the types of challenges encountered by the business and engineering students respectively. Involving EAP/ESP teachers might have given further comparative analytical perspectives on students' difficulties and challenges with EMI on English-medium engineering and business masters programmes.

Troudi and Jendli (2011) conducted an exploratory study by investigating what Emirati university students think of EMI and sought to answer the following questions raised by the study: what were students' attitudes towards English as medium of instruction at Zayed University in the UAE? What was the nature of the challenges students face studying through EMI? How did students cope with these challenges? The effects of EMI on students' educational achievements and learning experiences were also investigated. Semi-structured interviews were used to obtain the data. The findings revealed that students' experiences of EMI at the university level were shaped by a number of educational and socio-cultural factors. Students' previous schooling experience and their overall competence in English to a large extent formed their views of EMI. The results showed that students who attended private English-medium schools were more prepared to face the academic demands of EMI than their colleagues who had learnt English in governmental schools. Further, family background and parental attitudes towards English also played a role in students' acceptance of EMI and, in many cases, a tendency to prefer English to Arabic. Nevertheless, the data revealed that Emirati students were also interested in Arabic as a medium of instruction for a number of university

subjects. Employability and labour market requirements and needs shaped their pragmatic attitude towards EMI in their tertiary education. Additionally, they also associated Arabic with discourses of identity, and linguistic and cultural heritage. One of the major implications of Troudi's and Jendli's study is a suggestion that the old binary division between Arabic and English as languages of instruction is inadequate. The study challenges established discourses that have been reinforcing English as a language of science and academia, while relegating Arabic to a language of heritage and religion. They argued that Arabic and English can mutually co-exist in a model of dual language instruction for university students.

Although Troudi's and Jendli's study shares methodological and contextual orientations with the present study, their study did not involve core subject and EAP teachers. Involving teachers as insiders might have given more in-depth insights as well as broader perspectives. Additionally, the nature of the challenges faced, and their impacts, may vary from one discipline to another. The present study looks into engineering students' experiences with the use of EMI and the challenges that they encountered during the course of their studies.

Belhiah and Elham (2015) carried out a study to explore the effectiveness of English as a medium of instruction (EMI) in the Arabian/Persian Gulf, specifically in the UAE. Teachers' and students' perceptions were examined in relation to the use of EMI to teach subject matter in six universities across the UAE. Five hundred students and 100 teachers were surveyed and interviewed about the effectiveness of EMI. Results suggest that EMI disadvantaged students with low proficiency in English. The study suggested the need for implementing a bilingual curriculum in which instruction is delivered in both English and Arabic in order to promote students' linguistic and biliteracy skills. The study claims to have implications for language education policy issues in the Gulf, and it advocates bilingual education as a means for improving students' proficiency in English and preserving their national identity and indigenous culture at the same time. Belhiah's and Elham's (2015) study has offered insights into EMI in EFL contexts, and it could be argued that EMI is only applicable and useful if students have good English proficiency and skills.

Evans and Morrison (2011) conducted a longitudinal study examining the language-related challenges that first-year students faced when adjusting to the demands of English-medium higher education in Hong Kong. Twenty-eight university students were tracked via semi-structured interviews at regular intervals over their three years of study. The findings were supplemented by surveying 3,000 students at the same university. The interview and survey

findings revealed that students experienced four main problems during their crucial first year at university: understanding technical vocabulary; comprehending lectures; achieving appropriate academic style; and meeting the institutional and disciplinary requirements. The evidence suggests that students were able to overcome these and other problems through the combination of strong motivation, hard work, effective learning strategies and supportive peer work. The study had implications for the provision of EAP in EFL/ESL contexts. Although Evans and Morrison (2011) provided insights into the language-related problems encountered by first-year university students, they did not address students' coping strategies or EAP and core subject teachers' perceptions on these language-related challenges in this particular context.

Shamim et al. (2016) conducted a case study on the use of English as a medium of instruction in the preparatory or transition year at a public sector university in Saudi Arabia. The findings showed that both students and teachers preferred English as the medium of instruction due to pragmatic and instrumental reasons. However, a number of challenges were reported, mainly due to learners' low proficiency in English. The results showed that students used different learners' strategies to address these challenges which negatively impacted their academic performance and achievement. Shamim et al.'s study shares contextual orientation with the current study as they were both conducted in the Arabian Gulf, and the two EFL contexts share cultural and socio-economic factors. However, Shamim et al.'s study was focused on the preparatory or transition year students rather than core subject students. It is evident that the vast majority of teachers and students who were surveyed or interviewed in the Gulf region held positive attitudes towards the use of English as a medium of instruction due to its significant impact on employability and the labour market across the region. Although Shamim et al.'s study was centred on first-year preparatory students, it provided insights into the difficulties that Arab students encountered with the use of EMI, and the coping strategies that they used to handle these.

Chang (2010) evaluated the implementation of English as a medium of instruction (EMI) for content courses at a private university in northern Taiwan by examining both students' and teachers' perceptions. Three hundred and seventy undergraduate students were surveyed and six professors from six departments in the three major colleges at the university were interviewed. The data obtained from students were centred on four aspects: students' reactions to the EMI subject courses; the influence of English-medium instruction on students; difficulties that students encountered in their EMI courses; and students' English language

teaching needs observed during the research process. The results revealed that although the students in this study generally did not think that they had a high level of comprehension in their EMI lectures, most of them did not show negative attitudes towards the courses. Moreover, most of the surveyed students claimed that EMI helped them to improve their English language proficiency, particularly their listening skills. Chang's (2010) study has provided us with a picture of the perceptions of Taiwanese EFL students about the implementation of EMI and the challenges that they faced as they reflect on their own experiences. It also provides us with the perspectives of professors with regard to EMI implementation in this particular context. Nevertheless, Chang's (2010) study only surveyed the students who were neither interviewed nor observed in their classes while studying through EMI. Additionally, the study covered a range of disciplines from three departments and colleges but it did not indicate the percentages of participants from each individual discipline or department. There is a need for approaches that move beyond questionnaires and surveys with multiple sources of data collection and participants to more closely investigate EFL students' experiences with EMI, and the current study aims to do this in relation to English-medium engineering programmes in Oman.

Chuang (2015) examined students' views about a teaching method for facilitating their engagement and improving their learning experiences in EMI courses at a Taiwanese university. Chuang confirms that her pedagogical method was effective in improving lecture comprehension, fostering students' engagement in class, and promoting collaborative learning. Finally, she recommends the method to be used for better learning outcomes in EMI contexts.

An ethnographic study conducted by Goodman (2014) focused on the impact of EMI pedagogy in a private university in Eastern Ukraine. The fieldwork was conducted in nine English-medium classes and three Russian-medium classes. The data indicated that EMI education posed staffing challenges, as teachers were either language experts with low content knowledge or were content experts with low English language skills. Moreover, the lack of print resources and textbooks in English was another challenge. Additionally, teachers found teaching content in a foreign language necessitated adjustments to speaking pace, discipline and general classroom discourse. However, despite all these challenges, both teachers and students viewed teaching and learning in English as a worthwhile opportunity for them. Goodman's study reported a variety of challenges encountered by Ukrainian students and teachers. The study did not specify the disciplines in the three English-medium classes which were under investigation, nor did it reveal the methods used to obtain the data.

Mouhanna (2010) conducted a small-scale study which surveyed Arabic native-speaking teachers' attitudes towards EMI. He explored their perspectives on the use of L1 to teach content courses in this particular context, teachers' understanding of a tertiary institution's policy in general and the dynamics of the pedagogical decision to use English as a medium of instruction in the content-based tertiary courses, namely, maths and IT at a tertiary institution in the UAE. The findings showed that although the participants were predominantly native speakers of Arabic, a high degree of support was evident for the use of English as a medium of instruction. The results indicated that although the teachers rarely used Arabic as a part of their instruction, they were generally supportive of the use of some L1 to facilitate learning in certain situations. The study highlighted some challenges associated with the use of EMI at the tertiary institutional level in the UAE, namely, the impact of students' English language proficiency on academic progress, the exclusion of the L1 in the EMI classroom and the lack of development of accessible resources in the native language.

Mouhanna's study is relevant to the current study and it has given us some insights as it shares contextual orientation with the current study. However, the study only surveyed teachers and hearing students' voices might have provided a clearer picture. The present study moves in a similar direction but it looks into both teachers' and students' experiences. Moreover, Mouhanna's study employed surveys only to explore teachers' perspectives. To take into consideration interviews and observations to collect the data might have provided a more complete picture regarding the use of EMI and the challenges that it poses in this particular EFL context.

Related to one of the aims of this study, Bielenberg (2004) considered mathematics and information technology students' and teachers' experiences with EMI at the UAE University. The teachers had to employ a number of pedagogical and linguistic devices, such as the use of a slow pace of delivery and a focus on selected vocabulary, to help their students understand the core subjects. The findings revealed that students' learning experience was characterised by major challenges that were encountered with the kind of linguistic structure and genre used in their academic textbooks. These students mostly came from Arabic-medium secondary schools, except for those who went to private schools where English was the medium of instruction. Bielenberg's study did not delve into the strategies that students and teachers used to handle those challenges, and the impact of those challenges on their academic achievements and educational experience. Clearly, there is a need to learn more about students' experiences with EMI in the Gulf region, specifically in the Sultanate of Oman.

King (2014) explored content teachers' views on English as the medium of instruction (EMI) in a federal tertiary setting in the United Arab Emirates (UAE). A questionnaire was used to collect data from 45 teachers and nine teachers were interviewed. The findings suggest that although there was some support for EMI among the sample, there was also recognition of some problems with the policy of using EMI, primarily students' insufficient language proficiency to study in English. Students and teachers used a number of strategies including skills avoidance, simplifying materials, reducing content and code-switching into Arabic. King's study has provided good insights into EMI pedagogy in tertiary education in the Arabian Gulf.

Brock-Utne (2007) conducted a study using classroom observation to find out issues linked to EMI in a Tanzanian context. Brock-Utne identified a number of critical issues with regard to the use of EMI instead of Kiswahili. She contended that EMI should be forsaken for Kiswahili as English significantly slowed down the learning process, and students were apprehensive about communicating in English. The study has two main limitations, namely, only observation was used to collect data, and teachers were not involved in the investigation. Using more than one method of data collection and involving teachers might have helped in gaining a better understanding of students' perceptions of the use of EMI in their tertiary education.

There are recent studies by Al-Bakari (2017), Tsui and Ngo (2017) and Jiang et al. (2016) which examined students' learning experiences through the medium of English in EFL/ESL contexts. Generally, in all these studies, EMI was viewed positively by stakeholders which is contrary to the critical views on EMI. Stakeholders suggested ways to improve the provision of EAP and language support programmes to facilitate the EMI.

Tsui and Ngo (2017) examined Hong Kong University students' perceptions on EMI policy. The purpose of their study was to examine students' views of the newly implemented EMI policy in their tertiary education. The findings showed that the students perceived the EMI policy positively for pragmatic and future career reasons despite the challenges that it presented to them. It was found that the variations in perceptions of the four factors were based on the differences between students, including their academic disciplines and years of study; students' intention to migrate; and career and internationalisation (which had positive impact effects on the intention to migrate). The study offered insights into the students' academic performance; however, Tsui and Ngo (2017) only used surveys to collect data from the students. Additionally, the study did not state whether there were differences between students in their

views across the disciplines. Involving disciplinary teachers and language teachers, too, might have given further comparative and analytical perspectives on the students' perceptions of EMI in their degree programmes.

Jiang et al. (2016) investigated subject-teachers' and students' perceptions and practices, and students' motivations and needs in an EMI tertiary education programme in China. It also examined how EMI was used by subject teachers, and how English language learning should be facilitated by EAP/ESP practitioners among students with low English language proficiency. The data was generated via nine classroom observations, three post-observation interviews and a questionnaire survey. The results showed that effective instruction was maintained by adopting pragmatic strategies, but it failed to enhance performance in English. The subject teachers' perceptions of EMI undermined prospective students' linguistic gains. Additionally, the existing education context also contributed to students' English learning motivation and needs. The study findings suggested that increasing access to ESP courses was important for the EMI classroom. Moreover, the results supported that the collaboration between subject teachers and language specialists would be beneficial for students in terms of their disciplinary knowledge and language skills. Finally, it was suggested that EAP/ESP teachers needed to take into account their students' communicative needs across their disciplines and had to address the limitations of the current EMI practices in Chinese higher education institutions. Jiang et al. (2016) offered insights into EMI in EFL contexts, but it could be argued that the voices of EAP/ESP teachers were not investigated as one of the main aims in the provision of EAP/ESP in an EMI context.

3.2.3 Studies on EMI in relation to the discipline of engineering

This study has been partially motivated by the paucity of research in relation to EMI in the area of engineering education in the Gulf in general and in Oman in particular. There is a plethora of research on EMI in ESL/EFL in general. Teaching English to engineers is a demanding matter in terms of content, methods and techniques, and deciding which kind of English is appropriate for their particular sub-discipline within engineering and to shaping the future of engineers (Riemer, 2002). Smith (2004) summarised many potential problems of EMI in terms of curriculum design and approaches to teaching methodology. The problems include: insufficient language abilities and proficiency on the parts of both teachers and students; lack of training on the use of EMI; reluctance of local teachers to use EMI; lack of willingness among students to opt for EMI courses; deficiency in CLIL materials and their inconsistency in

content; and lack of administrative support and inefficiency of institutions to run EMI programmes. Researchers such as Riemer (2002), Al Bakri (2014), Tamtam et al. (2010), Basibek et al. (2014) and Sivaraman et al. (2014) have investigated EFL/ESL students' learning experiences within English-medium engineering programmes.

A study by Al Bakri (2014) was conducted to explore Omani college students' views on EMI and its effects on their learning experiences. An exploratory design method, with an element of critical ethnography, was used. Semi-structured interviews, along with classroom observation, were employed to collect the data. The findings revealed that the main challenges that students faced with EMI were in relation to coping strategies, however, they expressed their preference for studying in English rather than Arabic. Al Bakri's (2014) study challenges the assumption that education is most efficient if it is conducted in English and it suggests that Arabic should be implemented as a medium of instruction in tertiary education with English taught as a foreign language with an emphasis on appropriate curriculum, pedagogy and material. Al Bakri's study has several drawbacks which merit consideration. Firstly, the number of students involved was limited to 10. Secondly, the findings showed that the participants' attitudes towards English were positive and they were in favour of English as a medium of instruction rather than Arabic. Nonetheless, the study recommended that Arabic should be used as a medium of instruction and English should be taught as a foreign language.

A study conducted by Tamtam et al. (2010) investigated possible ways to implement EMI in engineering education in the Arab world as well as focusing on the Netherlands, Korea and Indonesia, which had implemented EMI in their engineering education. The study was fundamentally centred on problems and difficulties faced by these non-native English-speaking countries with regard to EMI and explored possibilities and suggestions to handle these issues. Tamtam et al. (2010) argued that in order to improve engineering education in the Arab countries it was necessary to research internationalisation of the education systems and meet the internationally recognised standards, not only in engineering as a discipline, but also in communication skills and attributes which are necessary for engineering graduates. Tamtam's (2003) earlier study has provided insights into the EMI difficulties encountered by engineering students in the non-English-speaking countries from both Arab and non-Arab countries. Tamtam, however, reported these difficulties following a review of the then existing literature and not by interviewing students and teachers. Involving students and teachers might have given further comparative and analytical perspectives on engineering students' difficulties with EMI.

A study conducted by Basibek et al. (2014) surveyed 63 engineering professors' attitudes towards EMI at two Turkish universities, which partially employ English as a medium of instruction, along with Turkish. The purpose of the study was to compare attitudes towards EMI in the Turkish contexts. Basibek et al. claimed that some lecturers in partial EMI programmes may consider that they are incapable of performing their teaching duties or may feel some aspects of teaching to be more difficult to be handled in English. Basibek et al.'s study shares an orientation with the current study in terms of its focus on the engineering discipline, however, the scope and aim of the current study is to go beyond students' and lecturers' attitudes to explore and investigate their learning experiences with the use of EMI as the sole medium of instruction, unlike the Turkish context described by Basibek et al. Moreover, Basibek et al. only used surveys to identify students' attitudes. Arguably, using interviews and observing classes might have given more in-depth insights into lecturers' and students' attitudes. Additionally, directly involving students and other stakeholders might have enriched the findings of the study.

Tamtam et al. (2013) conducted a qualitative study to investigate teachers' views on the impact of the language of instruction on the quality of education in two contrasting Libyan universities. Arabic was used as a medium of instruction in science and engineering at the University of Al Jabal Al-Garbi and English was used as the medium of instruction in science and engineering at Nasser International University. The participants in the study were five faculty members from each university, teaching different science and engineering courses. They were interviewed with regard to their views on using Arabic only, English only or Arabic-English bilingualism as the medium of instruction. The findings revealed that staff members in both institutions have very similar views with slight variations with regard to the three media of instructions. They assumed that English would have a negative impact on students' academic performance, and participants in case one thought that students liked English. Whereas, respondents in case two were of the view that students liked Arabic and they believed it is easier for them to study in Arabic. However, all participants agreed that the use of Arabic would present difficulties when they were searching for job opportunities. Moreover, the lack of Arabic academic resources and materials was identified as an issue for Arabic-medium instruction. The study suggests that Arabic-English medium seems to be the best choice towards globalisation.

Sivaraman et al. (2014) surveyed 132 engineering students about their experiences in an English-medium private engineering college in Oman. The survey showed that there was a

language barrier in their understanding of their engineering modules. Taking part in classroom discussions was difficult; there were difficulties in fully understanding lectures delivered in English, as well as in understanding fundamental concepts and terms in the field, classroom participation, exam preparation and the study experience. The results revealed that the use of EMI has a negative effect on their overall performance due to their lack of proficiency in the English language. A possible limitation of the Sivaraman et al. (2014) study is its reliance on questionnaires only.

3.2.4 EFL/ESL students' experiences on lecture comprehension-related challenges in English-medium programmes: Survey and interview-based studies

This section reviews studies conducted on EFL students' experiences on lecture comprehension problems and challenges in English-medium programmes. Both survey and interview-based studies were reviewed and discussed.

Boyle (1985) identified three main factors that may influence ESL students' listening ability during lectures. These factors are: speaker factors, listener factors and factors related to the materials and medium of instruction. Problems with lecture comprehension take place due to several reasons, namely, the mismatch between students' and lecturers' expectations, lack of understanding by students and problems relating to the kind of strategies lecturers adopted (Flowerdew et al., 2000). Moreover, the problem of lecture comprehension may be related to lecturers' personal attributes, such as speed of delivery, accent, interpersonal factors, etc. as well as students' poor linguistic abilities, such as poor vocabulary and listening skills, including failure to understand discourse organisation (Yousif, 2006). A number of studies on students' experiences and from lecturers' perspectives on lecture comprehension difficulties have been conducted (these include Arden-Close, 1993; Flowerdew and Miller, 1992; Flowerdew et al., 2000; Mulligan and Kirkpatrick, 2000; Airey and Linder, 2006; Hellekjaer, 2010; Sivaraman et al., 2014; Kagwesage, 2012; Joe and Lee, 2013; Yousif, 2006; Navaz, 2012; Sally, 1985).

A quantitative study was conducted by Hellekjaer (2010) to investigate lecture comprehension in English-medium higher education by comparing student lecture comprehension in English and their first language (L1) at three Norwegian and two German institutions of higher education. Three hundred and sixty-four Norwegian and 47 German students were surveyed. The study compares self-assessment scores for lecture comprehension in English and the L1. The results indicated that the difference between English and L1 scores was substantial, with a

considerable number of students having difficulties understanding the English-medium lecture. Among the main problems, which in fact were similar in English and in the L1, were difficulties in understanding and distinguishing the meaning of words, unfamiliar vocabulary and difficulty in taking notes while listening to lectures. The study argues the need to improve the quality of lecturing in English and L1 as well as the students' and lecturers' English proficiency. Hellekjaer's study provided insights into lecture comprehension problems in both English as a second language (ESL) and as a first language (L1). Involving lecturers might have given a different picture and provided possible contrastive and comparative perspectives to students' perceptions.

Another investigation was conducted by Arden-Close (1993) to examine the kind of language problems that took place in chemistry lectures given by English and American lecturers to Omani students at Sultan Qaboos University, Sultanate of Oman. The language problems were found to be exclusively related to vocabulary. The problems were classified as: those vocabularies having to do with the invisible nature of chemistry and those concerning the scientific and everyday use of words, and problems with synonyms used to explain words. The study suggested that the kind of learning of words that occurs in these lectures entails a very limited knowledge of the words in question. Arden-Close's study has provided us with some Omani students' experiences with English-medium lecture comprehension problems in chemistry classrooms, and it offers good illustrative examples of the types of problems EFL/ESL students experience with their English-medium lecture comprehension difficulties in the Sultanate of Oman.

Flowerdew et al. (2000) conducted a three-stage longitudinal study into lecturing in English to non-English-speaking students at a university in Hong Kong. The first stage of this project (Flowerdew and Miller, 1992) focused on perceptions, problems and strategies of non-native-speaking students receiving lectures in English from native-speaking lecturers. The second stage of the project focused on the lecture situation from the other side of the lecture equation, that of the lecturers. In the third stage of the project, which is reported here, the ESL lecture is investigated from the perspectives of local Chinese lecturers that share L1 of their students and for whom English is therefore a second language. The main problems during lectures, as stated by all groups, were the linguistic skills of the students, speed of delivery and the inability to understand vocabulary or specialist terminology. Chinese-speaking lecturers reported having more problems due to the linguistic skills of the students during lectures than the native-English-speaking lecturers mentioned. Surprisingly, these problems seemed to stem from the

Chinese-speaking lecturers' ability to use Cantonese. Many lecturers reported pressure from students for them (the students) to use Cantonese during lectures. Students were not willing to ask questions in English during the lecture when they were having problems, and many had an inability to take notes in English. Chinese-speaking lecturers tended to attribute the students' weak study skills to the education system they had experienced during their schooling. Regarding the strategies employed by students to follow the lecture and handle the lecture-related challenges, they employed a variety of strategies, such as students tended to make extensive use of their peer groups for support in understanding what was taking place in the lecture. They also made use of their reading skills, either prior to the lecture or afterwards, to enhance their comprehension of the topic. All lecturers attempted to modify their language when lecturing to their students. They tended to give out more handouts than they would like to; they tried to use local examples as much as possible. Additionally, lecturers used more visual aids than they were used to using in order to make sure that their students were following the lecture. The use of some Cantonese during lectures was considered to aid comprehension and to check students' understanding.

Flowerdew et al.'s (2000) study is considered important in relation to lecture comprehension problems as it was longitudinal in nature and dealt with lecture comprehension problems in an EFL context. Moreover, the study looked into both lecturers' perceptions with regard to lecture comprehension problems and strategies used to handle these problems by both students and lecturers. However, the study did not consider the possibility that lecture comprehension problems resulted from the variation across disciplines due to the differences among various science-related disciplines.

Flowerdew and Miller (1992) conducted an ethnographic study to investigate second language lecture comprehension problems experienced by 30 Hong Kong Chinese students attending lectures in a BA TESL method course. Questionnaires, diary completion, classroom observations and in-depth interviews were used to generate data. The analysis of the data focused on students' perceptions of the lecture experience (attitude, self-rating of comprehension level, what students look for in a lecture, etc.). The problems reported were speed of delivery, terminology and concepts, concentration, etc. The strategies used to handle such problems were pre- and post-lecture reading, peer or lecturer help, attempts to concentrate harder and note-taking. Flowerdew et al. (2000) claimed that the study had wider pedagogical implications for both lecturers to non-natives and ESL specialists preparing students to study through the medium of English.

A study by Mulligan and Kirkpatrick (2000) looked into tertiary literacy among international students at Australian universities. The aim of the study was to determine the nature and extent of problems experienced by non-English-speaking backgrounds (NESB) students in comprehending lectures and found significant gaps in understanding. The results revealed that many students from NESB had problems with comprehension and note-taking in lectures. The results showed that fewer than 1 in 10 NESB students were able to understand the content and intent of their lectures very well. More surprisingly, almost one-quarter of them had not understood much of the lectures at all. The study suggested strategies for change for EAP teachers, students and core subject lecturers.

Although Flowerdew's and Miller's study, and the studies reviewed above, have provided some insights into the types of second language lecture comprehension problems encountered by EFL/ESL students, they have not considered engineering students' lecture comprehension problems and difficulties, or strategies used to handle these problems. The current study is adopting multi-thematic investigation on engineering students' experiences with EMI challenges and lecture comprehension in Oman to provide a more detailed, comprehensive picture of the situation in a specific geographical and cultural context and to thereby better inform the provision of EAP during the pre-sessional and in-sessional years in that context.

A study was conducted by Sivaraman et al. (2014) on Omani students at an engineering college in the Sultanate of Oman to understand the teaching staffs' attitudes towards engineering students' English language difficulties. The study surveyed teaching staff about students' learning difficulties, where English was used as the medium of instruction. The vast majority of students have had their primary and secondary education in Arabic-medium schools. They went through a bridging course in the foundation programme but their proficiency in Arabic was limited and they still had problems in understanding the engineering modules, class participation, exam preparation and their overall performance and study experience. The survey findings showed that the language barrier negatively affected the performance of the students in their engineering modules. Although Sivaraman et al.'s study shares contextual and disciplinary orientations with the present study, it did not include students or the foundation teachers, which might have given a different picture and insights into the findings and students' difficulties with the English language. Moreover, the study only used questionnaires to obtain data and understand the views of the members of staff about students' difficulties.

Joe's and Lee's (2013) study focuses on Korean medical students' perceptions about second language lecture comprehension difficulties. The study also scrutinised relationships among Korean medical students' comprehension of satisfaction with EMI and their general English proficiency. Various concerns have been raised with regard to students' difficulties in EMI lecture comprehension and ineffective interaction between lecturers and students. Sixty-one students were surveyed and sat for pre-and post-tests during English-medium and Korean-medium lectures. Surprisingly, it was found that the medium of instruction had no effect on understanding of the lecture and that students' general English proficiency was not related to their lecture comprehension. Based on the findings, the study has offered suggestions and recommendations for implementing EMI courses in Korea.

A study conducted by Kagwesage (2012) investigated Rwandan university students' reflections on using English as the sole medium of instruction in their everyday HE academic tasks and duties. The data was mainly obtained via interviews. The findings suggest that the students encountered a number of difficulties and challenges with the newly implemented medium of instruction as their English proficiency did not match with the communicative demands of their academic tasks. However, students were very much aware of the demands of globalisation and the 'dissolution' of national boundaries through new technologies, so they were willing to improve their English to cope with the new demands of the EMI academic setting. Kagwesage's study has offered good insights into EMI difficulties in EFL/ESL contexts; however, involving teachers might have given a deeper understanding of EFL/ESL students' difficulties and problems in relation to EMI.

Airey and Linder's (2006) investigation was aimed at the use of EMI to teach physics at two Swedish universities. Twenty-two undergraduate physics students attended lectures in both English and Swedish as part of their regular undergraduate programme. These lectures were videotaped and the students were then interviewed about their learning experiences using selected excerpts of the videos in a process of stimulated recall. The results revealed that there were important differences between when they change the medium of instruction from Swedish into English. The classroom interaction with regard to asking and answering questions was reduced, and there was difficulty in following lectures and taking notes at the same time due to the change in the disciplinary discourse. The study found that students employed a number of strategies to respond to these language-related difficulties, namely, asking questions after the lecture, and reading the sections related to the lecture before class. There was a change in their

study habits so that they no longer took notes in class. Airey and Linder's (2006) investigation has provided a clear picture and insights about EFL/ESL students' experience with EMI.

An investigation was carried out by Yousif (2006) on the reasons for lecture comprehension problems in an EFL context, specifically in Saudi Arabia. The participants were students majoring in English. His findings showed that there were five key factors affecting lecture comprehension. The factors were: linguistic and conceptual variables (e.g. terminology); discourse variables (e.g. difficulty in understanding longer sentences); acoustic variables (e.g. speed of delivery); environmental variables (e.g. noisy classroom); and psychological variables (e.g. boredom). The current study aims to fill the gaps in the relevant literature by undertaking a comprehensive and multi-faceted approach to investigate engineering students' learning experiences on an English-medium engineering programme in Oman by looking into the difficulties that were encountered with lecture comprehension and the strategies that they utilised to handle these problems. The present study also moves in a similar direction to Yousef's (2006) work since it addresses EFL students' experiences with EMI in their engineering education, based on multiple sources of data (i.e. semi-structured interviews, observations and collection of documents). Yousef reported lecture comprehension problems only from students' perspectives.

Sally (1985) investigated undergraduate engineering students' lecture comprehension in a Sri Lankan context. Sally exposed the participants to an experimental course in listening comprehension for eight weeks. The listening comprehension was measured, and it was found that the students had difficulties in understanding vocabulary, prepositional phrases and phrasal verbs, which in turn affected their lecture comprehension negatively. Sally claimed that the exposure to these experimental lectures enhanced the students' lecture comprehension; however, the study did not reveal how the listening comprehension was measured. Additionally, it did not highlight the impact the differences among disciplinary contents may have had on lecture comprehension. Likewise, Navaz (2012) investigated students' and lecturers' experiences with lecture comprehension difficulties at the Faculty of Applied Sciences (FAS) in a Sri Lankan university. The data was collected via questionnaires, interviews and observations. The findings revealed that there were several factors that influenced students' and lecturers' behaviour in class, and their perception of that behaviour. Additionally, it was found that students' lecture comprehension problems and classroom interactions were influenced and shaped by their language proficiency. Students believed the

lecturers' delivery style to be more important than their language proficiency. However, the study did not investigate the strategies they used to handle these difficulties.

3.2.5 EFL/ESL students' coping strategies in provision with the English-medium of instruction

English-medium courses and programmes have increased dramatically in tertiary education in non-English-speaking countries all over the world. This has raised many concerns with regard to the difficulties that EFL/ESL students may encounter, which may result in ineffective interaction between lecturers and students, and problems with lecture comprehension (Joe and Lee, 2013). Researchers such as Kagwesage (2013), Hu and Lei (2014), Suliman and Tadros (2011), Peacock (2001), Alginahi et al. (2009) and Saat and Othman (2010) have investigated the coping strategies employed by EFL/ESL students to handle EMI difficulties and problems.

Kagwesage (2013) examined coping strategies used by multi-lingual students in Rwanda in order to successfully deal with complex academic material delivered through the medium of English in their economic and management courses. The data was collected from group work discussions and interviews; the data was analysed thematically. The findings showed that students used multiple coping strategies to handle EMI-related difficulties, namely, the successful use of other languages at their disposal to mediate cognitively-demanding academic tasks. Interestingly, although other spoken languages are not officially recognised as media of instruction in Rwandan higher education, they played a mediating role in core subject learning through the use of code-switching and translanguaging. Kagwesage's study has offered valuable insights into coping strategies used by EFL/ESL students to respond to EMI difficulties. However, EAP and core subject teachers were not involved in the investigation. Hu and Lei (2014) reported a number of coping strategies used by professors and Chinese students to deal with EMI language-related challenges and difficulties. Because of the linguistic demands of EMI, students and professors reported considerable difficulties in using English to explain sophisticated scientific concepts and complex technical terms, to explicate process and principles fundamental in their discipline, and to discuss intricate cases and develop persuasive arguments and construct counterarguments. To overcome such language-related problems, they reported various teaching and learning strategies they were using. One of the coping strategies adopted by core subject teachers was simplifying the curricular content. Another teaching strategy was preparing teaching notes in advance to explain the language of the textbook. Also they assigned pre-lecture readings for students to preview the instructional content, as well as

repeating explanations that students did not understand. Further, students were compelled by their inadequate command of English to adopt a variety of compensatory learning strategies. One of the popular strategies was to depend on Chinese references/textbooks to make sense of their lecturers and English coursebooks. Additionally, students spent a lot of time looking up unknown vocabulary in their English textbook before they went to their classes. In addition, they translated content from English into Chinese, memorised answers to tests based on Chinese and English textbooks, and avoided spontaneous discussion in English.

A study conducted by Suliman and Tadros (2011) explored coping strategies used by nursing students in Saudi Arabia to cope with foreign language-medium of instruction difficulties. A descriptive repeated-measure design was used; seventy-eight students were surveyed three times. The findings showed that students' coping strategies are changing within this context. Some coping strategies, such as positive reappraisal, planful problem-solving, self-controlling and seeking social support were rated as the highest at the beginning of the semester. However, they decreased significantly by the middle of the semester. Confrontive coping and distancing increased significantly by the end of the semester. Positive reappraisal and planful problem-solving deal with inspiration to analyse and solve difficulties and problems. In this case, the teacher should boost students' confidence to work out a couple of different solutions, such as setting a plan of action and doubling efforts, and changing strategies of studying and this would help to deal with such problems. Self-controlling as a strategy requires avoiding frustration to facilitate learning English, and here the teacher should instil confidence in their students when they are stuck and stressed. Seeking social support includes getting advice from teachers, students, relatives, etc. on how to cope with English-language-related challenges. Further, Suliman and Tadros (2011) pointed out that students' choice of confrontive coping and distancing by the end of the semester may signal that they are stressed and imply that the teachers may need to support them by giving them positive feedback, offering them academic counselling sessions and enhancing their understanding of effective coping strategies in relation to learning English as an EFL or ESL medium of instruction. The study concluded that nursing students utilised a variety of strategies which changed over time. The researcher argued that the responsibility for coping with the English-medium of instruction is a shared one which rests on the collective efforts of students, faculty and management. Suliman and Tadros's study has provided insights into EFL/ESL students' coping strategies. The method of data collection was limited to surveys. The current study moved beyond surveys by using in-depth interviews and observations.

A study conducted by Peacock (2001) examined strategies adopted by EFL learners to cope with English as the medium of instruction. The following six strategies were examined: cognition, compensation, memory, metacognition, socialisation and affection. His focus was on the relationship between the strategies learners use and their language proficiency. He found that the strategies linked with language proficiency were compensation, metacognition and cognition. Indeed, these coping strategies might be used by EFL students in different contexts, however, a study which moves beyond surveys as a method of data collection is needed to provide a picture of the experiences of EFL/ESL students beyond descriptive methods of data collection to take into account both students' and teachers' perspectives.

A longitudinal case study was conducted by Hung (2009) in Hong Kong University to report two types of difficulties EFL business undergraduate students experience with writing tasks in their marketing programme. Students reportedly used a number of coping strategies to deal with EMI challenges and complete their writing tasks. They used the following strategies: use of L1, collaborative and group work, the Web, and guessing the potential reader expectations. Such studies seem to suggest that better support to help EFL/ESL students to cope with their English-medium programmes is needed. Given these potential context-specific issues and given that most studies have been conducted on non-engineering disciplines, the need becomes apparent for more studies to explore students' experiences on English-medium programmes in these outer and expanding circles (Kachru, 1992).

Alginahi et al. (2009) evaluated information communication technology (ICT) students' coping strategies in dealing with English as the medium of instruction in their university studies. Two hundred and sixty-seven students were surveyed at a Computer Science College in a Middle Eastern University. Moreover, the study used a phenomenological approach with semi-structured interviews with 10 students. The responses from students showed that having English as a medium of instruction was a source of stress to them.

Saat and Othman (2010) explored the perceptions and challenges of Malaysian pre-service teachers teaching science in a second language. A qualitative case study with multiple methods of data collection, namely, interview and observation, were utilised. The study provided insights into the challenges a group of pre-service science teachers encountered with English-medium classes during their practicum and the strategies that they used to handle them. These teachers had to overcome difficulties, which arose due to their lack of competency in English, and the students' varying degrees of language ability. These teachers employed a number of

strategies to overcome such challenges, such as code-switching and mixing, teacher-student collaboration, rephrasing and re-emphasising, the use of instructional aids and the use of analogies. The study recommended that attention should be given to address English language policy in the science teacher education programme. Saat and Othman provided useful illustrative examples of the types of challenges EFL/ESL students experience on their English-medium programmes and the strategies that they use to overcome such challenges. However, the study did not consider students' voices.

3.2.6 Skills and attributes required in the engineering classroom and workplace

Engineering graduates generally have technical discipline knowledge and skills, but many of them lack interpersonal and social skills, such as effective communication and team spirit (Pineteh, 2012; Koprowska, 2006; Evans, 2006), which are demanded in the 21st century job market (Direito et al., 2012; Yaaccoub et al., 2011). Generally, employers need graduates who are confident communicators, critical thinkers, problem solvers and good team players (Wankat, 2017, p. 217), as well as adaptive and adaptable to the new challenges of the changing and dynamic workplace (Harvey et al., 2002). Teaching transferable and soft skills to engineering students can facilitate their mastery of their discipline's knowledge base and develop their sense of judgement (Star and Hammer, 2008, cited in Holi, 2013). Therefore, engineering professional organisations, such as the American Board for Engineering and Technology (ABET) and the European Commission, have drawn attention to the weakness in transferable skills among recent engineering graduates (Direito et al., 2012). Based on this, there is a consensus among engineering education providers that engineering education needs to consider the urgency of equipping graduates with a range of soft skills to ease their transition from academia to the workplace (Direito et al., 2012; Litchfield et al., 2016). Engineering and science-related programmes seem to be blamed for their failure in preparing their graduates for the workplace settings (Yaacoub et al., 2011).

Transferable skills are needed nowadays to reduce the number of unemployed graduates (Esa et al., 2014) because academic success alone offers no guarantee of employment. The technical competencies in engineering can be roughly divided into two major categories: the 'science of engineering' and the 'practice of engineering'. The former is manifested in technical knowledge and skills, which usually get the higher priority in engineering programmes in the US because they demonstrate the technical ability of an engineer. The 'practice of engineering' is seen in the graduates' non-technical competencies, which include communication skills,

entrepreneurship skills, global awareness, capacity to work in teams, a professional and ethical attitude, lifelong learning and good interpersonal skills. All of these play an important role in the labour market and workplace (Martin et al., 2006; Sageev and Romanowski, 2001; Meier et al., 2000; Lang et al., 1999). Consequently, globalisation has put pressure on higher education institutions to produce engineering graduates who not only possess expert knowledge, but are also able to operate and think in terms of international, technical, social and financial relationships (Hopp, 2000).

Additionally, oral and written communication skills are critical for practising engineers and new graduates who are often poor writers (Wankat, 2017). However, developing these skills is a difficult task for engineering and EAP instructors because it requires time and money.

Wankat (2017) suggests that the most effective and economical approach to developing the types of skills mentioned above is for universities to hire communication specialists to work closely with both undergraduates and graduates. Yaacoub et al. (2011) highlighted 11 skills that fall under criterion number three of ABET, the accrediting board for engineering programmes. This criterion is applicable to any engineering programme which is interested in getting accredited by ABET. If programmes do not equip their graduates with these 11 skills, they will not be considered adequate for today's labour market. They include six soft skills and five technical skills. The six soft skills encompass the ability to function in multi-disciplinary teams; the ability to communicate effectively; the recognition of the need for lifelong learning and an ability to engage in it; the knowledge of contemporary issues; the possession of a broad education, necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context; and the understanding of professional and ethical responsibility. The technical skills, on the other hand, include the ability to apply knowledge of mathematics, science and engineering; the ability to design and conduct experiments, as well as to analyse and interpret data; the ability to design a system or process to meet desired needs within realistic constraints; the ability to identify, formulate and solve engineering problems; and the ability to use the techniques, skills and modern engineering tools necessary for engineering practice (Yaacoub et al., 2011, pp. 90-91).

A study by Grant and Dickson (2006) reviewed the employability skills in chemical engineering domains. Their review was informed by a range of accreditation guides, including the Institution of Chemical Engineers (IChemE) and other bodies associated with the recruitment of engineering graduates. Their results showed that the major transferable skills

which engineers need to acquire are: good communication skills in both written and oral forms; the ability to work well in teams; the ability to solve problems (pro-actively and with initiative); numeracy and IT literacies; the ability to manage time; and the ability to manage themselves and to embark on professional lifelong learning.

In the same vein, Craig (2014) conducted a study of a programme of first- and second-year Emirati engineering students at ABET-accredited institutes in the UAE. The programme was developed to address the transition needs in terms of the transferable skills of engineering students who had had their primary and secondary schooling in their mother tongue, namely Arabic. The programme was informed by in-house needs analyses and the third ABET criterion, which focuses on introducing students to research skills, critical thinking skills, teamwork, communication and lifelong learning, as well as the desire to develop one's language proficiency.

Based on the teachers' views of their students' transferable skills, the above-mentioned study recommended developing certain skills and competencies across the curriculum as these skills were necessary for preparing engineering students for the 21st century. The skills which were identified and required to succeed in English-medium engineering programmes were the ability to read course texts, take notes from course texts, read other course materials, write course assignments, write in examinations, comprehend lectures, take notes during lectures, deal with lab report instructions, seek and give information clearly, give formal oral presentations and manage informal oral discussions. Teachers believed that the acquisition of these skills could positively facilitate learning content and smooth the transition from college to the workplace.

Although teaching soft skills in higher education involves many challenges, it is important for universities and colleges to acknowledge the value of these skills for students' current learning and future employment (Barrie, 2004).

3.2.6.1 The importance of communication in English for Omani engineering students

English has become such a pervasive factor, and any shift to another language remains unlikely in the near future (Crystal, 2002). English has become a highway for the rapid progress of technology and scientific knowledge; however, using English as the sole medium of instruction has been received with doubt and controversy (Wong, 2010). It has been described as a 'pipeline' for the stream of knowledge in all branches of learning (Begum, 2014). In Oman, it has been suggested that the Sultanate "needs English as the only official foreign language in

the country as a fundamental tool for ‘modernization’, ‘nationalization’ and the acquisition of science and technology” (Al-Issa, 2007, pp. 199-200).

In fact, the current labour market in Oman demands that graduates be proficient in English. As a result, the development of communication skills in this language is considered to be a desirable learning outcome, not only in Omani engineering undergraduate programmes, but also elsewhere (Jennings, 1995). Moreover, lack of language proficiency could be a barrier to the ‘Omanisation’ of the labour market (Al-Issa, 2006; Al-Mahrooqi, 2012) as it would make Omani engineers unemployable.

Furthermore, English is necessary for maintaining international dialogue between countries and HEIs, and keeping pace with the changing standards of knowledge, technology and business.

Communication in English plays a significant role in the digitalised and industrialised engineering workplace (Kakepoto et al., 2012). Prichard and Nasr (2004) has argued that English is the language of science and cannot, therefore, be absent from modern science-based disciplines. It is, hence, assumed that English can improve the quality of education in engineering and science-related disciplines (Tamtam et al., 2010). In fact, Orr (2002) has argued that although engineers can work in any language, there will only be a few of them who have never used English during their studies or in the exercise of their profession (see also Abdel-Jawad and Radwan, 2011).

Additionally, clear and concise communication is fundamental for success in the modern global business environment (Jaderstorm et al., 2008, cited in Kakepoto, 2012). Therefore, it is very important for engineering graduates to be equipped with effective oral and written communication skills in English which can promote the business of their organisations and satisfy their customers’ needs.

3.2.7 Impact of EMI on students’ academic performance and their studies

Research has shown that EMI has both positive and negative effects on EFL/ESL students and their academic performance, but this depends on the students’ and content teachers’ levels of proficiency and training.

In her recent study, Al-Bakari (2017) explored the perceptions of students about the implementation of the EMI policy at an Omani public higher educational institution. The purpose of the study was to investigate the effects of EMI on students’ learning experiences

and academic performance. The findings showed that the majority of students either supported or accepted EMI policy for utilitarian reasons, such as future employability. Students also considered the adoption of Arabic as a medium of instruction (AMI) as a plausibly helpful strategy to enhance their comprehensive understanding of disciplinary courses, and this would eventually also improve their academic performance.

Al-Bakri also showed that the implementation of EMI had disempowered students with low English language proficiency. It also seems to have had a negative psychological impact on them. EMI policy was, therefore, contested as it disadvantaged some of the students, and it did not provide them with equal opportunities in education. Neither did it allow them to improve their Arabic competence.

In response to EMI, the students recommended that English language teaching in school should be improved to better prepare students for their tertiary education. Additionally, AMI courses should be offered in all colleges to help students to comprehend their disciplinary subjects. Finally, teachers should be offered professional development activities to develop their pedagogic competencies.

Although Al-Bakri (2017) provided insights into EFL students' learning experiences through the medium of English in Oman, the study did not address students' learning experiences in any given discipline; it looked instead into all kinds of disciplines, both from the humanities and the sciences. In this way, no light was cast upon the question of whether EMI affects students' performance in different disciplines differently.

At the same time, Al-Bakari (2017) took a critical stance vis-à-vis EMI. The researcher problematised EMI without offering a genuine alternative medium of instruction which could help students to study their core subjects and function in their future workplace in the same way as English.

Additionally, it would have been useful if the study had incorporated interviews with subject teachers and EAP teachers to learn about their views of their students' learning experiences through the medium of English. Methodologically, the study relied heavily on questionnaires for collecting data about students' learning experiences of EMI. Other qualitative data collection methods, such as stories, would have enhanced the quality of the findings.

Another study, conducted by Dofouz and Camacho-Minano (2016), examined the impact that EMI may have on students' academic performance in comparison to their L1 (which in this

case was Spanish). The data was collected from 383 financial accounting students in a Spanish university via tests, which were administered during four academic years, and were analysed statistically. Overall, the findings showed that there was no statistical difference between the groups, and that the use of EMI did not negatively impact students' academic performance. However, Dofouz and Camacho-Minano did not interview any students about the impact of EMI on their academic performance; rather, they relied exclusively on the analysis of their test results. Interviews and observations might have painted a different picture.

A study conducted by Worp (2017) analysed the relation between the experiences of future professionals with EMI in the workplace, their learning experiences as language learners, their proficiency and competence in English, and their expectations of the use of English in their future career. A questionnaire was used to collect data from 194 business students at the University of the Basque Country. The findings revealed that students who had taken EMI classes demonstrated higher oral language skills and proficiency in English, and they were comfortable in using English in work situations due to the amount of their exposure to the language. This study suggested that studying through the medium of English had positively impacted the students' language proficiency. The study argued that EMI might help professionals in their future careers. However, this study has a couple of limitations which merit consideration.

First, Worp (2017) only employed questionnaires to collect data about students' learning experiences as language learners and future professionals. Second, stakeholders and workplace professionals were not involved in giving their suggestions about workplace linguistic needs. Using interviews as one of the methods of data collection and involving workplace professionals might have helped to better understand students' learning experiences through the medium of English and their thoughts and expectations about their language needs in their future careers.

In another study, Shohamy (2013) and Ali (2013) suggested that when English is used in instruction, it not only helps students to acquire domain-specific knowledge, but also language skills. From this, it would transpire that English is not only the task of language teachers, but indirectly also of content teachers. However, in reality, the latter do not concentrate on language learning during their classes as they do not see themselves as language teachers at all, and were not trained to be such, either. Generally, content teachers expected that their EFL/ESL students would be linguistically prepared for their studies before joining their

speciality (Dearden, 2015; King, 2014; Costa and Coleman, 2013; Airey, 2012; Aguilar and Rodrigues, 2012; Rogier, 2012; Kerklaan et al., 2008). As previously suggested, some content teachers felt that they were pedagogically competent to teach content, but their own limited English language proficiency presented them with obstacles which they had not been prepared to deal with (Zacharias, 2013; Hamid, 2011; Wilkinson, 2013; Airey and Linder, 2006).

In light of the foregoing, I would argue that EMI could have a positive impact on EFL/ESL students' language development if the content course specialists possessed high levels of language proficiency and if they were trained in how to deliver their classes through the medium of English. When both students and teachers are ill-prepared for English-medium classes, they equally lack the appropriate linguistic competence to ensure that EMI classes can lead to better engineering education.

Additionally, Barnard (2014) argued that most of the EFL students in Asian higher education institutions lacked the appropriate and critical linguistic abilities to engage with academic content delivered in English or to produce original and appropriate academic texts. In this way, he suggested, a dual-medium model (*translanguaging*), which could better enable students to cope with their content courses and the difficulties and challenges which are usually associated with studying in a language which is not one's mother tongue. This idea was also supported by Kirkpatrick (2011), who claimed that Hong Kong universities needed to use a bilingual system to safeguard their local languages and promote publications in their local language. Moreover, many other researchers (Raddawi and Meslem, 2015; Belhiah and Elham, 2014; King, 2014) have advocated the need for implementing bilingual education systems, or translanguaging, to preserve the national identity and heritage and L1s such as Arabic.

3.3 Chapter summary

This chapter has provided an overview of the existing relevant literature, and it has also identified some issues arising from EFL/ESL students' experiences with EMI in the Arabian Gulf, specifically in Oman. Key issues related to EMI controversies, debates, opportunities and threats in EFL/ESL contexts were highlighted. Studies related to EMI challenges encountered by EFL/ESL students were discussed. At the same time, this chapter has presented the results of studies related to students' coping strategies, difficulties with L2 lecture comprehension, skills and attributes required in the engineering classroom and workplace settings, and the impact of EMI on students' academic performance and their studies. The following chapter

will be devoted to the research methodology adopted in this study. The chapter will provide details on both the theoretical and procedural aspects of the overarching qualitative case study methodological approach.

Chapter 4: Research Methodology

4.1 Introduction

This chapter presents the interpretative qualitative methodological approach adopted, the case study strategy, and the data generation and transformation methods employed. It also presents the aims of the study and its research questions. This is followed by discussion of the institutional context of the study, participant profiles, sampling, and the procedures and criteria for establishing trustworthiness. The overarching aim of the research is to explore the learning experiences of Omani engineering students studying bachelor degrees through the medium of English at one of the public colleges in the Sultanate of Oman. More specifically, the study explores the learning experiences, challenges and problems facing these students.

4.2 The researcher's philosophical stance

There is a wide range of methodological approaches that can be utilised within the social sciences. However, choosing a methodology, which is appropriate for the study aims and questions, can sometimes be a daunting task due to the associated ontological, epistemological and methodological debates. To understand any social phenomenon under investigation, social science researchers have to use the appropriate data generation methods in order to make sense of what they are investigating. These varieties of methodologies can broadly be divided into qualitative and quantitative (Tuli, 2010). There are a number of possible and sometimes competing paradigms, each of which has its own ontological perspectives which refer to the assumptions, beliefs and theories about the nature of knowledge, whereas the epistemological dimensions relate to theories, assumptions and beliefs about reality (Cohen et al., 2011; Morgan, 2007; Bryman, 2003; Tuli, 2010). The paradigmatic position, which underpins this study, could be broadly characterised as interpretive. The interpretivist paradigm is informed by the belief that knowledge is socially constructed. An interpretivist approach implies an interest to understand how people interpret their world and how this informs their behaviours and actions. This study aims to interpret some Omani engineering students' perceptions about English-medium instruction (EMI) approaches in order to make meaning from those experiences. Reality is experienced subjectively, in contrast to the positivist approach, which sees reality as something objective, which can be measured. Research methodology depends on the paradigm that guides the research activity, or more specifically it rests on the beliefs about the nature of reality (ontology) and the theory of knowledge that informs the research

(epistemology), and how knowledge is to be gained (methodology). All three aspects are central features of discussion about the nature of social research (Tuli, 2010, p. 99). Qualitative methodology argues that the aim of the research should be focused on understanding the experiences of the participants being studied.

The methodological approach to a research problem should be appropriate to the research questions and should reflect the research topic (Dörnyei and Taguchi, 2010). Additionally, Silverman (2006) asserts that the research method should not be pre-determined, but rather chosen on the grounds of the appropriateness to what the researcher is seeking to find out and it is on this basis that qualitative methods were employed in this study. Qualitative methods can provide an in-depth understanding of the researched topic and can offer rich data to answer the questions of the study. Moreover, according to Dörnyei (2010:38), “one of the strengths of qualitative research has traditionally been seen as an effective way of exploring new and uncharted area”. It aims to broaden the possible interpretation of human experience by the rich data it offers about the participants’ experiences and it can widen the scope of understanding and can add depth to the data. This would be informed by my epistemological belief, as an interpretivist researcher, that participants’ views of reality can only be understood from their own points of view, by observing them and by talking to them. Therefore, 10 classroom observations were made and 25 interviews were conducted in this study to see, and to listen to, the lived experiences of the participants and to draw conclusions. The interpretivist approach is chosen because it reflects my view as a researcher about the nature of reality and the way knowledge is acquired.

A qualitative approach is appropriate for the questions raised by this study and it has the potential to explore engineering students’ experiences when the English language is used a medium of instruction. Most of the studies on EMI have been approached from an ideological socio-linguistic perspective, however, this study does not adopt an overt ideological stance in relation to the use of EMI as many critical researchers do, rather it seeks to examine EMI from essentially pragmatic and pedagogical perspectives by involving and interviewing the insiders themselves in order to investigate and represent their experiences, perceptions, perspectives, attitudes and feelings about EMI without assuming that EMI has been imposed on them through the processes associated with neo-colonialism. This is an interpretative qualitative study, which intends to examine Omani engineering students’ experiences with regard to EMI in their engineering education. The sample includes a group of engineering students as well as engineering teachers and post-foundation EAP/ESP teachers from different departments and

sections in the same institution. The methods employed to generate data were semi-structured interviews, observations of teaching and classroom-based learning interactions, and study of appropriate institutional documents. Semi-structured interviews were the main source of data collection because they helped the researcher to generate rich data from both engineering students and their teachers. The observations, institutional documents and the researcher's reflective diary offered an opportunity for the researcher to have both insider and outsider perspectives. A case study approach was adopted because the study focuses on a group of engineering students who study in an English-medium programme in the College of Innovation (pseudonym) in the Sultanate of Oman. The case study approach helps to study a problem in depth within a limited time. Moreover, it enables the researcher to gain a thorough and deep understanding of the research participants' experiences and perspectives in a natural context (Dhillion et al., 2008). Additionally, case studies allow the researcher to employ multiple methods of data collection such as interviews, observation and collection of documents to generate a variety of data from multiple sources (Denscombe, 2010; Yin, 2003; Denzin and Lincoln, 2003). Students' interviews were conducted in Arabic and then the data was subsequently transcribed and coded in Arabic, then the relevant accounts were translated into English. Data analysis was done manually and undertaken through identification of themes and codes. Braun and Clarke's (2006) five phases of thematic analysis: 'familiarising myself with my data', 'generating initial themes', 'searching for themes', 'reviewing themes' and 'defining and naming themes' were employed to code and analyse the data.

4.3 Aims of the study and research questions

This study aims to identify and investigate the experiences, perceptions and challenges that Omani engineering students encounter when English language is used as the medium of instruction in their engineering education at one of the public colleges. Additionally, it attempts to identify how these challenges impacted on them and their studies. Another aim is to identify how Omani engineering students respond to EMI challenges during their course of study. Moreover, it aims to suggest some possible strategies to overcome the challenges presented by studying through the medium of English. Finally, it tries to critically examine insiders' (stakeholders') views towards the use of EMI in their engineering programme in the Omani context; to find out engineering teachers', engineering students' and EAP teachers' views about the skills and attributes, which are important for success for studying engineering through EMI successfully, and finally to offer some suggestions for overcoming the challenges

presented by studying through the medium of English. Therefore, the study is designed to answer the following questions:

RQ1. What are Omani engineering students' perceptions of their experiences when English is used as the medium of instruction?

RQ2. What challenges did engineering students in Oman encounter when English was used as a medium of instruction in their engineering programmes?

RQ3. How did these challenges impact on these students and their studies?

RQ4. How did these engineering students respond to these challenges?

RQ5. What skills/attributes did these engineering students, engineering teachers and EAP teachers in Oman think are important for success in learning in the context of engineering taught through the medium of English?

RQ6. What were the engineering teachers', EAP teachers' and engineering students' suggestions for overcoming the challenges presented by studying engineering through the medium of English in Oman?

4.4 Research paradigm

This research is located within an interpretive paradigm because it offers the most appropriate approach to the research aims and questions. The overarching aim is to interpret and thoroughly understand Omani engineering students' perceptions about their EMI challenges to make meaning from their lived experiences. The research paradigm and approach are of utmost importance and significance for undertaking research. Exploring people's lived experiences demands careful listening to them, which helps the researcher to interact and communicate with research participants and to discuss their experiences, perceptions, feelings and thoughts more freely and critically. For research to be considered as credible and authentic it should be based on a sound rationale for the chosen methodology and the processes involved in data collection and analysis (Tuli, 2010, p.101). A qualitative methodology was utilised in this study in order to offer the opportunity to study people in their natural settings and to make sense of and "interpret the phenomena in terms of meaning people bring to them" (Denzin and Lincoln, 2008, p.4).

4.5 The case study approach

The approach which underpins this study is that of a case study. There are different types of case studies such as explanatory, exploratory, descriptive, multi-case studies, intrinsic, instrumental and collective (Baxter and Jack, 2008). For this study, an exploratory descriptive case study is employed in order to reveal engineering students' experiences in the context in question, and to address the main study questions as set out in 4.3 above.

The qualitative case study methodology offers tools to study complex phenomena within their contexts (Baxter and Jack, 2008). It facilitates exploration of a phenomenon within a context through using a variety of data sources (*ibid.*, 544). According to Yin (2003), a case study approach should be used when the focus of the study is to answer 'how' and 'why' questions. It allows an in-depth understanding of the context under investigation (Yin, 2009). Yin argues that the case study as a research strategy enables the researcher to gain a deep understanding of his/her participants' experiences, views and perspectives in a natural context. S/he perceives case study research as useful for how and why a question is being posed about a set of contemporary real-life contexts, over which the researcher has little or no control (2009, p.13). The case study approach usually deals with people and their social world. Cohen et al. (2000) claim that a case study "provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply by presenting them with abstract theories or principles" (p. 81). Arguably, the case study is appropriate for this study as it enables a better understanding of participants' perceptions and perspectives towards the use of EMI in their engineering education.

A descriptive case study offers a description of the phenomenon under investigation within its context (Yin, 2009). Additionally, Stake (2005) classified the case study approach into three types: instrumental, collective and intrinsic. The instrumental case study is a deductive approach which aims to offer insight into a large issue or refine an existing theory; while a collective case study approach is adopted when both intrinsic and instrumental approaches are integrated together to provide better understanding and theorising for a large collection of data (Wolcott, 1990). The intrinsic case study is an inductive approach which aims to gain a better understanding of a particular case. Moreover, further divisions of the case study approach were provided by Jensen and Rogers (2001, p.237) which include: snapshot, longitudinal, pre-post, patchwork and comparative case studies. The intrinsic case study is appropriate for this study because it allows the integration of multiple data sources such as interviews, observations and

document analysis (Denscombe, 2010; Yin, 2009; Baxter and Jack, 2008). The present case study is explorative and descriptive as it is concerned with questions of ‘what’ are the challenges that engineering students encounter in their English-medium classes, and ‘how’ these challenges impact on their studies, and ‘why’ they experienced these particular challenges.

Drawing on the interpretivist qualitative paradigm, the study adopts an explorative descriptive case study which focuses on the experiences of a group of Omani engineering students. Whilst the group is not representative of all Omani engineering students, it nevertheless offers a range of perspectives that help to better understand the engineering students’ experiences of the use of EMI during the course of their studies. This helps to develop understandings of their experiences and views in detail and depth.

The case study approach has some limitations which merit acknowledgement. Findings from a single case study are not generalisable (Baxter and Jack, 2008; Crowe et al., 2011; Flyvbjerg, 2006). However, generalisability was not the aim of this qualitative interpretative study, rather it aims at gaining a better understanding of Arab students’ learning through EMI in general, and Omani engineering students’ experiences in particular, to inform the EMI pedagogy and to offer insights to engineering and EAP/ESP practitioners, teachers and researchers. Additionally, the study in this particular context has value to others and it can be helpful for people in other situations in the Gulf region and other EFL/ESL contexts.

4.6 The institutional context

The present study is centred on a college of technology in Oman. The rationale behind the particular college chosen was a practical one based primarily on convenient access, geographical considerations and in relation to obtaining appropriate permissions. The college, however, is not in any way untypical in terms of its curriculum offer and scale.

4.7 Sampling

Sampling refers to the process of looking at a segment of a population closely, as it is difficult to study an entire population (Punch, 2005, p. 187). There are no rules for sample size in qualitative research as the sample size usually depends on what the researcher wants to know and the purpose of the inquiry and whether the sampling strategy supports the purpose and rationale of the study (Patton, 2002, p. 244). The current study strives to explore and critically

examine engineering students' experiences of EMI in their engineering education at one of the public colleges in the Sultanate of Oman by adopting a purposive sampling approach. Purposive sampling entails studying information-rich cases and yields insights and in-depth understanding rather than empirical generalisations (Patton, 2002, 230). Purposive sampling aims at capturing and describing the central themes across the case being studied (Patton, 2002, p.235). Sampling is usually done for the purpose of studying a representative sub-group of a precisely defined population in order to make inference and draw a conclusion about the whole population. Careful selection of a sample is of utmost importance for the development and understanding of the case study under investigation (Flyvbjerg, 2006; Guba and Lincoln, 1994; Shenton, 2004). Sampling is determined by the type of research under investigation (Yin, 2009). Qualitative research tends to use purposive sampling to study small samples which allows a particular insight into social processes in order to ensure the richness of the data gathered (Prior, 2003). Therefore, this study utilises a purposive sampling procedure usually used with a multiple structure population of many groups. Engineering students in each section or department represent a group and their speciality and level could be considered as sub-groups and a sample was drawn to represent all these sub-groups in this particular college to allow the researcher to satisfy the needs of the study (Robson, 2002). By using this procedure, all engineering students in all levels in this college had an equal chance to be selected in the study.

The study focuses on engineering students, mainly in one Omani public college in Oman. The sample is one of 12 students, nine male and three female, selected out of the population studying engineering as a major subject in this particular college. Their ages ranged between 20 and 24 years. All had a similar linguistic background, as Arabic native speakers, and they had been instructed under the same educational system in Oman, before they were enrolled in higher education institutions in Oman. Therefore, the selected groups of students were relatively homogenous in educational level and the number of years of pre-university instruction in English language. 7 students were chosen from Mechanical and Industrial (which includes chemical engineering); Civil and Architectural (which consists of quantity surveying and architectural engineering); and 5 students Electrical and Electronics (which includes computing, electrical power and electronics, and telecommunications). The recruitment of the participants was done randomly on a voluntary basis. However, the student sample was made using non-probability purposive sampling by including students from all departments and sections.

4.8 Study of participants' profiles

Three groups of participants took part in this study, namely, engineering students, engineering instructors and ESP/EAP teachers.

4.9 Engineering student participants' profiles

Engineering student participants who took part in this study were all Omani nationals and Arabic speakers. They have had their schooling through the medium of Arabic. They had progressed through 1-3 years' foundation (pre-sessional) and post-foundation (in-sessional) programmes. The engineering and EAP/ESP teachers were drawn from multiple nationalities and they have diverse teaching experiences regionally and globally. Most of them have spent an average of five years teaching in Oman. Tables 4.2 and 4.3 below illustrate their profiles, teaching titles, courses they had been teaching and their teaching experiences. Table 4.1 below summarises student participants' profiles, providing information on their speciality and the years of study when the data was being collected.

Table 4.1: Engineering student participants' profiles

Student participant	Gender	Nationality	Specialty/ Major	Level
S1	M	Omani	Mechanical Engineering	B-Tech Final Year
S2	M	Omani	Mechanical Engineering	B-Tech Final Year
S3	M	Omani	Mechanical Engineering	B-Tech Final Year
S4	F	Omani	Computer Engineering	BSc Final Year
S5	M	Omani	Mechanical Engineering	B-Tech Final Year
S6	M	Omani	Mechanical Engineering	Higher Diploma
S7	M	Omani	Mechanical Engineering	Higher Diploma
S8	F	Omani	Computer Engineering	Higher Diploma
S9	F	Omani	Computer Engineering	Higher Diploma
S10	M	Omani	Mechanical Engineering	B-Tech Final Year
S11	M	Omani	Electric engineering	B-Tech Third Year
S12	M	Omani	Telecommunication engineering	B-Tech Third Year

4.10 Engineering teacher participants' profiles

The engineering teacher participants who took part in this study were of multiple nationalities from countries such as India, the Philippines, Egypt, Pakistan, Sudan, Iraq, Jordan and Oman. They had taught engineering courses for both undergraduate and post-graduate students in various contexts through the medium of English. They joined higher education in Oman after teaching abroad for a number of years. Table 4.2 below displays their qualifications, teaching experience and the courses that they have been teaching.

Table 4.2: Engineering teacher participants' profiles

Participants	Gender	Nationality	Course(s) they teach	Highest Qualification	Teaching Experience
Eng.T1	M	Indian	Mechanical Engineering/ Machine Design	MSc in Machine Design	6 years
Eng.T2	M	Indian	Mechanical Engineering/ Manufacturing	MSc in Manufacturing	11 years
Eng.T3	M	Omani	Mechanical Engineering/ Manufacturing	PhD Materials Engineering	13 years
Eng.T4	M	Indian	Fluid Mechanics/ Thermodynamics	PhD Engineering Graphics	15 years
Eng.T5	M	Philippine	Manufacturing Technology	MSc Manufacturing Technology	19 years
Eng.T6	F	American	Architectural Engineering/ Drawings	MSc Architectural Engineering	12 years
Eng.T7	F	Indian	Science / Industrial Chemistry	MSc Industrial Chemistry	7 years
Eng.T8	M	Indian	Materials Engineering	MSc Mechanical Engineering	7 years

4.11 EAP/ESP teacher participants' profiles

The EAP/ESP teacher participants who took part in this study were from the United Kingdom, the US, Australia, Oman, Belgium, India, Pakistan and the Philippines. The ESP/EAP teacher participants were teaching ESP/EAP at the post-foundation level (in-sessional) in engineering and non-engineering specialities. All teachers were trained to teach English for specific and academic purposes. All these teachers have long-term experience in teaching English and academic literacies to EFL/ESL students for a number of years. They were teaching four credited courses, namely, Technical Writing I (TWI), Technical Writing II (TWII), Public Speaking (PS) and Technical Communication (TC). The table 4.3 depicts their teaching qualifications, teaching experiences and the courses that they have been teaching.

Table 4.3: EAP/ESP teacher participants' profiles

ESP/EAP Teacher Participant	Gender	Nationality	Highest Qualifications	Course(s) they teach	Teaching Experience
ESP/EAP T1	M	Belgian	PhD	Technical Writing I and II	15 Years
ESP/EAP T2	M	Omani	MA in TESOL	Public Speaking	5 Yearss
ESP/EAP T3	M	Indian	MA in TEFL	Technical Writing I	15 Years
ESP/EAP T4	F	Philippine	MA in TESOL	Technical Communication	9 Years
ESP/EAP T5	F	British	MA in TESOL	Public Speaking	5 Years

4.12 Methods of data generation

Having established a good ethical principle of involving the research participants at all stages, a number of qualitative data collection methods were employed, such as semi-structured interview, observation of teaching sessions and the collection of documents. Document analysis and classroom observations were conducted to complement the interviews by providing rich contexts and thick descriptions for the study (Lincoln and Guba, 1985; Patton, 1990).

The above-mentioned instruments were used to collect the proposed data to answer the research questions outlined in table 4.4 below:

Table 4.4: Research questions and methods of data generation

Research questions	Data sources and methods
RQ1.What are Omani engineering students' perceptions of their experiences when English is used as the medium of instruction?	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students • Classroom observations
RQ2.What challenges did engineering students in Oman encounter when English was used as a medium of instruction in their engineering programmes?	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students • Classroom observations • Document analysis
RQ3. How did these challenges impact on these students and their studies?	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students, engineering instructors, EAP teachers • Documents analysis
RQ4. How did these engineering students respond to these challenges?	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students, engineering instructors, EAP teachers • Observations • Documents analysis
RQ5.What skills/attributes did these engineering students, engineering teachers and EAP teachers in Oman think are important for success in learning in the context of engineering taught through the medium of English?	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students, engineering instructors, EAP teachers • Observations • Documents analysis

<p>RQ6. What were the engineering teachers', EAP teachers' and engineering students' suggestions for overcoming the challenges presented by studying engineering through the medium of English in Oman?</p>	<ul style="list-style-type: none"> • Semi-structured interviews with engineering students, engineering instructors, EAP teachers • Observations • Documents analysis
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4.13 Semi-structured interviews

Interviews are recognised as “a very good way for accessing people’s perceptions, meanings and definitions of situations and construction of reality. They are considered as one of the most powerful ways we have of understanding others” (Kvale and Brinkmann, 2009, p.168). Semi-structured interviews are seen as well suited for exploratory research, since the lively interaction may bring forth more spontaneous expressive and emotional views than might otherwise be expressed in the context of a more cognitive interview. Further, the group dynamics may facilitate opinions usually not accessible (Kvale and Brinkmann, 2009, p.150). They further added, interviews not only offer in-depth insights into how respondents view the world, but the interview also “marks a move away from seeing human subjects as simply being manipulative and data as somehow external to individuals, and towards regarding knowledge as generated between humans, often through conversation” (Kvale, 1996, p.11). More importantly, they offer “a kind of framework within which the participants try to exchange meanings that are negotiated and can be understood by both participants” (Antikainen, 1996, p. 25). Schostak (2006) states that interviews are the most frequently used tools in qualitative research as they help to explain reality from the respondents’ points of view. The data collected through interviews are usually good for what, how and why questions. The rationale behind using semi-structured oral interviews is because they are commonly used to supplement other methods. Further, Kitzinger (1995, p. 299, cited in Robson, 2011, p.293) points out that “they do not discriminate against people who cannot read or write and they can encourage participation from people reluctant to be interviewed on their own or who they feel they have nothing to say”. Interviews are an established method of data collection in many fields of applied social research. Robson (2011) claims that interviews have many advantages such as they are relatively inexpensive are flexible and they can be set up quickly. The aim of this tool

is to capture data that could enrich the data collected through other means such as observations and questionnaires. The study involved interviews with 13 members of teaching staff including ESP/EAP and engineering teachers along with 12 students in this college in question. A digital recorder was used to record the interviews and the recordings were transcribed and then analysed thematically.

The interviews in this study were conducted in order to explore engineering students', engineering teachers' and EAP instructors' views about the use of EMI in the engineering education in the particular college in question. Students' interviews were focused on their experiences and perceptions of their learning through the medium of English and the challenges presented. Opportunities were provided throughout the interviews for the participants to expand and add any information that they wished to share with regard to their experience with the use of English as a medium of instruction. The student interviews were principally conducted in Arabic in order to encourage the students to better express their opinions and views through their first language. The interviews lasted approximately 45 minutes on average. As permission was gained from the college, it was agreed that the student interviews should be carried out during breaks and free time and the time and place were decided by students. All teacher and student interviews were conducted on campus. The interviews with engineering and EAP teachers aimed at exploring their views regarding to what extent their post-foundation EAP programme had helped students to cope with their engineering speciality. The questions were focused on the skills/attributes engineering students, engineering teachers and EAP teachers think are important for success in learning in the context of engineering taught through the medium of English, and their suggestions for overcoming the challenges presented by studying through the medium of English. The interviews with the teachers were conducted in English, as all these teachers were able to express their ideas clearly in English, and lasted about an hour on average. The places and times of the teachers' interviews were chosen by the teachers and all these interviews were conducted during their free time. All the teachers' interviews were conducted on campus, either in the staff common room or in their offices. Both teachers' and students' interviews were audio-recorded after obtaining permission from the participants. All participants signed a consent form, and I started each interview by introducing myself and explaining my research aims and objectives. Assurance regarding confidentiality and anonymity of the data and the responses were given and participants were informed that the data would not be used for any purpose other than the current study (see appendix 1). All the participants were told that they

did not have to answer any questions that they did not feel comfortable answering, though they were encouraged to speak freely about their experiences and the challenges that they encountered with the use of EMI in their engineering programme in question. I actively listened to their answers and prompted and took notes at the same time. Interviews with female students were conducted separately from male students to address any cultural issues and concerns which might arise. The students' interview questions focused on the challenges that they encountered with EMI in their engineering programmes, how these challenges impacted on them and their studies, how they responded to these challenges, what role their mother tongue (Arabic) played in their EMI classes, what coping strategies were employed, and their entire experiences with EMI in their learning process. Interviews have many strengths although, however, they also have some limitations and weaknesses which merit consideration. The limitations of interviews must be acknowledged in two main issues related to data generation and analysis procedures. First, the issue of reliability and accuracy of data was highlighted and whether the data reflect the reality and participants' perspectives on reality or not was considered. Second, this issue is related to the sufficiency of accuracy of analysis throughout the whole process, from transcription coding and reporting the final results and findings. The two limitations, which related to data generation and analysis, were fully addressed to minimise the weakness of interviews in the present study. Firstly, probe and follow-up questions were used to engage the participants in the discussions during interviews and to help them to stay focused. Regarding the analysis process, to ensure that participants' views were accurately presented and addressed in the analysis, I used member checking and inter-rater reliability techniques.

4.14 Observations

Observation was chosen as another vital method for data collection in this study because "Observation is commonly used in educational research as tool to support other methods. It is one of two common ways of getting information which can help us to make sense of educational situations, gauge the effectiveness of educational practices, and plan attempts for improvements" (Malderez, 2003, p.179). Observations are good for 'what', 'how' and 'how many' questions. Therefore, observations were used in this study to collect data to support and complement information obtained through other methods of data collection. One of the advantages of observation, as Robson (2011, p.316) claims, is that of its directness. "You do not ask people about their views, feelings or attitudes; you watch what they do and listen to

what they say”. Moreover, Cohen et al. (2000, p. 305) point out that observation “enables researchers to understand the context of programmes, and to see things that might, unconsciously, be missed, and to discover things that participants might not freely talk about in interview situations, to move beyond perception-based data (e.g. opinions in interviews), and to access personal knowledge”. In addition, observation provides first-hand information about what teachers and students actually do, compared with what they say they do (Burns, 1999; Wisker, 2001). On this basis, the target college was visited to observe a total of 10 engineering classes. The points to be observed were specifically structured. The rationale for using this method of enquiry was to examine live classrooms in action in order to collect realistic data about what actually takes place in engineering classes at the college in question. Direct observation helps in the study of behaviours, events and physical characteristics in the context of the study environment (Bryman, 2012; Creswell, 2012).

The observations used in this study were non-participant and overt as the participants were aware that they were being observed. All the observations were conducted after the interviews and the purpose was to confirm and disconfirm what interviewees had reported about the EMI challenges in comparison to what was being observed. Ten engineering classes were observed, each class was about 60 minutes in duration. Notes taken related to EMI challenges in engineering classes, coping strategies, lecture comprehension difficulties, interaction patterns and the use of students’ L1 in class using an observation guide were considered. The observations were conducted immediately after the interviews and the students were aware of the purpose of the study. Observations offered an opportunity to observe directly and closely both student and teacher participants in the classroom and to gather first-hand data, instead of relying on second-hand data only (Taskakkori and Teddlie, 1998; Robson, 2011). Observation field notes are a potentially useful element in complementing interview data and explore the context in depth. This is supported by Robson: “observation can be used as a supportive or supplementary method to collect data that may complement or set in perspective data obtained by other means” (Robson, 2011, p.317). Patton added that observation offers an opportunity for the researcher to understand the context where interaction takes place in a real-life context. Additionally, observation provides the researcher with the chance to observe things that participants are unwilling to talk about during the interviews (Denscombe, 2010). Further, Cohen et al. (2000) stated that observations have two significant values. Firstly, observations provide the researcher with the opportunity to check and verify whether what people say they do is actually what they do. Secondly, they help to record behaviour that might not otherwise

be recorded. The observations utilised in the current study were conducted to verify what teachers and students said they did and what they actually do in the classroom.

There are some potential limitations, which are associated with observations as a method of data generation, despite its strengths in capturing the context and observing events and interactions in real-life contexts. There are some ethical concerns associated with observations, namely, the presence of the observer in the observed setting and the negative effects and implications which this might have on both the data generation and collection processes. People might change their normal behaviour and they feel they are being observed; these limitations need to be minimised and addressed. Literature has suggested that in order to minimise the weaknesses, limitations and risks of observations, researchers need to conduct more observations rather than fewer to allow participants to become familiar with being observed. Another suggestion is related to how much researchers disclose about their research aims and objectives so as to minimise the possibility of changing behaviour due to the presence of the observer (Miles and Huberman, 1994; Cowie, 2009). To address these limitations, I played the role of the non-participant observer during all observations. I interviewed some of the students and teachers before the observations so that I became, to some extent, familiar to those being observed, and I felt that they seemed comfortable and behaved naturally and that my presence did not seem to bother them. Having explained the pedagogical aims and objectives of the research, all the engineering students, engineering and ESP/EAP teachers appeared to welcome my presence and they allowed me to conduct both interviews and observations without apparent reservations or discomfort. Some of the participants asked me to provide them with copies of the final report and findings of the study.

4.15 Collection of institutional documents

Collections of documents were used as a tool of enquiry in this study to support other methods of data collection. These institutional documents include the post-foundation syllabuses (see appendix 6). These and other curriculum documents set out the formal ‘official’ purposes and content of the courses followed by the students and taught by the academics. I read the documents with a particular focus on their implications for delivery through then medium of English. The rationale behind utilizing these documents was to supplement other methods of data collection, and to consider to what extent these post-foundation courses were designed to meet the study and workplace needs of engineering students, as well as to assist them with their language-related challenges. In particular, my review of these documents enabled me to

critically contrast the formal intentions and content of the course with my observations of what happened in practice as well as with the accounts provided by the research participants. Robson (2011) states that ‘document’ refers to a written text, whether it be a book, newspaper, etc.; a document may be electronic. Content analysis is one of the common approaches to documentary analysis. Robson explains that “it is, of course, possible to analyze the contents of documents or other materials which have been collected directly for the purposes of your research” (ibid., 349). Content analysis is defined by Krippendorff (2004, cited in Robson, 2011, p. 349), as “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use”. Document analysis and review is usually good for ‘what’ and ‘why’ questions. Therefore, English language textbooks used as recommended reading at post-foundation level in the college in question were reviewed and examined to support other methods of data collection and to be compared to the students’ language needs in their engineering core subject courses. The textbooks were considered in relation to students’ linguistic needs. The rationale behind using these documents was to triangulate the data within the study. The documents were helpful in supporting the other tools of data collection and to triangulate the data. The documents are the ESP/EAP post-foundation materials, namely, Technical Writing I (TWI), Technical Writing II (TWII), Technical Communication (TC) and Public Speaking (PS) (see appendix 6). Materials were examined according to their relevance to what was encountered in engineering core subject classes.

4.16 Positionality

The researcher’s positionality is a key and essential consideration in qualitative social research design and enquiry processes as it impacts both the way research questions are formulated and the manner in which data is collected and interpreted (Ganga and Scott, 2006; England, 1994). A researcher’s positioning involves personal characteristics such as gender, race, political affiliation, age, biases, personal experiences, language, preferences, ideological stances and emotional responses to participants (Oliver, 2010; Bradbury-Jones, 2007; Padgett, 2008). The positions of the researcher may impact on the study in three major ways: firstly, they affect his or her accessibility to the field as the participants may be more willing to share their experiences and thoughts and beliefs with someone they trust and perceive as sympathetic to their situation and the researcher may be more aware and potentially knowledgeable in relation to suitable settings and sources of data. Secondly, the positions may also shape the relationships between the researcher and the participants, and this will affect the information

that the participants are willing to share. For example, in the context of the current study, female students were interviewed separately from male students. As I am an ‘insider’ I was fully aware that female students did not like to speak in front of male students due to the social, cultural and religious barriers which exist in that particular context, thus, I had to arrange for a convenient place where they could feel comfortable to freely discuss their experiences of EMI. Finally, the background of the researcher and the way they view the world will affect the way they construct the world, use language for asking questions to participants, and choose the theoretical lens to filter the data gathered, as well as making meaning of it and drawing conclusions from the findings (Berger, 2015, p.219).

As an interpretivist researcher I regularly question the impact of my values and beliefs on the way they generate and transform research data (Bryman, 2012). The terms ‘insider’ and ‘outsider’ positions were conceptualised in the qualitative research literature where researchers position themselves in relation to the setting which is being investigated because their position will be likely to have a significant impact on the whole research process. My position and role as a researcher in this study has both insider and outsider perspectives. As an insider researcher, I had the advantage of sharing experiences with the study participants because I was a former teacher in these technical colleges and I taught Omani engineering students for two years. Some of the staff members know me as a former colleague of theirs within the same institution. But I tried to keep my dual role (insider/researcher as much as possible during the entire data collection process. The insider knowledge, namely, knowledge of the Arabic language, cultural knowledge and awareness of the context was highly informative and they provided insights which would not be possible for an outsider. The students were happier to take part in the study when I told them that the interviews were to be conducted in Arabic. I tried to be friendly without becoming a friend to research participants and this helped me to build trust and a good rapport with them. However, I was fully aware, as a researcher, that my personal experience and knowledge of the context had the potential for negative impact on the data collection and interpretation. Therefore, techniques were adopted to minimise such effects on the study findings and results. Being an outsider has some disadvantages, such as when I came to interview engineering expatriate teachers, some of whom were reluctant to take part in the study or to answer some of the questions in a more elaborated way. However, this issue was solved after talking to them several times. Being an outsider enabled me to see things which might not be seen by an insider.

4.16.1 Reflexivity

Denzin and Lincoln (2005) have characterised reflexivity as “the process of reflecting critically on the self of the researcher” (p.155). Reflexivity in qualitative research is viewed as the process of self-inspection throughout the research process (Schwandt, 2007). Further, “reflexivity is the awareness of the influence the researcher has on what is being studied and, simultaneously, of how the research process affects the researcher” (Probst and Berenson, 2015, p.814). Several scholars stress the importance of utilising and incorporating reflexivity into all stages of a research project from the selection of the topic phase until the final report of findings (Finlay, 2002b; Gilgun, 2010, cited in Probst and Berenson, 2014, p. 815). Reflexivity involves a critical approach where the researcher exposes their beliefs and ideologies to a scrupulous examination when conducting the research, namely, during research question formulation, the methodological approach, and the data collection and analysis techniques, and methods decisions (King and Horrocks, 2010).

Reflexivity refers to self-correction, self-criticism, and is based on the premise that the engaged field researcher is an active part of the setting, relationships, and interpretations. Knowing yourself and how you affect and are changed by the research enterprise are central to field research and, ideally, occur throughout the research process (Crabtree and Miller, 1999, p. 14).

Moreover, reflexivity is defined by Finlay (2002) as a conscious, explicit self-awareness, the “continual evaluation of subjective responses, inter-subjective dynamics, and the research process itself” (p. 532). Reflexivity is crucial throughout all phases of the research process from the formulation of the research questions until reaching the conclusion (Berger, 2015, p.221). A goal of reflexivity in qualitative research is to keep the research ethical by monitoring the researcher’s positions and thus enhancing the accuracy of the research and the credibility of the findings by accounting for the researcher’s beliefs, values, knowledge and biases to secure the research’s trustworthiness (Berger, 2015, p. 221). The use of first-person language and the provision of a detailed and transparent report for the whole research would have been evidence of reflexivity in qualitative research, though these characteristics would not constitute a guarantee of reflexivity (Berger, 2015). As reflexivity is generally considered essential for social research (Probst and Berenson, 2014, p. 815), I endeavoured to be self-reflexive throughout the whole process from the data collection until the data interpretation. During the interviews I was patient, listening attentively and carefully to the interviewees’

voices, stories and experiences without interruption or evident boredom. I built good relationships based on trust and established a ‘balanced rapport’ (Denzin and Lincoln, 2003, p. 69) with the participants from the early stages of our meetings. I was aware that of my relationship with the participants as a former teacher in the same institution might lead to distortion of the data arising out of perceptions of my role. In light of this I was conscious of the need to be critically aware of avoiding the transmission, either direct or indirect, of any sense of power differentials arising from my former or current status. The possibility of this was a factor which I kept in mind when considering the transcripts of the interviews I undertook as well as in relation to the formulation of my own ideas and analysis.

4.16.2 The reflective diary

The reflective diary can play an effective role during fieldwork and has its potential to shape the methodological issues that emerge in qualitative research. It can provide a bridge to new understandings for both the researcher and participants. The “reflective diary has the potential for prompting, capturing and exploring participants’ reflective thinking” (Hewitt, 2015, p. 1). Borg (2001) states that a reflective diary is a “form of reflective writing which the researcher engages in during a project and through which they document their personal experience of the research process” (p1.57). Further, Lincoln and Guba (1985) saw a reflexive journal as “a kind of diary in which the investigator on a daily basis or as needed, records a variety of information about self and method” (p.327).

In the present study, a reflective diary was used from the very beginning in January 2011 as a source for documenting my thoughts, reflective thinking, difficulties and the challenges encountered, ideas, personal experiences and interesting incidents that took place during the fieldwork for the purpose of helping me to be more reflective on my experience and to foster reflexivity throughout the research. It has helped me to rethink many decisions made with regard to the choice of the study paradigm and methods of data generation and transformation. Utilising a reflective diary offered insights into the data collection and analysis process and helped to choose the appropriate paradigm and methods of data generation which fit the type of research questions formulated and study methodological aspects. Additionally, my reflective diary included my daily agenda of the study and non-verbal events which took place during the interviews or in the fieldwork in general. Keeping a diary helped me to record and reflects on many important events and information which were significant in this research.

4.17 The piloting stage

Piloting is important in research to address potential problems and to improve the quality and efficiency of the study. Piloting helps the researcher to gain understanding of the context and to deal with salient problems and to anticipate events during the actual data collection process. Robson (2011) claims that piloting “helps you to show up some of the inevitable problems of converting your design into reality” (2011, p. 405). In addition, Nunan (2000, p. 56) adds: “piloting gives the researcher the opportunity to find out if the questions are yielding the kind of data required and to eliminate any questions which may be ambiguous or confounding”. For this study, engineering students and engineering and EAP teachers, who share similar characteristics in relation to their main subjects, were interviewed. All methods and techniques that it was thought might benefit from piloting in their use were piloted (ibid., 56). Dörnyei and Taguchi (2010) point out that "the purpose of piloting is to allow the researcher to collect feedback about how the instrument works and whether it performs the job it has been designed for" (2010, p. 8). Based on this information, a pilot study of the instruments, observations and interviews was carried out and modifications and changes were made to make the instruments more credible.

Moreover, Dörnyei and Taguchi (2010) add that piloting can also indicate problems or potential pitfalls with regards to the administration of the instrument. Based on the piloting, problems and discrepancies were identified and modifications and corrections were made to the instruments. They were used as a tool for data collection to provide an informed background to the detailed study of the relevant context (engineering) within a single college. Flyvbjerg (2006) claims that piloting of goals is important for individual case studies as it helps to enhance the quality of the information obtained. The student interviews were piloted with two Omani students who were studying engineering in the same college and they were able to give feedback about the quality and clarity of the questions being asked. Having piloted students' interviews, I managed to identify potential difficulties in some of the questions and concepts, and the necessity of translating some items more accurately to capture exact information and responses. Further, piloting helped in ensuring the best and accurate understanding of each participant and to find the best way for clarifying some interview questions and thinking about alternatives in order to be able to prompt the interviewees without leading them. Further, the piloting stage offered me insights to organise the data and to consider how it could be best analysed and reported.

Engineering and EAP instructors' interviews were also piloted with two EAP and three engineering instructors who teach at the same college. The piloting was conducted in English to check the clarity of questions, wordings and concepts. The piloting helped me to reword some of the questions and to use a more direct style. The engineering teachers' interview questions focused on their perceptions about the challenges encountered by their engineering students when English was used as a medium of instruction, the strategies used by students to overcome those challenges, to what extent those challenges impacted their studies, and the teachers' suggestions to deal with these challenges and the skills required in the engineering study and workplace settings. As for EAP teachers' interview questions, they include questions related to their perceptions and perspectives about the impact of the post-foundation ESP/EAP programme in preparing students in their engineering speciality, and the language challenges that their students faced during their foundation programme.

To sum up, the piloting stage was useful for several reasons. It enabled me as a researcher to change the language which should be used when conducting interviews with students and teachers. Additionally, the transcripts of the pilot interviews enabled me to identify some of the initial emerging themes arising from the data. Piloting offered insight into the translation of students' interviews from Arabic into English, so all the potential problems related to the translation of some concepts from English into Arabic were avoided. A translation-accuracy check was provided by Arabic-speaking colleagues in my institution.

4.18 Ethical considerations

The British Educational Research Association's (BERA) ethical guidelines (BERA, 2011) have been taken into consideration throughout the process of data generation and the transformation process. Care was taken to sustain the trustworthiness of the study and to address ethical issues arising. Ethics has been defined as "rules of conduct; typically to conformity to a code or set of principles" (Israel and Hay, 2006, cited in Robson, 2011, p. 197). Consciousness of ethical issues is important in relation to conducting a research study and cannot be ignored (Murray and Beglar, 2009, p.32). The participants in a study have the right to be protected. These issues should be considered "from the early stage of a research project until the end" (Oliver, 2010, p. 9). Further, Cohen et al. (2001, p. 314) added that when conducting any research there are some important ethical considerations which need to be respected such as others' opinions, anonymity, confidentiality, gaining access, acceptance and permission, informed consent and sensitivity.

4.18.1 Gaining access and acceptance

The first step which was taken to manage the ethical issues that might arise was to seek permission from the Dean of the college where the study took place. An official letter was obtained from the University of Huddersfield to be presented to the appropriate authorities in Oman (see appendix 2). A letter was sent to the Dean of the college to introduce myself as a researcher, and to state the aims and the objectives of the study, and to seek permission for interviewing both staff members and students as well as observing some of the engineering classes. Permission was given for the study to proceed including interviewing the students and teachers, and observing classes. Concerning observations, teachers were given the option to either agree to be observed or not. Robson (2011, p. 206) pointed out: “observing people as a part of a research project without letting them know what you are doing is clearly at odds with the principle of informed consent”. Thus, all teachers were informed about the purpose of the observations and their agreement was obtained in advance. For the interviews, all the participants were given the chance to speak freely in the interviews without interruption or any kind of imposing opinions. Students participating were able to decide whether they wanted to be interviewed in English or in their mother tongue (Arabic). For anonymity, no names of teachers, students or college were mentioned in the transcripts and the participant identity will not be revealed to anyone.

The interview sessions were recorded on a tape and their contents were transcribed. Kvale advocated that “ethical issues go through the entire process of an interview investigation, and potential ethical concerns should be taken into consideration from the very start of an investigation to the final report” (Kvale, 2009, p. 62). All ethical aspects were taken into account and appropriate measures were taken to ensure compliance with ethical principles. Therefore, interviewees were given absolute control over the recording process. Assurances that the tapes would be handled with maximum care and confidentiality were provided. An informant consent form was provided. Oliver (2010) pointed out that “the researcher should explain to participants the reason for wishing to tape record the interview, the way in which recording was used, the way in which the tape will be stored, the procedure for destruction of the tapes when all data have been transcribed” (pp. 46-47). All these measures were applied with regards to the interviews, the cooperation of participants was requested, their voluntary participation was obtained and they were informed of their right to withdraw at any time should they so wish.

4.18.2 Informed consent

With regards to BERA ethical guidelines (BERA: 2011, p.5), “all educational research should be conducted with an ethic for respect for people”. All participants were provided with a voluntary consent form, which included the purpose and nature of the study, outlining ethical procedures that protected their identities and guaranteed their anonymity and privacy. Informed consent includes the purpose of the study, who the information is for, how it will be used, what will be asked in the interview, how information will be handled and what benefits are involved for participants being interviewed (Patton, 2002, p. 407). Moreover, all participants (teachers and students) were given time to talk to each other regarding information provided about the research project before making the decision to participate. There was a double-check with participants that they understood the research purpose, their role in the study, and the implications for them, and they were asked if they had any questions or concerns before they completed the form. The participants were explicitly told that they could withdraw from the study if they so wished at any stage or any point of time without giving reasons (see appendix 1).

4.18.3 Confidentiality and protection from harm

Confidentiality in research deals with “agreements with a person or organization about what was done (and may not be done) with their data; may include legal constraints” (Miles and Huberman, 1994, p.293). BERA guidelines (BERA: 2011, p.7) state: “Researchers must recognize the participants’ entitlement to privacy and must accord them their right to confidentiality and anonymity”. Confidentiality should be established at the beginning of the research to “gain trust and encourage participants to speak openly and honestly” (Simons, 2009, p.106). Therefore, permissions were sought from the appropriate authorities and institutional ethics committees to conduct interviews and administer questionnaires to the participants. Moreover, a pseudonym for the institution was used to preserve anonymity and safeguard confidentiality. Furthermore, participants were made aware of their right to withdraw from the research for any or no reason, at any time and their participation was voluntary and they have the right to question the study and their role in the study. Steps were taken to minimise the effects of design and procedures that might advantage one group of participants or institute over others, and to protect the confidentiality of the data gathered and respondents’ identities (see appendix 1).

According to Oliver (2010, p.78) anonymity encourages objectivity throughout the research process and enables the researcher to explore issues which might be slightly unpopular or sensitive. All the participants in the present study were assured that they would remain anonymous and that the reported findings would not include their names or any identification of them or their institution. All participants were made aware that all audio files of data collection and analysis would be stored in a secure and safe place to ensure their confidentiality. They were told that all electronic-related information, such as files and records, would only be accessed by the researcher via a password and all files would be locked in a secure place. To protect the collected data from falling into the wrong hands after the research had been completed, all audio and written data files would be destroyed and disposed of digitally (see appendix 1). When conducting qualitative research harm can come to participants in many ways (Miles and Huberman, 1994). The researcher should do their best to protect the participants from any physical and emotional harm which may result from the study (Babbie, 1998; Fontana and Frey, 2005). The researcher considered all the potential negative consequences which might affect participants. All interviews were conducted during breaks and the appointments were based on mutual agreement between the participants to avoid any negative effect that may result.

4.19 Data and thematic analysis

The current study strives to explore and critically examine engineering students' perceptions and those of their teachers about the use of EMI in engineering education in the Sultanate of Oman. Having generated the data using three methods of data collection, the next step was data analysis and transformation which includes data explanation and interpretation. In this regard Creswell points out that:

Qualitative data analysis consists of preparing and organizing the data (i.e. text data as in transcripts, or image data as in photographs) for analysis, then reducing the data into themes through a process of coding and condensing codes, and finally representing the data in figures, tables, or discussion (Creswell, 2007, p. 148).

The analysis was done manually in this study. Data analysis usually starts with coding. Therefore, the analysis was undertaken through identification of the main themes and codes which offered thorough and in-depth understanding of the issue under investigation. Coding is generally referred to as data reduction, sorting and organisation for the purpose of generating

themes and categories for the purpose of analysis of an interpretation (Coffey and Atkinson, 1996; Miles and Huberman, 1994).

Thematic analysis is a method for identifying, analysing and reporting patterns within data (Braun and Clarke, 2006, p. 79). It is widely used as a qualitative analytic method; although it is rarely acknowledged (Braun and Clarke, 2006). Moreover, it offers an accessible and theoretically flexible approach to analysing qualitative data. Thematic analysis is a generic approach that can be used with different conceptual frameworks and with descriptive exploratory studies (p. 77). It has the potential to produce more interpretations of data and offers more insightful interpretations than its counterparts with exploratory and descriptive studies. This study utilised thematic analysis (Braun and Clarke, 2006) to transform and analyse the data by using the six steps, namely, familiarisation with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing a report. The first four phases were carried out interchangeably by repeated reference to the study aims and research questions. This helped me to select the salient themes and then identify the codes. The following table highlights and illustrates the phases through which the thematic analysis was carried out (adopted from Braun and Clarke 2006).

Table 4.5: Phases of thematic analysis

Phase	Description of the process
1. Familiarisation with data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (level 1) and the entire data set (level 2), generating a thematic ‘map’ of the analysis.
5. Defining and naming	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and

themes	names for each theme.
6. Producing a report	The final opportunity for the analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back the analysis to research question and literature, producing a scholarly report of the analysis.

Source: Adopted from Braun and Clarke (2006, pp. 87-93)

Familiarisation with data

The first stage of data analysis began with the transcription of the engineering students' and ESP/EAP and engineering teachers' interviews. I started transcribing all recorded interviews and did not rely on making summaries of interviews, or only considering the words, sentences or other utterances related to the study questions. Researchers have acknowledged that interview transcription is time-consuming (Creswell, 2012; Baker and Edwards, 2012; Robson), however, I did the transcription myself as this allowed me to familiarise myself with the data and gave me a sense of the whole picture of the data before breaking it into more manageable chunks. After transcribing and coding the interviews in Arabic, relevant extracts were translated into English. The process of translation was another opportunity to help me to become much more familiar with my data. I translated the meanings in Arabic into English by assuring the equivalence between the two languages. Listening to the interviews several times and translating them helped me to be immersed in the whole data and gain a better understanding of each participant's experience. Notes related to the emerging themes were taken and comments were written during the transcription and translation process to assist in identifying the themes and sub-codes at later stages.

Generating initial codes

Having familiarised myself with the data, the next step was generating initial codes. Coding is a matter of organising and sorting the data. Coding is a "way of indexing or categorizing the text in order to establish framework of thematic ideas that capture something of interest and importance in relation to research questions" (Gibbs, 2007, p. 38). Codes refer to "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Boyatzis, 1998, p. 63). Coding is viewed as the heart of the data analysis process and coding as data transformation, organisation is not "analytically

neutral” from the interpretive and explanatory phases of data analysis. Coding and analysis are inter-related phases and it is difficult to distinguish between them (Mason, 2002). Codes were viewed as usually attached to chunks of words, phrases or whole paragraphs, connected or unconnected to a specific setting (Miles and Huberman, 1994; Boyatzis, 1998). To guarantee the appropriateness and inter-relatedness of codes, an open coding strategy was adopted to discover any potential issue related to the data. Further, the codes were defined, reviewed, described and re-written to assure their relevance. The table below shows some examples of codes and sub-codes:

Table 4.6: Examples of codes and sub-codes

<ul style="list-style-type: none"> ▪ EMI language-related challenges ▪ Lecture comprehension-related challenges ▪ Coping with the speed of delivery ▪ Dealing with discipline-specific terms ▪ Oral communication-related challenges ▪ Taking notes during lectures ▪ Understanding engineering discipline’s specific terms ▪ Understanding concepts and technical terms ▪ Taking part in class discussions ▪ Coping with dialogic interactions with teachers ▪ Handling in-class writing tasks ▪ Understanding core subjects’ content ▪ Writing lab reports and assignments ▪ Causes of EMI challenges ▪ Pre-schooling-related factors ▪ Arabic-medium of instruction factor ▪ Pedagogical factors ▪ Socio-cultural factors ▪ Logistical factors ▪ EMI impact on students’ studies ▪ Academic impact ▪ Future employability ▪ Low GPA

- Students' attrition rate
- Psychological
- Students' reported coping strategies
- Mother tongue (L1)
- Seeking help from peers and teachers
- Seeking help from family members
- Joining extra English tuition classes
- Translation technology
- Engineering teachers' reported challenges
- Comprehension
- Language-related challenges
- Plagiarism-related issues
- Engineering teachers' reported coping strategies with EMI
- Repetition
- Simplification
- Demonstration and visualising things

Skills required to deal with English-medium engineering programmes reported by engineering teachers

- Critical abilities (critical thinking)
- Numeracy skills
- Oral and written communication skills
- Resilience
- Information literacy skills

Skills required to deal with English-medium engineering programmes reported by engineering students

- Oral communication (speaking)
- Email writing
- Reading skills
- Memos

Searching for themes

Having generated the initial themes, there is a need to read and re-read these in order to identify further themes and sub-themes. In this regard, Braun and Clarke (2006) suggest that:

Searching for themes involves sorting the different codes into potential themes, and collating all the relevant codes extracts within identified themes. Essentially, you are starting to analyze your codes and consider how different codes may combine to form overarching themes (Braun and Clarke, 2006, pp. 87-93).

This stage demands deep scrutiny of the relationships between the various generated codes, themes and sub-codes. The stage required reviewing, re-organising and re-arranging the coded chunks and extracts to fit the study framework and objectives. In coding qualitative data, Ryan and Bernard (2003) stated that there are generally two types of themes: data emerging themes and priori themes. Emergent themes are the ones which are initially identified from the raw data based on the researcher's interpretation. Prior themes are the themes which emerged before interrogating the data and which are based on the theoretical understanding and the study framework. All the data that are related to the themes were scrutinised, referenced and cross-referenced to prioritise their significance to the study questions (Silverman, 2005, pp. 171-187). The main emerging theme which was related to the main study questions was the 'EMI language-related challenges'. The data analysis process was carried out with the major theme: 'EMI language-related challenges'. I was interested to explore the engineering students' challenges with regard to this theme. These challenges would support answering the study Q2: What challenges did engineering students encounter when English was used as a medium of instruction in their engineering programmes?

Reviewing themes

This stage involved the refinement of the previous themes and identification of new themes as well as breaking some of them into sub-themes. Issues related to 'homogeneity' and 'external heterogeneity' between themes were considered here (Patton, 1990). Braun and Clarke (2006) suggested two principles at this stage, which were considered by the researcher, namely, by checking that there was coherence between themes (p. 91). Additionally, their two levels for establishing further coherence and refining and reviewing themes were put into account. As for level 1, I read all the collated data extracts for each theme and checked coherence among them and formed a meaning unit of analysis. Concerning level 2, further review and refinement for themes was carried out until I realised that the themes captured coded data and the extracts and formed a thematic map. Moreover, I revisited the entire coded data, seeking any additional data within the existing

themes and making sure that all the themes were coherent and fitted together and there was accurate representation of the whole coding scheme.

Defining and naming themes

The purpose of this fifth phase is to define and refine the themes further and to determine what aspects of data each theme captures (Braun and Clarke, 2006, p. 92). In this phase all the data extracts were collated for each of the themes and rephrased and re-organised into coherent and internally consistent, logical and meaningful accounts in relation to the aims of the study and its questions. The names of the themes were revisited in order for them to be “concise, punchy, and immediately give the reader a sense of what the theme is about” (Braun and Clarke, 2006, p. 63). By the end of this phase, a reasonable coding scheme was developed which consisted of six major themes and 30 codes and sub-codes.

4.20 Establishing the trustworthiness of the study

In qualitative research, establishing trustworthiness is of utmost importance to assure and enhance the quality of the research. According to Lincoln and Guba (1985), trustworthiness refers to:

How can an inquirer persuade his or her audiences (including self) that the findings of an inquiry are worth paying attention to, worth taking account of? What argument can be, what criteria invoked, what questions asked, that would be persuasive on this mounted issue (Lincoln and Guba, 1985, p. 290).

To establish trustworthiness in qualitative research there are certain criteria which can be operationalised. Additionally, Denzin and Lincoln (2005) suggested that the criteria of constructivism, which include “credibility, transferability, dependability and conformability ‘should’ replace the usual positivist criteria of internal and external validity, reliability and objectivity” (p. 24). Putting these criteria and procedures into practice in each phase of the research would increase the confidence in the data and improve its trustworthiness (Gobo, 2008). All four of these criteria were used to evaluate the study findings and results. Trustworthiness includes the transparency of the data collection process; data gathered with what and for what purpose (Phillips and Carr, 2009, p. 208). Trustworthiness is established when findings and results reflect as closely as possible the meanings as described by the participants (Lincoln and Guba, 1995). To establish trustworthiness in qualitative research, researchers must engage in a variety of

strategies in order to present their research findings and results in a way that authentically represents the exact meanings described by the participants (Creswell, 2003; Lincoln and Guba, 1985).

4.20.1 Credibility

Credibility in qualitative research refers to the extent to which there is congruence between the findings and the reality. Lincoln and Guba (1995) proposed some techniques for establishing credibility and trustworthiness of research, namely, prolonged engagement, persistent observation, triangulation, referential adequacy, peer debriefing and member checking (Lincoln and Guba, 1985).

4.20.2 Prolonged engagement and persistent observation

Prolonged engagement enables the researcher to test any “misinformation introduced by distortion” on the side of the researchers or participants (Lincoln and Guba, 1985). Prolonged engagement enables the researcher to alleviate and mitigate any distortion or misinformation done by him or her or by the research participants intentionally or unintentionally throughout the research process (ibid.). Further, Lincoln and Guba (1985) and Erlandson et al. (1993) recommended prolonged engagement between the researcher and the participants in order for the researcher to gain adequate understanding of an organisation and to establish a relationship of trust between the parties (Lincoln and Guba, 1985; Shenton, 2004; Erlandson et al., 1993). For the present study I was in contact with the participants and good relationships and trust were established with the participants during interviews and observations.

4.20.3 Triangulation

Triangulation involves the use of different methods for data generation and transformation and this integration of methods helps them to compensate for their limitations and exploit their respective benefits (Hunter, 1989). Patton (2002) claims that “triangulation strengthens a study by combining methods. This can mean using several kinds of methods or data, including using both qualitative and quantitative approaches” (p. 247). Denzin (1978b, cited in Patton, 2002, p. 247) identified four basic types of triangulation: data triangulation – this deals with the use of a variety of data sources in a study; investigator triangulation – this refers to the use of several different researchers and evaluators; theory

triangulation – this entails the use of multiple perspectives to interpret a single set of data; and methodological triangulation, which refers to the use of multiple methods to study a single problem or programme. Using multiple methods is a very useful strategy for ensuring the validity of the research process (Cohen et al., 2000; Denzin and Lincoln, 2000). Thurmond (2001:253) views triangulation as “the combination of at least two or more theoretical perspectives, methodological approaches, data sources, investigators, or data analysis methods. The intent is to decrease, negate, or counterbalance the deficiency of a single strategy, thereby increasing the ability to interpret the findings”. However, the use of triangulation strategies does not strengthen a flawed study. Researchers should use triangulation if it can contribute to better understanding of the phenomenon. Thus, researchers must justify why a certain triangulation strategy is being used and how it might enhance the findings of the study (ibid., 253). Triangulation can be utilised in different ways or at different levels in study. Methods of data collection, such as oral interviews, classroom observations and document analysis, were used to increase confidence in the research data. In addition, the one governmental college which was selected was one with students coming from different parts of the country and studying in different engineering departments rather than relying on a single department site of study. In this study, Denzin’s four types of triangulation were considered. Data triangulation was utilised by generating the data from three different resources, namely, engineering students, ESP/EAP teachers, engineering teachers, using interviews, classroom observations and some relevant institutional comments. As for investigator triangulation, this was realised through the use of member checking and inter-rater reliability for data. Theory triangulation was considered by employing different theories to analyse the data set, such as thematic analysis theories, some relevant aspects of sociocultural theories, translanguaging, EAP, academic literacy and EMI theories. Regarding methodological triangulation, there were multiple methods used to generate and transform the data. For example, interviews, observations and collection of documents were used to generate the study data and to illuminate the enquiry questions (Patton, 2002).

4.20.4 Member checks and peer scrutiny of the study

Member checks, sometimes known as respondent validation, are considered the most important step that can be made to foster the credibility of a study (Lincoln and Guba, 1985). Member checks improve the accuracy of the data by checking whether or not the participants consider that their words match what they actually intended to say (Shenton,

2004). In this study, member-checking techniques were utilised to sustain data and research credibility and trustworthiness. Member-checking offers an opportunity for participants to correct any misunderstandings and wrong interpretations in relation to their previous responses (Creswell, 2012). As for peer scrutiny, this is usually done by colleagues, peers and academics in the form of feedback offered at any presentation of the project or the data as the researcher's engagement and closeness to the research may inhibit their ability to view any shortcomings. This kind of feedback gives insights to the researcher and strengthens the research argument (Shenton, 2004, p. 67). This study has benefitted from constructive feedback and comments which were offered by and/or actively sought from colleagues who had appropriate experience to provide insights or specific expertise. One particularly important contribution was made when,, following the coding undertaken in relation to the accounts provided by engineering student, EAP and engineering teacher participants, three typical and representative interview transcripts (along with three lists of codes) were reviewed by a colleague who is familiar with qualitative research methodology who kindly coded samples of the transcripts as a second coder. After he had finished coding we met to calculate the percentage of inter-rater reliability. All coding differences were discussed and resolved and my initial codes were then revisited, refined and modified. A further much appreciated contribution was made when colleagues checked my Arabic to English and English to Arabic translations in relation to data collection instruments and interview transcriptions.

4.20.5 Enhancing levels of trustworthiness

Levels of trustworthiness can be enhanced by giving the research participants opportunities to refuse to participate in the study, so as to ensure that the sessions of data collection involve only those who are genuinely and freely willing to take part in the study (Shenton, 2004, p. 66). Research participants should be encouraged to be frank from the beginning of the data collection sessions and a good rapport should be established to aid the data collection process. It should be made clear that the participants have the right to withdraw from the study at any point without giving the reasons (ibid., p. 67). All these issues were considered during the interviews and observation and they were clearly emphasised in both written and oral ways.

4.20.6 Transferability

Transferability refers to the extent to which the results and findings of a particular study may be generalisable to other similar contexts (Lincoln and Guba, 1985). As for this qualitative research, generalisation was not the aim of the study as the sample was of a relatively small number of participants in a particular context which may not be applicable to other contexts. A detailed and thick description for the research report and the situation investigated were provided to support research credibility and to give insights to the reader to determine the overall quality of the reported findings (Shenton, 2004, p. 69). In this study all the procedural and analytical aspects of the data were described thoroughly in order to help the reader to judge whether or not such findings might be applied to other similar settings by employing the same methods.

4.20.7 Dependability

Dependability refers to the possibility that the findings of the research could be repeated with the same or similar participants (Lincoln and Guba, 1985; Creswell, 2012). The rationale behind this criteria or procedure is to achieve consistency and reliability. To ensure dependability, the processes within the study should be reported in detail to enable future researchers to repeat the same work to gain the same results (Shenton, 2004). Positivists view reliability as indicating that if the research was repeated with the same participants, methods and context, it would yield similar results. However, interpretivists perceive reliability in a rather different way as they consider reality as always changeable and subjective and it would therefore be unlikely that repeating the study in a similar context would produce the same results (Hammersley, 2005). As for the present study, all the processes were described in detail, namely, the research design and its implementation and execution, the operational details of data gathering and what was done in the field, and reflective evaluation of the whole process of the inquiry which was undertaken (Shenton, 2004, p. 72).

4.20.8 Confirmability

Confirmability is the extent to which the researcher ensures that the study findings are the results of the experiences and ideas of the study's participants, rather than the characteristics and the preferences of the researcher. Triangulation can be used to foster confirmability (Miles and Huberman, 2003). Additionally, they add that confirmability is a

key criterion which deals with the extent to which the researcher explicitly addresses his or her own influences, beliefs, predispositions underpinning decisions made with regards to methods used and the reasons for using one approach or theory over another (Miles and Huberman, 2003). Further, detailed methodological description should be provided to enable the reader to determine how far the data and construct emerging from the study are accepted (Shenton, 2004, p. 72). In addition, Lincoln and Guba (1985) suggest two techniques for establishing confirmability, namely, an audit trail and reflective diary. An audit trail refers to the details, procedures and decisions described within the research to allow the reader to trace the research step-by-step via the detailed procedures described (Lincoln and Guba, 1985, p. 319; Shenton, 2004, p. 72).

4.21 Chapter Summary

Various research methods and techniques were used to collect data from the participants and different methods of data analysis were employed to increase confidence in the data and enhance the credibility and trustworthiness of the study. All data collection methods and analysis, the nature of the participants and sampling techniques were discussed above. Additionally, the aims and objectives, theoretical aspects and significance of the study were outlined. Moreover, the institutional context of the study and the aims were presented. Further, different methodological aspects were discussed, such as research questions, research design, the research approach, data collection methods and their limitations, and other aspects related to triangulation, ethical considerations, credibility, transferability and data collection tools and aspects of data analysis were considered. This study makes potential methodological, contextual and pedagogical contributions to the field of knowledge. Methodologically, most of the previous studies conducted on EMI in an engineering setting were survey-based research and have been able to capture a more detailed picture of students' experiences in relation to EMI. This study utilised multiple methods to generate data from students' voices and their lived experiences in their EFL context. There has been a dearth of research on students' experiences of the use of EMI in their engineering programmes and the study seeks to contribute to the advancement of knowledge in relation to this.

Chapter 5: Engineering Students' Perceptions in Relation to the Challenges of Study through EMI

5.1 Introduction

This study seeks to 'weave' the stories of participating Omani engineering students' learning experiences through the medium of English in order to present a textured account which both represents and interprets their views. The next three chapters undertake the data analysis based on the emergent, a priori themes and on the research questions. This chapter is divided into three sections according to the study research questions addressed. Section one presents the engineering students' perceptions and some of the key challenges they encountered during the course of their study. Section two explores the engineering students' coping strategies adopted in response to the EMI challenges and difficulties, which primarily related to academic literacy, speaking and oral communication, discipline-specific issues, technical terms-related problems, lecture comprehension difficulties, and in-class interaction-related challenges. Finally, section three focuses on the skills and attributes that engineering students and engineering and EAP teachers think are important for success in learning in the context of engineering taught through the medium of English as well as making suggestions for overcoming the challenges presented by studying through the medium of English in Oman. The data presented and analysed were primarily generated via semi-structured interviews and observations. Occasionally, some institutional documents were used to critically interrogate and, where possible, to substantiate the analysis. The data analysis, transformation and interpretation are linked with the multiple-layer theoretical and conceptual framework and the literature review. The identification of themes provided insights into the analysis of Omani engineering students' learning experiences through the medium of English and was instrumental in articulation of the participants' stories.

5.2 Learning challenges through the medium of English

The following sub-sections encompass Omani engineering students' perspectives about the challenges that they encountered when English was used as a medium of instruction in their engineering degree.

5.2.1 Academic literacy-related challenges

Two-thirds of Omani engineering students in the sample of this study believed that the use of English as a medium of instruction (EMI) presented many language-related challenges to them. One student noted that they found difficulty in expressing themselves in English and understanding the disciplinary vocabulary was a great challenge for them. Another student described his learning experience through the medium of English as follows:

There are many problems and difficulties that I personally encountered with use of the English language, namely: how to write a correct sentence, how to fluently express myself verbally in English... I feel that I have the ideas but how to say them is a big challenge for me. Moreover, there is difficulty with how to pronounce and understand some technical vocabulary which is related to engineering [S1].

Another student said:

I had serious problems with vocabulary: these were how to pronounce terms and understanding the meaning. I find it difficult to decode and encode the text and how to make sense of it. The problem with comprehension is very frequent [S9].

It is clear in the above statements that these students have had problems in oral communication skills. How to express themselves in English is a problem as they have had their schooling in Arabic-medium institutions and they are then suddenly shifted into English-medium colleges. This transition was generally very difficult for them and this was even the case when they had progressed through the foundation and post-foundation programmes. Additionally, it was common to find problems with understanding discipline-specific terms as the students lacked academic socialisation and they had not yet been immersed in the discourse community of their discipline (Lillis, 2003; Street, 2009; Wingate and Tribble, 2012; Turner, 2012). A similar difficulty emerged with regards to literacy where the students frequently stated that they encountered difficulty in decoding, encoding and understanding the academic texts. This problem may be due to the technical nature of the engineering genre and the associated register which are difficult for newly enrolled students. As demonstrated in the literature, academic literacy refers to an individual's conversancy in specific and specialised vocabularies, concepts and knowledge associated with particular disciplines, as well as their distinctive patterns of meaning-making activity (genres, rhetorical structures, argument formulations, narrative devices, etc.) and to ways of contesting meaning (Rex and McEachen, 1999; Neumann, 2001; Hirst et al., 2004). Academic literacy and EAP courses are usually offered, whether pre-sessional or in-sessional, to help students to cope with their English-medium speciality. The

main purpose of these courses is to promote disciplinary literacy and help students to function in their disciplinary content effectively.

A similar experience that students reported was their difficulties in relation to writing and reading comprehension. Many stated that they were not able to write or understand what they read in English. The following interview extract demonstrates this issue:

The first problem I would say is the writing and specifically report writing. As you may know most of our engineering study is based on problem solving but when we started studying technical terms and concepts the situation became better than before. The difficulty is how to understand the problem and how to solve it. Another problem is how to write or compose and how to organise your ideas and how to make use of ideas taken from books and teachers. I had a problem with extended writing (writing essays). I have a problem with writing short paragraphs. Additionally, I have problems in reading comprehension and how to understand things, and how to write using my own words and phrases [S2].

What students consistently refer to, as indicated above, is their difficulty with academic writing, specifically, with report and essay writing. Academic writing genres are typically difficult for students to master, and these students had clearly struggled with academic writing in general, and how to organise their ideas and thoughts logically, and this was compounded with difficulties of writing sentences and paragraphs in English. This was despite the fact that they were supported institutionally through their pre-sessional and in-sessional courses where academic writing courses were offered to help them cope with their content courses. It seems that these students lacked familiarity with academic writing conventions which are always important to handle university writing requirements. These kinds of difficulties and the general inability of students to write academically demonstrate the ineffectiveness of the EAP pre-sessional and in-sessional courses. One student stated:

Report writing...well... I feel that books and reference texts are too big for us and we find it difficult to find specific information or even to understand them. However, understanding is not such a big issue as we're able to ask our colleagues and friends to explain things. But reports you ideally have to do by yourself and seek clarifications from your instructor using English. If there is a question I find difficult to form then I would just ask one of my friends who has really good English to accompany me and talk to the respective teacher. I sometimes try to use simple words to communicate my ideas and I use pidginised Arabic to speak to the engineering lecturers but some of them find it difficult to understand me. There are difficulties in giving our presentations and I get confused sometimes, but when we discuss the presentation in Arabic with our friends we feel confident. We have some problems in avoiding plagiarism. We sometimes ask

others to help us with our assignments and sometimes people will cut things and paste them directly from the internet due to the lack of time (S10).

Similarly, students commented on their difficulties with specialised lexis and technical terms in general. Report writing is vital for engineering students. However, the extract above suggests that students have enculturation difficulties with their domain-specific terms and technical vocabulary. This is illustrated in the following interview extract:

There are difficulties related to teachers, textbooks and content areas. Engineering teachers speak in different accents and this has caused many difficulties in understanding them. Also, engineering textbooks are written in a very complicated technical language and I sometimes find it difficult to comprehend them. Moreover, some core subjects are very complicated to be understood in English, and this applies even to machine manuals and instructions. When I try to speak to my friends and classmates in English they often just reply in Arabic and this could be one of the challenges that I personally face in the classroom (S5).

Another significant difficulty is reading comprehension. Engineering students are commonly required to read manuals and instructions related to machinery, and many interviewees stated that they had difficulty in understanding their content courses when they read these. EAP is a means for helping students to develop control over the specific genres they require in order to be successful in the higher education institutions (HEIs), and within their specific disciplinary context (McGrath and Kaufhold, 2016). Thus, the in-session and pre-session EAP courses need to be tailored in response to students' disciplinary needs. Engineering students need to be familiarised with the engineering register before joining their speciality. This can be addressed through collaboration between EAP teachers and subject teachers.

In a similar vein to the experience recounted above, another student described his difficulties as follows:

I have problems with my reading and writing skills and I feel that they are below the bar. I have difficulties in understanding the meaning of technical terms and words. Also having different teachers with different accents was a problem for me (S5).

The above interview extracts illustrate that reading and writing skills were often a problem despite the existence of institutional support during the foundation and post-foundation courses. Notwithstanding this, many students were not aware of academic writing conventions and genres. It

seemed that the skills embedded within the EAP courses were not always transferable to students' academic classes, and they were, perhaps, not seen to have immediate relevance to their speciality. These literacy-related problems were confirmed by some engineering teachers as the following teacher's interview extract demonstrates:

They [students] cannot write what they mean. So, so this is the main problem. If you talk about this problem from a linguistic perspective then it is really a big problem. We've got problems with writing, speaking, reading and listening. So, the most common problems that you notice among students are writing and speaking (Eng. T5).

In a similar vein, another engineering teacher's view indicates the existence of students' writing and enculturation difficulties:

The main problem is that maybe students are too pressurised into their courses, so they cannot also concentrate on the quality of their writing. Technically we don't go deep. Their spoken English is okay. They find difficulty in some of the engineering concepts. If you don't explain it well and it has a meaning in the common language, and another meaning in engineering then they will be confused. They have problems in how to think critically (Eng. T3).

Both the students and engineering teachers who participated in this study considered academic writing to be a big challenge for students, and the teachers saw a pedagogic challenge. In addition, understanding academic concepts and terms was another problem for them. Critical thinking was a challenge.

5.2.2 Speaking and communication-related challenges

This section illustrates Omani engineering students' difficulties and challenges in conversing in English. Speaking and communicating in English with teachers and friends was a major problem for many Omani engineering students who participated in the study and the following extract illustrates a typical experience:

The most difficult problem that I encountered was speaking English and especially the communication in English with my instructors. Also we discovered that there are many words which have different meanings when they are used in certain specialities such as engineering. I had problems with listening and writing [in English] as well and how to use certain technical phrases in their appropriate context to convey meaning or instructions. Some words are general and have fixed meanings and they don't cause as many difficulties as the technical words do. I had difficulties with my report and projects. I find it difficult to reference or to attribute information to a given source. There is a problem with technical vocabulary which can't be used in our everyday life as they

are restricted to certain domains and usage. I find it difficult to take part in classroom discussion in English or to argue with my teachers or friends in English (S2).

Likewise, conversation with lecturers in English was a problem as many students found it difficult to participate in their specialist discourse community leading to enculturation difficulties. The extract above reveals problems, not only with the use of technical terms, but even to engage in academic discussion with their lecturers and friends. Mastering academic literacy skills and possessing the ability to communicate effectively in different settings has become essential for a professional engineer (Nguyen, 1998; McGregor, 2000). This can be linked to what Sun (2010) and Speight (2012) have stated:

The engineering profession is becoming increasingly global and professional engineers are nowadays likely to communicate with people from diverse linguistic backgrounds and they need to do this effectively with both technical and non-technical audiences.

Northedge (2003, p. 172) states that “what undermines newcomers’ efforts to understand academic discourse is the unspoken assumptions, which provide the frame of reference, within which it is meaningful”. Students’ inability to understand the technical terms indicates that they do not have appropriate frames of reference within their repertoires after their experience with their EPL and literacy-oriented courses. The Omani engineering students had generally studied a different type of English in their tertiary education from that which they had encountered in their schooling. This was clearly expressed by one of the students:

English language was a great challenge for me because the kind of English that we studied in schools is different from the kind of English at the college. English in our college is highly technical and complicated. In secondary schools we studied general English and the words used were very simple and they are not really useful for us now. At the college the situation is quite different, all words are linked to the speciality and when revising and reading engineering textbooks and materials you have to understand them within the context of engineering. They need more effort and practice so as to be internalised and understood (S3).

The interview extract above is illustrative of the fact that the students interviewed for this study were largely dissatisfied with the EAP and English language instruction they received during their schooling and foundation and post-foundation studies. They frequently had difficulties with the engineering register and terms.

A computer engineering student expressed his concerns about speaking and communication challenges as follows:

I encountered many challenges with the technical English and concepts which related to computing. The post-foundation courses were a great help to me and they helped me to improve my public-speaking and writing skills. Some technical words are not clear to me in terms of their pronunciation and meaning. Some teachers use strange pronunciation and I sometimes find it difficult to understand them. Once I go home I keep checking the correct pronunciation and spelling of those mispronounced words. Some teachers speak a bit fast when they lecture us, and it is sometimes difficult for us to understand what they are saying (S4).

This student indicated that:

I have difficulties in understanding the tutors' accents and I find them unintelligible. Their speed of delivery is also another story, some of them just speak fast and I could not follow them or even take notes. As we are computing students we usually concentrate on applications rather than theories. We sometimes encounter problems with such applications and we couldn't fix them (S4).

The interview extract above suggests a problem with understanding instructions and responding to them which can lead to difficulties in fixing technical problems owing to the language barriers.

Another interview extract reflects students' speaking challenges:

I have difficulties in initiating discussions or asking questions of the teachers in English, or even seeking clarification of anything that is not clear for me. How to speak was really difficult because I am scared of making mistakes in front of my friends and classmates. When it comes to exams I feel the questions and exam rubrics are a bit ambiguous and I don't know what to do. There are non-classroom-related problems which are centred on assignment writing and communicating with teachers outside the classroom or even during lab activities (S6).

Participants often had difficulties in initiating discussions in English with both their teachers and colleagues. They found it difficult to seek clarification from teachers because they were not confident and they were scared of making mistakes which made them reluctant to use English. Understanding exam instructions and responding to them was another challenge. Students are required to answer open questions and to solve mathematical or technical problems. However, some of the participants indicated that they encountered a number of language-related challenges in their examinations.

Students recognised the importance of developing good English communication skills because they anticipated that English will be used in their future careers.

5.2.3 Discipline-specific terminology challenges

Suitable knowledge of the domain-specific terms and familiarity with the conventions of the specialised discourse community is of vital importance for engineering students to handle their speciality and understand their register and genre. This is required to help those new to the community discourse to participate effectively in the practices of the community (Swales, 1990). The findings of the present study are that the participants considered engineering-related terms were challenges for them in the EAP courses that they had studied during their post-foundation stage.

One student described his experience with engineering-related technical terms as follows:

I don't have serious problems with English except some technical terms and concepts are difficult to understand. Even if you looked up into the dictionary definitions you would find them difficult to understand (S8).

The student's comment above illustrates that some students do not have serious problems with their general English; however, even these had difficulties with understanding engineering technical terms and concepts. It seemed they had enculturation difficulties and they lacked familiarity with the specialist discourse. By incorporating technical terms into the EAP courses, the pre-sessional and in-session courses could be more effective in meeting students' learning and target needs. It would also help students to be subject-specific language users rather than English language learners (Kırkgöz, 2009).

Students' difficulties with technical terms are illustrated in the following interview extract:

I don't have significant problems with English except that with some new technical terms within my computer engineering discipline. My writing, reading, speaking and listening were good and up to the standard (S9).

Like other participants, S9 described his difficulty with technical terms. In some cases, he found it difficult to understand them or even to use them. Many of the students were expecting that their foundation and post-foundation courses would consider such technical terms which might facilitate their study in their content courses.

Similarly, a student described his experience with engineering-related technical terms as follows:

English had a negative impact on my study. I need to spend much time with my English rather than concentrating on my content courses. English has taken much of our valuable time. Further, I find it difficult to understand exams because of the kind of technical words and instructions used and this could impact on my marks and academic performance. Because of English I need to spare much time for practising for my presentations instead of focusing on core subjects. In addition, I need to spend time on researching and looking up meanings of new words and finding the technical meanings. I have difficulties in understanding and comprehending engineering lectures because of the level of my English (S4).

Efficient access to disciplinary information requires knowledge and familiarity with disciplinary discourse of that specific speciality. Students repeatedly stressed the importance of teaching domain-specific terms to them during their pre-sessional and in-sessional foundation courses to familiarise them with their discipline-specific terminology and genre.

5.2.4 EMI lecture comprehension-related challenges

Another challenge with EMI, which was repeatedly reported by Omani engineering students, was that of comprehending lectures delivered in English. This is despite EMI being considered an effective way to improve students' language proficiency through using English to acquire subject knowledge (Joe and Lee, 2013). However, it has created a number of challenges for engineering students. The following interview extract shows students' problems with lectures delivered in English and the strategies that are sometimes employed to handle such challenges:

I had a number of problems in understanding lectures delivered in English. Therefore, if I haven't understood something during lectures I can ask my friend to explain to me in Arabic. If asked to study engineering in either English or Arabic I would choose English because if I study in Arabic I wouldn't find a job to secure my future. Some engineering professors are Arabic speakers and they can simplify things and say them in Arabic and we have found that beneficial for us. Some of my friends use Arabic to explain the new instructions and machines' manuals for us. Friends use Arabic to write their assignments and then translate them into English using translation technology (S10).

Indeed, EMI presented a challenge for them to understand the engineering lectures; however, they employed many strategies to handle such challenges and difficulties. Although the students reportedly develop disciplinary knowledge while progressing in their discipline, many encountered problems with lecture comprehension. These problems exist due to several reasons, namely, the mismatch between students and lecturers' expectations, lack of understanding by students and

problems relating to the kind of strategies lecturers adopted (Flowerdew et al., 2000). Moreover, the problem of lecture comprehension may be related to lecturers' personal attributes, such as speed of delivery, accent, interpersonal factors, etc., as well as students' poor linguistic abilities, such as lack of vocabulary and limited listening skills (Yousif, 2006).

Another student described his difficulties with lecture comprehension as follows:

I have difficulties in understanding the tutors' accents and I also found them unintelligible for me. I sometimes find it difficult to take notes during the class as some teachers use difficult and highly technical language. I sometimes try to record the lecture in order to listen to it at later stages. I use online dictionaries to help me to find out their meanings (S6).

Some students reported that they experienced difficulties in comprehending lectures and taking notes and even engaging in classroom discussions. They used a number of compensatory strategies to handle these problems, including those problems indicated by student S6 above.

During the classroom observations undertaken as a part of this study, students' lecture comprehension difficulties were persistently evident. Students tended to have difficulties with taking notes during lectures, and some spoke of employing strategies, such as using dictionaries and recording lectures, which could be replayed later. Particular lecture comprehension problems were a consequence of lecturers' speed of delivery as indicated by the following interview extract:

I have difficulties in understanding and comprehending engineering lectures because of the level of my English. Moreover, I have problems with following my teachers when they speak during lectures. All these could be considered challenges which have a great impact on my academic performance (S5).

There was evidence that the problems with lecture comprehension and technical terms could be attributed to the fact that all students studied in Arabic in their schools:

English language was a great challenge for me because we studied all subjects in Arabic in schools. Moreover, the kind of English that we studied in schools is different from the kind of English at the college. Because English in our college is highly technical and complicated. In secondary schools we studied general English and the words used were very simple and they were not really useful for us now. At the college the situation is quite different, all words are linked to speciality and when you revise and read your engineering textbooks and materials you have to understand them within the context of

engineering. They need more effort and practice so as to be internalised and understood (S5).

The quote above underlines the challenges created by the transition from Arabic-medium education to English-medium education to these engineering students.

Well...Personally I don't have any problems in comprehending lectures due to the use of English. I sometimes have some difficulties but not because of the language but because some concepts are challenging and they need time to be fully understood (S10).

Sure, in certain courses and lectures this depends on who is the lecturer and his nationality and accent as well. Some lecturers speak very fast so I couldn't follow them and take notes. Some of them use a very complicated and highly complex language and this makes it difficult to understand. Lecturers sometimes ask very difficult questions during their lectures and I feel embarrassed in answering their questions (S6).

I haven't encountered such great challenges but sometimes I have difficulties in understanding the tutors' accents and I find them unintelligible for me. Their speed of delivery is also another story, some of them just speak even faster and I could not follow them or even be able to take notes. As we are computing students we usually concentrate on applications rather than theories, therefore, we sometimes encounter some problems with such applications and we couldn't fix them (S4).

5.2.5 Engineering students' perceptions of the challenges arising from EMI

5.2.5.1 Engineering students' in-class challenges

Many students reported that they encountered in-class challenges caused by EMI. These problems vary in their nature. Some of them related to in-class writing, speaking and reading skills, as well as informal in-class discussion tasks. These problems vary from one engineering major to another due to the epistemological and conceptual differences between them. My classroom observations indicate that what students were saying reflected their classroom experience. Many students stated that they encountered in-class challenges caused by EMI. These problems vary in their nature.

5.2.5.2 Challenges during in-class writing

Research findings have shown that EFL/ESL students studying through the medium of English often encounter a number of problems and difficulties in academic writing, which make them incapable of handling their writing tasks, and coping with their study's literacy requirements and expectations

(Bacha, 2002). Therefore, many students repeatedly reported that they experienced a number of problems with their in-class writing tasks, such as report writing. Lack of knowledge of citation conventions and lack of skills in using sources in their engineering discipline constitute a challenge for them and the lack of these skills may place them on the context of breaching academic integrity (Pecorari and Petrić, 2014). Engineering teachers as disciplinary insiders should be able to evaluate the extent to which their students' writing conforms with the engineering writing conventions in terms of form, content and requirements (Petrić and Harwood, 2013). Engineering students are expected to produce a text to be marked by engineering community standards and engineering academics in terms of conventions and forms (Green, 2016). These in-class challenges and their potential impact on their academic achievement and career caused significant concerns among students, which one of the students described as follows:

The first problem I would say is writing and namely report writing. As you may know, most of our engineering study is based on problem solving but when we started studying technical terms and concepts the situation became better than before. Another problem is how to write or compose, and how to organise your ideas and how to make use of ideas taken from books and teachers. I had a problem with extended writing (writing essays) for I do not have problem with writing short paragraphs (S2).

It is becoming apparent that the Omani engineering students in this study experienced a number of challenges with their in-class writing tasks. More specifically, they had difficulties with report writing, especially lab reports. Their perception was confirmed by the teachers. The problem is that engineering is a discipline which requires writing reports for various purposes, so students must be acquainted with the writing conventions, register and vocabulary of this genre. In order to learn, students need to be exposed to academic tasks which mirror those which they will be required to write in their discipline of study. Moreover, tasks ought both to enhance learners' awareness of the distinctive features of the tasks and to help them develop strategies which can be applied in similar future situations (Wingate, 2006).

As indicated by another student, lab reports proved particularly challenging.

I had problems with writing lab reports such as how to structure a report, how to write an introduction and conclusion and how to analyse and synthesise information. Engineering as a discipline contains theoretical and practical components. I do not have a problem with the practical parts, only with the theoretical part. As I said earlier, I like to work with numbers and to operate machines and gadgets. I like learning things by doing and demonstration (S3).

The quotation above reveals that students may experience problems with writing lab reports, not just with reports in general. They often had difficulties structuring their reports, most significantly writing an introduction and conclusion. Furthermore, they had problems not only with conventions, but also with cognitive aspects of the tasks, such as with analysing and synthesising non-textual information for their reports. In short, the interview extracts revealed some of the practical and theoretical challenges being faced by Omani engineering students.

I don't have many problems to be honest, my problem is only with writing. Academic writing is a bit boring and I found it difficult to master it, particularly the use of passive voice and reported speech. Generally, my English is okay in terms of reading, speaking and listening but writing is still a problem for me. Writing is difficult for all students, particularly spelling. The problem with my writing has impacted on academic performance and some teachers penalise us for our spelling errors and reduce our marks accordingly (S4).

The EAP curriculum for engineering students should explicitly deal with the aspects of English as indicated by student S4 above. Post-foundation writing courses and syllabi need to be revised and revisited to meet students' study and workplace needs.

Spelling deserved special mention as it was reported to be one of the students' major causes of concern as it had impacted their academic performance, their marks and their future chances of obtaining the required band on IELTS. Engineering teachers would regularly consider spelling errors when marking students' projects and exam papers, but the policy was that assessment had to focus not on the quality of students' writing but on the accuracy of the information which they had provided. Nonetheless, teachers did take spelling errors into account in cases where mistakes and errors impeded the intelligibility and clarity of written work.

5.2.5.3 In-class speaking and discussion-related challenges

Engineering students expressed the difficulties they encountered when classroom discussions were in English. A student expressed his in-class speaking problems as follows:

There are many problems and difficulties that I personally encountered with English language, namely: how to express myself in English... I feel that I have the ideas but how to say them is a big challenge for me. Moreover, there is difficulty with how to pronounce and understand some technical vocabulary which related to engineering (S1).

Students' speaking problems were apparent during classroom sessions when students had to answer questions, give their opinions and discuss the subject at hand. Where public speaking was offered as a post-foundation course, many students still faced difficulties in expressing

themselves in English. It was noticed that a number of them were digressing into Arabic to discuss in-class tasks with their friends rather than using English. Pronouncing technical words was another problem, as some of the discipline-specific terms are difficult to pronounce (and to spell correctly). In this regard, a student reported that he used Arabic instead of English to express himself clearly:

...If I didn't understand anything, I will ask my friends to explain it to me in Arabic but I go to a teacher I just ask him to explain it in simple English and if the teacher is Arabic-speaking teacher I will ask him to explain in Arabic (S2).

Arabic was used as a coping strategy to deal with in-class speaking and discussion-related tasks. The use of this strategy was frequently apparent during classroom observations. A student believed that communicating with his instructors in English was a problem for him. This interview extract below demonstrates his concerns:

Studying English means speaking it but generally the most difficult problem that I encountered is speaking and the communication in English with my instructors (S3).

The vast majority of the engineering instructors in the colleges of technology in Oman are from non-Arabic-speaking countries, such as India, the Philippines, Pakistan, etc. They usually communicate with their students in English. However, some students were not confident enough to express themselves in this language and tended to switch back to Arabic.

Another student elaborated on the kinds of problems that he faced.

The problems where I have difficulties are in initiating discussions or asking questions regarding classroom-related problems to the teachers in English or even seeking clarification of anything that is not clear for me. How to speak was really difficult because I am scared of making mistakes in front of my friends and classmates. When it comes to exams I feel the questions and exam rubrics are a bit ambiguous and I don't know what to do (S6).

Students appeared to persistently encounter problems as they try to communicate in English. They do not feel capable enough to initiate discussions and ask questions in English, which is a considerable obstacle for teachers seeking to gauge their students' understanding and weaknesses. Many students resort to asking friends to raise questions on their behalf or to using pidginised forms of Arabic in the hope that their teachers will understand them.

However, students also indicated another problem, namely the lack of real opportunities to use English despite it being the mandatory language of instruction; in the words of one of the interviewees:

When I try to speak to my friends and classmates in English they just reply back in Arabic and this could be one of the challenges that I personally face in the classroom (S5).

Arabic was widely used in the classroom as a coping strategy, as students tended to switch back to their mother tongue to express what they could not say in English. S5 was trying to express himself in English, but his friends kept on replying in Arabic. S5 claimed that translanguaging and code-switching were common phenomena in the engineering classroom, particularly when students talked to one another. This suggests that they sometimes tend to digress to Arabic to share ideas and seek clarification from their classmates as they were not capable of using English in certain contexts.

Another student stated:

Well... generally, I have problem with speaking and how to communicate with others orally using English. I feel that I am not confident enough to speak in English in front of others, I feel shy to do so. Secondly, I don't want to make mistakes in front of people to make a fool of myself, and the main issue that contributed to my speaking problem is lack of vocabulary (S1).

Clearly, S1 did not want to speak English to avoid 'losing face' due to mistakes and errors. He was using avoidance as a strategy to deal with such a challenge. Moreover, lack of adequate vocabulary was another reason behind his speaking problems. This communication problem was consistently corroborated during classroom observations.

5.2.5.4 Challenges related to in-class reading tasks

Reading academic texts is viewed as one of the most important skills for EFL/ESL students studying their content courses through the medium of English (Shen, 2013). However, it became clear during class observations that in-class reading tasks constituted a challenge for many Omani engineering students. This conclusion was confirmed by one of the students who, during the interview, described his in-class reading as demanding, particularly reading engineering textbooks. He stated:

Engineering textbooks are written in a very complicated technical language and I sometimes find it difficult to comprehend them. Moreover, some core subjects are very complicated to be understood in English, even machine manuals and instructions (S5).

It may be inferred from S5's words that the level of English acquired by some of the Omani engineering students, by the time they start post-foundation courses, is insufficient for them to adequately interact, not only with textbooks, but also with the user manuals of the machines which they must use. Engineering and science-related technical terms are highly specialised and

seemingly too difficult for EFL students to grasp without prior learning. The students' poor knowledge of professional jargon and the technicalities of domain-specific English use rendered them ill-equipped to perform in-class tasks. This predicament will presumably negatively impact on their exam preparation and performance, too.

The language deficits experienced by S5 were also corroborated by S2.

I have problems in reading comprehension and how to understand things and how to write them using my own words and phrases (S2).

This passage points to problems that hinder both the comprehension and rewording of technical texts. Reading comprehension deficiencies may include vocabulary, syntax and inferences. Logically, students who could not grasp the language of their textbooks could hardly be expected to paraphrase them. Despite the fact that key study and academic skills, such as paraphrasing, summarising and referencing had been dealt with in the English courses, many students were still unable to cope with in-class tasks involving those skills.

5.2.6 Key debilitating factors: inadequate prior learning experiences

The following section presents an analysis of Omani engineering students' perspectives and perceptions about their previous learning experiences as being one of the sources of the above-mentioned challenges. In relation to 'previous experiences', they referred particularly to their primary and secondary education.

A student expressed his views about his unpleasant previous learning experience and its impact on his engineering studies:

I had an unpleasant experience with English during my school days. My English wasn't good enough and I couldn't speak English in front of others. My English teacher was wonderful and he encouraged us to speak the language without bothering about our mistakes. He was telling us English is neither your first nor your second language and to make a mistake is not a big issue. I took his words into consideration and I started speaking to my friends at the hostel in English and they were not welcoming my English. I felt embarrassed once they laughed at me. I started speaking gradually but with difficulty and when I joined the college my speaking was fairly good and I was able to communicate with my teachers. My classmates were a bit shy and couldn't speak freely and fluently and I was the only lady who spoke with confidence. Having finished my foundation and joined my speciality, my spoken English was wonderful and my teachers have always appreciated this. During the post-foundation I did a great job on my public-speaking classes but writing wasn't good, particularly my spelling and handwriting as well. This

has impacted on my exam results negatively. I started writing a lot but still my writing is not good enough (S9).

The above lengthy quotation depicts S9's unpleasant prior learning experience as a student in school and at the pre-university stages, namely, foundation and post-foundation levels. The teacher seems to have encouraged his students to speak English, but it was not easy for them to do so due to their lack of confidence and their inability to express themselves in the language. The student's English had improved by the time she joined the college as teachers were mostly from non-Arabic-speaking countries, and the students need to communicate with them in English. Despite her efforts, this student's handwriting, accuracy in writing and spelling continued to be a cause of concern and negatively impacted on her exam results.

One of the EAP teachers was of much the same view:

Our students face many language-related problems. Despite the training and the tasks assigned to them, they still make serious and silly spelling mistakes; and their writing is still weak. I find it difficult to read their answers in the exam papers (EAP T3).

Another student mentioned a number of other prior language-related problems which had a negative impact on their in-class tasks:

My experience with English is quite memorable as I struggled a lot with studying English language since my schooling. I found English grammar difficult for me because my English teachers in school were speaking mostly Arabic and they were forced to explain things in Arabic to help students to understand. We had only four English contact hours a week and there was no practice for English either in terms of speaking or listening because neither the teachers nor the students speak English. I kept memorising new words without knowing how to use them. After completing my secondary schools, I joined the college and I sat for a placement test and I was admitted in level 1 where I had the opportunity to study the basics. After studying the four levels in the foundation my English improved and I joined the post-foundation programme and the first part of the degree. I felt that my English was okay at that time and I was able to communicate with my teachers in broken English and they were able to understand me. I worked harder on my English during my degree and I managed to get high scores in both speaking and listening but writing wasn't really good and I had a big problem in spelling (S5).

Students seemed to resort to Arabic to understand each other and their teachers to avoid communication breakdown, when asking and answering questions or discussing issues with their

classmates and colleagues. Their problems in oral communication were complicated because their English school teachers had communicated with them in Arabic. Moreover, the number of contact hours for English classes was not enough to properly practise using the language. Having completed his foundation and post-foundation studies, the student's English was improving, and he was able to communicate with his teachers in broken English. His writing, however, was still problematic. A student stated this situation as follows:

I did not give time to English during the entire time of my schooling years but when we joined the college we found the situation is quite different from schools, you have to speak English with your teachers and friends and this was the first shock for me. I was about to quit the college due to such unexpected language-related challenges. I started studying English in my school and my English teacher was Indian and I couldn't understand what he was saying as he was speaking only in English. After that I had a private teacher who taught me the basic grammar rules and structures and this was really useful for me. After joining the college, I started understanding things. At school I didn't even know how to write my name in English and my teacher was shocked by my level of English. I had difficulties with reading, writing and speaking as well but things have begun to improve drastically. All subjects in the college are in English and this has helped me to improve my English (S6).

The above interview extract illustrates that students such as the interviewee have difficulty understanding their teachers due to the language being used in tertiary education. A common coping strategy is hiring a private teacher to go over the basic grammar and language skills. For this student, the foundation and post-foundation years were new experiences. Fortunately for him, he felt that his English was improving and that he managed to communicate with friends and teachers in it.

As seen above, the students experienced their previous learning experience in school as a major source of language-related problems in college. A student put it this way:

English language was a great challenge for me because the kind of English that we studied in schools is different from the kind of English at the college. English in our college is highly technical and complicated. In secondary schools we studied general English and the words used were simple and they are not really useful for us now. At the college the situation is quite different. All words are linked to speciality and when reading your engineering textbooks and materials you have to understand them within the context of engineering. They need more effort and practice so as to be internalised and understood (S3).

The interview extract above compares the English studied in schools with the type of English they were studying in the college in terms of simplicity, complexity, technicality and usefulness. It seems that in schools they were not exposed to technical terms or words since all the science-related subjects were taught in Arabic; English was taught as a subject only. The students interpreted this limited exposure to English as one of the major contributing factors to their existing language-related challenges. This idea was corroborated by another student.

My experience with English was something unforgettable at all. I started studying English in schools (grade four). I started studying new words but I was not able to use them in context or meaningful sentences. My goal was to study mechanical engineering. I joined the foundation year and it was a good opportunity for me to speak English. I worked harder during the foundation year and I ended up with good GPA. I started speaking to my English and engineering teachers in English and my English has improved. The speciality was helpful for me to improve my English skills (S7).

In a similar vein, yet another student found that his previous learning experience in schools and foundation and post-foundation levels had been a source of challenge:

I started studying English at schools (grade 4) and my English was not good when I entered the foundation programme. After joining the foundation, things have started to improve and language skills have become stronger than before. I started giving presentations and seminars and I became confident to speak English in public. I finished the foundation and I joined the Computer Engineering Department but still there was a problem with my writing and spelling. I studied the foundation courses and they helped me a lot with my English in general and writing in particular (S8).

Once again, writing and spelling were mentioned as the main sources of concern during both the schooling and foundation levels. It appears that the foundation courses had helped students to give presentations and seminars in English and boosted their confidence and motivation as well. However, some of the students particularly reported that they sought social support from family members in an attempt to tackle their language-related problems in the engineering programme. Some of them did find the required help at home, as S10 reported:

I am lucky as my father is an English language teacher and since I joined the school he has been helping me with my English. He had helped me with my homework and projects during my schooling. My English was good during school and I used to get top marks in English in my

class. When I joined the college I sat for a placement test and my performance was very good so I was exempted from the foundation. I joined the degree and my post-foundation and I wasn't sure whether my English would enable me to cope with speciality needs or not. I took the post-foundation courses seriously and scored high marks on them and my teachers were happy with my performance in English. However, I still have some challenges with certain technical terms particularly their pronunciation. I kept using e-dictionaries to check the correct pronunciation and spelling for the difficult terms and concepts. I used to help my friends and classmates with their assignments and projects. My teachers were happy with me and whenever there were any difficult questions in class they passed them to me to answer. I used to work hard and to take notes during lectures to use them in the future. Whenever I encounter any difficulty with English I just go to my father and he is always there to help. My experience with English is a pleasant experience and I like English more than any other subject since my school days (S10).

S10's comments illustrate that the educational background of students' families can play an important role in ensuring, or hindering, educational success. However, he still encountered a number of challenges with engineering-related technical terms and their pronunciation, developing the habit of using an e-dictionary as a coping strategy to deal with these problems and continued to rely on his father's assistance when necessary. Moreover, S10 even used to offer help to his friends with their own assignments and projects. Unlike other students, S10 described his previous learning experience as pleasant, probably partly because he liked the language very much and partly because he was successful in acquiring it.

S10 was not the only student to have had a pleasant learning experience; S4 states that:

I started studying English since grade 4 and I studied the basic grammar rules and structure and after that I started speaking English since my early schooling with my friends and teacher. After completing my secondary school, I joined this college of technology and I did not study foundation. I sat for a placement test and I managed to get score and I was placed on the first year of my computer engineering degree and I started studying the post-foundation courses and they have helped me a lot with my speciality (S4).

This student claimed that his previous learning experience had been positive, as he had already been using English with his teachers and friends in school. In fact, he believed that his exposure to English had been a contributing factor, explaining why he had not encountered serious language-related difficulties in his engineering programme. After all, he had scored highly on the placement test and was exempted from the foundation English courses and went straight to his

degree programme. Furthermore, it appears that his post-foundation courses had positively impacted his performance in the engineering major.

It may be assumed that previous successful learning experiences can play a helpful role in both the academic self-image of students and their performance in college. Moreover, it may be argued that EMI implementation at the tertiary level is impacted by students' previous experiences in learning English as well as the amount and quality of English which they were exposed to during their early education, schooling and foundation (pre-sessional) and post-foundation (in-sessional) courses.

5.2.6.1 Lack of enculturation in the disciplinary discourse

Language socialisation or enculturation theory claims that learners gain knowledge of language and the ability to participate in new discourse communities by using language appropriately. As they do this, they also gain new bodies of information, even ideologies, related to particular disciplines or fields of knowledge (Ochs, 1986). However, the different languages of instruction used in pre-tertiary and tertiary education in Oman, namely, Arabic and English, respectively, appear to have a generally negative impact upon students' ability to be enculturated and socialised in the engineering discourse community.

Judging by the interviews, this linguistic mismatch between the different levels of education seems to harm the majority of the students' academic performance and contributes to the existing language-related problems. This is in line with Vygotsky's (1978) concept of academic socialisation, which implies that students should be integrated into their academic community and its specialised discourse. Without this integration, students are at a loss as they seek to understand the knowledge being presented to them and function as fully-fledged members of their professional community. This idea was reflected in the views of an engineering teacher, who stated:

When I discuss certain topics with them ...they are not able to visualise things. The technical part, I feel that is the thing they need to improve on. I mean the way they visualise things ... they find it very difficult to visualise..., for example 'force', they understand the meaning, but it is difficult to visualise it. But in terms of technical, e.g. 'viscosity', they find it very difficult to grasp because they are not fully immersed in the engineering terms and concepts. For example ... they find it very difficult to define. So generally they look for only a one-word meaning, one word rather than the whole concept (ET 2).

In other words, students lacked academic enculturation into their disciplinary discourse. As a result, they had difficulties understanding what their teachers were saying during lectures as they could not visualise and place technical concepts. Such lack of academic socialisation and enculturation can easily present a challenge for students in their English-medium programmes, which is what S9 clearly revealed:

Technical terms and concepts are difficult to understand, then even if I looked up the dictionary definitions I would find them difficult to understand (S9).

Additionally, the radical transition from Arabic-medium schools to English-medium colleges seems to be a significant factor in their language-related problems and difficulties. An EAP teacher suggested that for EMI in colleges to stop being an obstacle to students' full academic development, the students should be gradually enculturated into their disciplinary content during the pre-college phase:

We need to adopt an approach like the American programme in the secondary schools, where students study maths and IT and science in English. This will make them familiar with the science genre and register (EAP T3).

Although there are countries which tried out this strategy and are going back to their L1, some educators in Oman, one of whom is EAP T3, believe that to help students to succeed in their speciality, school subjects such as maths, IT or science should be taught in English, at least in secondary education.

5.2.6.2 Inadequacy of foundation and post-foundation course materials

Students reportedly appreciated the impact and significance of their foundation and non-foundation programmes in their engineering studies.

Indeed, the foundation programmes were viewed as important for their engineering study:

I think the post-foundation courses have been useful for me and particularly in developing my speaking skills. The public-speaking course was a great opportunity for me to speak and argue with my friends in English. I like the course and teacher very much. Without this course our spoken English would be in trouble. Besides, the course has helped me with my writing and I managed to learn many things in writing and how to compose and write academically. The post-foundation course offers us the opportunity to study general English because the kind of English we study in our engineering lectures is highly technical and it is not really useful for our

communication and everyday life. But the post-foundation course should be kept in for at least two years to help us practice in English in a friendly environment (S9).

Some of the engineering students viewed the post-foundation courses as useful for them despite their drawbacks and shortcomings. For example, the public-speaking course was perceived as useful and it was believed to have helped them to improve their oral communication and speaking skills. Additionally, technical writing courses were also of great value for improving their academic writing quality. The students sensed that there are marked differences between General English, English for Academic Purposes and English for Special Purposes.

The post-foundation has been a great help for me in terms of reading, writing, speaking and listening. Technical writing courses, technical communication and public speaking have been useful, and they helped us a lot with our English. The problem is that post-foundation English and the specialities are not linked together. We were expecting that the post-foundation would lay the foundations by equipping engineering students with all necessary terms and skills that they would need in their degrees (S7).

Although students perceived English components of their post-foundation programme as useful, they still pointed out that there was no perceivable link between post-foundation English courses and their specialities. They believed that post-foundation courses should cater for engineering students' study and learning needs within their specialisations. It seems that the gap between the two aspects of the programmes is too wide, and that there is a lack of appropriate cooperation and collaboration between the EAP teachers and engineering teachers.

While students agreed on the importance of their post-foundation courses, they highlighted some of their shortcomings and inadequacies:

The post-foundation deals with general terms and English which you would hardly encounter during your degree. Reading texts and listening scripts are mostly general and they deal with some technical issues but not engineering-related issues. I think the best way to help students to be familiar with engineering texts and terms is by introducing them during the foundation and post-foundation levels and this would help them a lot. Additionally, teachers should ask students to choose their presentation topics from themes related to engineering rather than general topics. Public-speaking topics also should be engineering oriented topics and shouldn't be general. Relevant illustrations, diagrams, and pictures should be used to support presentations (S7).

Students also emphasised that the general foundation courses deal with general terms which were not discipline-specific and/or dealing with engineering-related issues. They believed that introducing the key terms in their speciality would help them to better cope with their majors. Students also suggested that they should be given the freedom to choose the topics for their presentations rather than having topics assigned to them by their teachers. Further, the topics for their public-speaking courses should be engineering-related, and they should be general as this would definitely familiarise them with their engineering register and discourse.

Here is how students further described their post-foundation courses:

Some of the post-foundation courses have been helpful, particularly the public-speaking course, which has fostered our confidence and enabled us to speak English freely. Technical communication is useful somehow, but it needs to be improved and developed to meet our real study needs. The technical writing courses are not really useful because they are similar to the foundation writing courses (S6).

Indeed, the Public- Speaking course was perceived positively by students. However, they believed that the Technical Communication course needed to be geared towards the speciality to meet the students' learning and study needs. Another student made these points:

Well... the post-foundation courses are Technical Writing I, Technical Writing II, Technical Communication, and Public Speaking. I believe that the Public-Speaking course has really helped us with our speciality and how to communicate with other students and our teachers. But, Technical Writing courses are not really different from what we had studied during our foundation. But I feel these courses need to be modified and improved to cater for students' study and learning needs (S2).

Most of the students agreed that the Public-Speaking course had enabled them to communicate in English with their classmates and teachers. However, they also perceived their Technical Writing courses as repetitive, and similar in terms of content to their Foundation Writing courses. They believed that these courses needed to be reviewed to meet their study and learning needs.

5.2.6.3 Lack of communication between EAP teachers and engineering instructors

The teaching of EAP has traditionally been viewed as the sole responsibility of the EAP teachers. However, it seems there is a shift in responsibility due to the recognition of the role of

subject teachers as ‘insiders’ and informants in the teaching learning process (Pawn and Ortloff, 2011).

The students interviewed for this research were of the view that there was no formal contact between the EAP and subject teachers in discussing English language materials and the language-related problems encountered by students in their engineering classes. Collaboration between academic content teachers and EAP teachers is of vital importance as this could help to identify genres relevant to the discipline and ways to help prevent and minimise students’ language-related problems.

Although a complete lack of communication and cooperation between EAP teachers and engineering tutors would be indefensible in an English-medium context, it seems that this sustained and meaningful cooperation rarely exists, one EAP tutor stated that:

Unfortunately I would say there is no communication or cooperation. Last semester, I think one year ago I taught Technical Writing, and I found a lot of engineering terms, engineering stuff there. And I felt like I would need to sit with engineering teachers in the department to see which of these are really important for our students and which are not. But because of the pressure at that time, we didn’t have time to do that (EAP T3).

Clearly, there was little or no formal communication between EAP teachers and engineering tutors at any level. Cooperation, collaboration and team teaching (Dudley-Evans and St John, 1998) are way in which the two sides can deliver their courses in a more effective way and help students to better understand their content courses. Moreover, such approaches can inform the provision of EAP/ ESP in the foundation and post-foundation levels. This lack of cooperation might be due to the absence of a mechanism for carrying out cooperation as both content and EAP teachers were busy and they did not have time to talk to teach other or communicate their students’ language-related problems to their colleagues in the English Language Centre.

An engineering teacher confirmed this predicament:

We don’t have any interaction with the English Language Centre, or their teachers. Because most of the students start study of the core subjects in their first-year level, they come, they take their class, and then, they go out. So, we don’t have any sort of interactive meetings, cooperation or communication with them [English Language Centre] or anything of that sort (Eng. T4).

Other engineering teachers were of the view that there was no formal communication, interaction or meetings with the EAP teachers. This lack of cooperation and collaboration could be attributed to their demanding schedule and their busyness with their teaching and other college activities. Many believed that the college should establish a formal mechanism where content

teachers and EAP teachers could cooperate and collaborate with each other for the benefit of the students and the college in general.

5.2.6.4 Lack of EMI training offered to engineering instructors

The importance of training being offered to engineering teachers on how to teach through the medium of English emerged as a recurrent theme. Engineering teachers emphasised the importance of training them how to teach engineering through EMI. In an Omani EMI environment, many students are challenged, both in terms of language and content, as both represent very significant cognitive demands. Training for engineering lecturers can include what Young et al. (1995) cited in Fisher and Webb (2006, p. 343), called dimensions for the training needs of the 'lecturer of the future'. These were: *curriculum knowledge*, *learner-centred pedagogic knowledge*, *inter-professional knowledge*, *organisational knowledge* and *connective knowledge*. Training on these dimensions would enable the engineering lecturers to best deliver their EMI lectures and enable learning.

However, it is not only students that have problems. Teachers do, too, as an engineering teacher stated:

English is not my mother tongue, but my English is good as I had schooling and tertiary education in English. However, I feel I am not trained enough on how to teach content through English. I really need pedagogical training on the approaches of how to teach engineering (Eng. T5).

Similarly, another engineering teacher added:

...of course we do need training on EMI methodology and approaches because knowing the content and English is not enough. Training would be useful for us as the successful delivery of content may be influenced by language competency of the content instructor and his teaching approaches, strategies and techniques (Eng. T3).

Evidence accumulated through this study clearly indicates that teachers need training on how to teach engineering through the medium of English to students whose command of English is mostly deficient. In short, the successful implementation of EMI requires not only adequate education and training on the part of the students but also high quality professional development opportunities for the teachers. While students must be proficient in the specific type of English which is required in their discipline, teachers must not only be proficient in their use of English but also in their teaching through English. In other words, EMI policies need to be designed,

articulated and implemented with the awareness that there are complex dynamics involving general language proficiency, as well as domain-specific vocabulary, syntax, and oral and written conventions. In the case of teachers, academic disciplinary literacy (Airey, 2009), i.e. *English for Engineering*, is not enough; *English for teaching, coaching and advising* must also be acquired. The following chapter will be centred on the analysis of the impact of EMI on Omani engineering students and the coping strategies that they employed to handle their EMI related challenges and difficulties.

Chapter 6: The Impact of EMI on Omani Engineering Students and Coping Strategies

6.1 Introduction

This chapter explores the ways in which Omani engineering students perceived the impact of EMI on their studies. It also looks into the coping strategies whereby they negotiated the challenges inherent in studying through the medium of English. In fact, both the students and their teachers utilised a number of coping strategies to overcome EMI-related problems and difficulties. The data analysis and interpretative section are presented according to the emergent themes and a priori themes. The identification of themes offers insights into understanding Omani students' learning experiences through the medium of English and presenting the participants' stories in relation to their challenges and difficulties in college. These experiences are categorised and presented here on the basis of the themes according to themes rather than through ascription to the individuals to which they relate.

6.2 Potential impact of EMI on students and their studies

It is clear that EMI can potentially impact students' learning experiences and their studies both positively and negatively. It may well be a positive factor in improving their English language proficiency while, at the same time, it may be a source of hindrance in relation to their acquisition of subject-related knowledge and skills for them. Based on the data collected, this section will consider the impact and consequences of EMI on students' academic performance and studies. Generally speaking, students attributed several of their negative results to the mandatory implementation of EMI in the colleges of technology. A student stated:

Studying through the medium of English had a negative impact on my study. I need to spend much time with my English rather than concentrating on my content courses. English has taken much of our valuable time. Further, I find it difficult to understand exams because of the kind of technical words and instructions used and this could impact my marks and academic performance. Because of English I need to spend much time practising for my presentations instead of focusing on core subjects. In addition, I need to spend time on researching and looking up meanings of new words and finding the technical meanings. I have difficulties in understanding and comprehending engineering lectures because of the level of my English. Also I need to have much time to prepare and write my assignments to meet the deadlines. All these

could be considered as challenges which have great impact on my degree and academic performance as well (S5).

The quote above clearly illustrates that S5 considers mandatory EMI as a waste of time and cause of poorer content learning. Time which could have gone into studying content was used to learn English. In other words, the end, including examination performance, suffered because of the medium. This would have a negative impact on his academic performance and his grade average point (GP), which is increasingly used by major international oil and gas companies as a criterion for recruiting engineers. Also, he believed that the English language was a barrier for him to understand engineering terms and the associated register. Additionally, the interviewee had problems with written assignments and speaking tasks. S5 found it was difficult to understand what his engineering teachers were saying during lectures and classes, generally struggled and spent a disproportionate amount of time preparing his presentations.

Teachers had their own coping strategies to get around EMI, as one of them explained:

For example, if there are a few spelling mistakes in their reports, I will just overlook them because for me, yes, I am not here to teach them English (Eng. T3).

The quote above suggests that engineering teachers like Eng. T3 had their own understanding of the challenges presented to their students by mandatory EMI. In some instances, it is likely that they weigh up the possible courses of action and decide that in the case of content courses, students should not be penalised because of the language mistakes, especially not due to spelling mistakes. It may be deduced that primacy was given to content; in other words, as long as students' reports were clear, on target and understandable to the reader, they were found acceptable. Clearly, some engineering teachers believe that their job is not to teach English, and their informal individual assessment criteria may take this into account.

On the other hand, a student added:

Of course EMI has had negative impact on my study but at the same time it enabled me to know my strengths and weaknesses in English in particular. My problem with English writing has impacted my assignments, projects, essays and exams (S5).

However, some of the students reported that the use of English as the medium of instruction was useful for them and helped them to improve their proficiency and develop their competency.

I had difficulties with reading, writing and speaking as well but things have begun to improve drastically [after joining the degree programme]. As all subjects in the college are in English and this has helped me to improve my English (S6).

These comments contradict the arguments raised by the majority of the students who participated in this study, and usefully serve to illustrate the complex individual perspectives which arise from the unique circumstances of each student.

6.3 Omani engineering students' EMI coping strategies

The Omani engineering students participating in this study utilised a number of coping strategies to handle their EMI language-related challenges and difficulties. The issue of coping strategies appeared as a recurrent theme in both the interviews and observational data analysis. Some of these strategies appeared to be more effective and widely used than others. This section presents Omani students' coping strategies which are divided into: use of mother tongue as a compensatory strategy; use of translation dictionaries and technology; in-class task-related strategies; the use of social support from peers, groups and family members; use of personal strategies and lecture comprehension-related coping strategies.

6.3.1 Using the mother tongue (Arabic) as a compensatory strategy

Students frequently used Arabic, their mother tongue, as a compensatory strategy to avoid communication problems and breakdowns when they asked and answered questions. Some of the students referred explicitly to their use of Arabic or translanguaging, in their engineering classes. This was also noticed during observations where students were interacting and discussing questions with their classmates in Arabic (see appendix, 4).

S3 thought that Arabic was useful for his study:

To some extent Arabic has helped me. If I haven't understood anything or a point I can ask my friend to explain to me in Arabic. If I were asked to study engineering in English or Arabic I would go for English because if I study in Arabic I wouldn't find a job to secure my future.

Some engineering professors are Arabic speakers and they can simplify things and say them in Arabic and we have found that much more useful and beneficial for us. Some of my friends use Arabic to explain the new instructions and machines' manuals to us. Friends use Arabic to write their assignments and then translate them into English using translation technology (S3).

S3 realised that the Arabic-speaking engineering professors were using Arabic to mediate learning and to explain things which the students could not understand in English. In cases like this, translanguaging can promote a deeper understanding of the subject matter (Baker, 2006). In addition to using Arabic as a useful coping strategy, students also relied on peer support as another coping strategy. Using Google Translate was yet another coping strategy whereby the students translated English engineering texts which were required for their assignments and projects into Arabic.

Other engineering students identified holding the same view of additional roles of Arabic in their engineering classes as a compensatory coping strategy:

It has several roles to play in the classroom and outside. People learn better when they are instructed in their mother tongue and several countries, such as Japan and China, have been using their local languages as medium of instructions and they have been developing in education, technology, industry, etc. Arabic should be used even as an auxiliary language beside English to help students to understand the content. I usually use Arabic along with English to discuss content with my classmates and argue with them. On some occasions, we mix Arabic and English when we study in groups. We use Arabic when we study for our exam and write our assignments and projects. Sometimes we write everything in Arabic and then we use machine translation to translate it into English. Arabic was really helpful for us (S4).

Translanguaging interactions were plain to see and regularly evident during classroom observations as student carried out their engineering-related tasks. Another of the interviewees stated:

My mother tongue has played many positive roles such as in mathematical calculations. Moreover, some teachers use Arabic to explain difficult concepts and problems which relate to engineering. We use Arabic with each other to discuss problems and how to solve them. We use Arabic to give examples from real life to explain things and relate them to our everyday life (S5).

Another student highlighted the wide use of Arabic among students both on campus and in their hostels and its role in engineering education:

Arabic is widely spoken across the campus and in the hostel as well. We use Arabic to discuss technical things in some cases instead of English because it is our mother tongue and it helps us sometimes to comprehend abstract things and concepts in a better way. We sometimes translate the whole handout to understand it in a better way. Arabic-speaking teachers are more likely to digress to Arabic to explain complicated things to us. Moreover they give examples from reality to explain or demonstrate things for us. The equivalent of certain technical words is given in Arabic and then just remembered as we studied it during our school days. Arabic has helped us in studying not only engineering but also studying English language as well (S7).

Some of the students showed that they had actually thought about EMI and its role and necessity. On the other hand, there were those who were against EMI. They repeatedly stressed the importance of studying engineering through the medium of their mother tongue (Arabic).

I think the engineering should be taught in Arabic and there should be an English course taught along with the degree to help to communicate with companies (S6).

One of the students interviewed, however, favoured the opposite view with regards to the use of Arabic in engineering classes:

I am against the idea of using Arabic as a medium of instruction for several reasons: first, if you work for big companies then you will be sent for courses and training abroad, so how would you cope with courses because they will definitely be run in English... Second, the vast majority of engineering textbooks, references and machine manuals are in English. Third, high proficiency in English is one of the requirements in joining big companies in Oman such as PDO, OXY, Schlumberger, etc. I did not use Arabic to cope with engineering difficulties though. I sometimes find it difficult to understand some of the exam questions. I try to read the questions several times and sometimes I asked the teachers about some of the key words in the exams (S1).

S1 and a quarter of the participants illustrated the stance against the use of Arabic as a medium of instruction in engineering education in Oman.

The above cases demonstrate the importance and significance of the students' mother tongue, Arabic, in their engineering study. It is not always possible for students to use only English to study or to cope with their engineering tasks and this can give rise to a range of conflicting perspectives as well as, perhaps, some inner conflicts. However, the majority of the

participants interviewed, 7 out of 12, were firmly in favour of studying through English; 4 out of 12 were committed to it; and 2 were ambivalent.

6.3.2 Using translation, dictionaries and the internet

The Omani engineering students participating in this study utilised a variety of coping strategies during the course of their engineering course. These strategies were shaped by the type of task and activities required by the engineering classes. However, they reported that they used Arabic translation, bilingual dictionaries and websites to cope with EMI-related challenges and difficulties. One student pointed out:

Arabic has helped us in knowing difficult concepts and terms. I usually used research engines and Google translators to find out meanings of new terms and concepts. Some teachers use Arabic to help us to write such assignments and they translate them into English using technology. Lack of exposure to terms was a problem for us but Arabic has helped us a lot to know new terms and concepts. Sometimes the content is easy but the language used is very difficult so Arabic could help us complete assignments without clear guidelines and rubrics, and we use it with regard to that issue. However, the translation process of the technical terms and concepts is time consuming. We chat together with our classmates in Arabic to discuss things related to lectures before we go to the classroom or ask questions to our teachers and professors (S8).

The interview extract above further highlights the role of the mother tongue (Arabic) as one of the most prominent coping strategies used by students to handle their EMI challenges and difficulties. Points such as those made here were frequently repeated and make clear that recourse to Arabic was made within a range of contexts in order to clarify thinking. Teachers were clearly aware of this, and Arabic-speaking tutors were particularly valued because of their capacity to directly engage with their students in their mother tongue.

The use of Arabic was a prominent coping strategy used by students to handle their EMI-related challenges and difficulties. Students stated that they frequently used Google Translate for finding out meanings and writing their assignments and projects. Additionally, Arabic helped them to discuss and revise concepts and technical terms with colleagues before their classes. Moreover, they used Arabic in some cases to ask questions and seek clarification from their Arabic-speaking professors.

S6 stated that:

Yes, our mother tongue was a great help for us in translation and interpreting technical terms and concepts. I use dictionaries to help me translate technical words into Arabic. Most of our engineering studies and courses related to physics and therefore I had to know all the physics-related terms in Arabic. The teacher was an Arabic speaker and I used to understand and comprehend 97% of the lectures (S6).

S10's interview revealed that bilingual dictionaries were a great help for them:

For technical terms I used to seek help from my father, consult [bilingual] dictionaries and use technology to find out about their meanings and pronunciations. They have been helpful for me. Some of friends and classmates have been helpful in group discussions and presentations (S10).

An engineering teacher confirmed that students sometimes used their mobile dictionaries to find out meanings of technical words and concepts during their classes:

Sometimes you would be surprised that they don't know the very basic words, which I think they should have. I just don't know what the structure of their high school curriculum is. It should have been discussed way, way back. When students encounter one word that's not familiar to them they just did they take their phone, punch the word in and know what the meaning of that word is (Eng. T4).

Bilingual mobile dictionaries seem to have been frequently used as a compensatory strategy to help students cope with their discipline-specific terms and concepts. In fact, both the parties' students and the teachers were aware of the importance of using bilingual dictionaries in their engineering studies.

6.3.3 Usage of peer, group and family support

Students spoke about their use of peer, group and family support as significant coping strategies in their engineering studies. This was clearly indicated by one of the interviewees:

I sometimes seek help from teachers and friends. Moreover, family members who are educated can help in this regard. I talk to my friends in Arabic and they explain everything in Arabic and this has been really helpful for me. Going to a teacher during office hours and asking them to repeat what they have taught is another useful coping strategy (S8).

This social support was considered as an effective coping strategy for this particular student, though not all would have similar cultural capital within their family network. Observational data revealed that students were utilising various cooperative learning methods to help and support each other in their engineering classes.

One student stated:

I usually seek help from my elder brother who is an engineer. Additionally, my friends and classmates help me to understand things which are not clear enough for me. I sometimes ask my teachers for further help and explanation (S5).

He had access to friends and family members who were able to help him with assignments and projects. In fact, he considered this support network an effective way to cope with his study.

Other students stated:

As for assignments, I usually seek help from friends and teachers, and they have been helpful for me. My brother is a civil engineer and he sometimes helps me with my projects and assignments (S3).

I used to go to my uncle to chat with him in English and he has been helping me with my English and assignments too. I personally believe that nothing is easy in life and there is no gain without pain (S6).

It hasn't been easy for me to overcome such challenges, as some of these were there since my schooling. My friends were a great help to me in terms of explaining difficult things for me in Arabic and simplifying equations in English. Some of them were helping me with projects and lab reports. We sometimes organise group reading and discussions and they have been helpful for me to overcome such problems. Translation technology was a great source of help for me in some cases (S7).

In some cases, students resorted to hiring an English tutor to improve their English in order to cope with their EMI-related challenges. The help of family members is usually referred to as 'mediation' in Vygotsky's terms, one of the fundamental concepts in socio-cultural theory. It highlights the role played by other significant people in the learners' lives. Mediation and

collaboration are of vital importance in the process, whereby knowledge is acquired and appropriated through interaction.

In short, the data reveals that students utilised various cooperative learning paths, many informal and outside the institutional sphere, to help and support themselves and each other in their engineering studies.

6.3.4 Opting for English tuition classes

One of the coping strategies employed by students, in addition to hiring a personal tutor, was that of attending English tuition classes.

Some students participating in this study had been involved in English courses for nine years, including full-time language instruction (not less than 15 hours a week) for one and a half years in the foundation programme. In other cases, the language deficiencies may have been made worse by ineffective instruction, inadequate curricula, demotivated or ill-prepared teachers and a scarcity of real-life and ‘push-and-pull’ factors to use correct English, etc. However, to assess the incidence of these variables would require further research into factors such as IQ, college preparedness, motivation, socio-economic background, policies, college infrastructure and facilities, funding, personal study habits, recruitment criteria, assessment methods and curriculum design. What may well be asserted is that some of the students encountered a number of language-related difficulties in their engineering study and sought help from their relatives, friends, teachers on campus, private tutors and each other. Indirectly, this indicates that their college English classes were not enough (objectively and subjectively) to help them to develop the kind of English which is needed to successfully study engineering courses in English. English tuition classes are quite common in Oman at all educational levels, however, not all students can afford them – which both creates and perpetuates educational inequality. Consequently, many students felt the need to access private tuition classes during their free time to improve their English to meet their study needs. Such students did not feel able to rely on their college English classes alone. These classes are not affordable for all students; however, some of them had the necessary financial capabilities.

Having discussed tuition classes as a coping strategy, the analysis will now move on to look at the personal coping strategies which the participants considered to be important, necessary and effective for dealing with their EMI challenges and difficulties.

6.3.5 Using personal coping strategies

The issue of the use of personal coping strategies emerged from the analysis and the data set as a salient and recurrent theme. All students emphasised the importance of their personal strategies in helping them to cope with their EMI-related problems and difficulties.

S6, a student, pointed out:

One of the most effective coping strategies which I have been using is my personal effort. I usually write a list of words and I keep repeating them all day until I internalise them (S6).

This quote illustrates that some students develop their own personal coping strategies which, incidentally, is a natural and necessary dimension of becoming an autonomous learner. In this case, the strategy meant glossaries and repeating words, concepts and terms throughout the day. Engineering students do not complete their secondary schooling knowing detailed engineering jargon. However, in the case of Omani students, the enculturation process must happen in a foreign language. And it is more difficult for Arabic-speaking Omani students to deduce the meaning of technical words, many of which are often etymologically linked to two other completely unknown languages, namely Greek and Latin.

In the same vein, a student reported:

We usually use many strategies to cope with such language difficulties. I do some reading and revision of the materials given before my class. We asked senior students to help us. I personally approach other teachers to help me understand the point. I used Google translator to translate the texts or instructions into Arabic and then I can understand them in a better way (S8).

The fact that some of the students are doing this shows that they are (gradually) taking charge of their own learning.

Another student who used personal coping strategies to handle his EMI language-related difficulties stated:

For technical terms I used to seek help from my father, consult dictionaries and use technology to find out about their meanings and pronunciations. They have been helpful for me. Some friends and classmates have been helpful in group discussions and presentations (S10).

S8, a student, added:

I used many strategies to overcome my writing problems. I kept writing many drafts and submit them to my teachers to get feedback. After that I rewrite the draft and now I feel my writing is far better than before. I sometimes feel that I don't have enough ideas while writing and I think that academic writing is boring and difficult. I find it difficult to construct a sound argument which can be supported by evidence and examples. Moreover, I feel writing is time-consuming. During exams I write a lot to express myself clearly for simple things which could be expressed in simple sentences. Seeking help from friends and classmates has been a common strategy. I think the 'over-writing' [writing at length, including several drafts] strategy has been the most effective strategy which has helped me to deal with writing problems. Repetition has been an effective strategy to help us to deal with my writing problems (S8).

The above interview extract illustrates yet another coping strategy which is a study that students normally develop on their own. S8 was in the habit of writing drafts and submitting them to his teachers, and then reflecting upon their feedback. In this way, the student sought to improve his writing. He did this even though he personally found academic writing difficult, boring and time consuming. For exams, he would over-write a simple thing and use simple sentences to make his arguments clear. It seems that writing essays over and over again worked for him, too. This suggests that rewriting is important for mastering writing, and students could learn (and be encouraged) to write effectively by rewriting good and useful texts.

S9 also revealed that he combined two of the above-mentioned strategies: rewriting and making glossaries:

For my writing, I am working hard on it by rewriting and getting comments and feedback from my teachers but the spelling problem is still there. For technical terms and vocabulary, I developed my own technical terms glossary and it has been helpful for me (S9).

To sum up, the students' responses demonstrated that Omani EMI engineering students use a variety of personal strategies to overcome their EMI-related problems. They use these strategies to manage their challenges and cope with their study needs and requirements. Although their collaboration and interaction with their classmates, teachers and family members in a shared practice was significant for their learning, they still developed their own personal coping strategies to handle their EMI language-related difficulties. This suggests that

it was not enough for them to depend on others to help with their study difficulties; they also needed to proactively and creatively develop personal coping that worked for them.

6.3.6 Lecture comprehension-related coping strategies

Lecture comprehension-related challenges were prominent amongst those encountered by interviewed students in their English-medium engineering classes. These problems included coping with the lecturers' speed of delivery, taking notes, participating in classroom discussions, asking questions, seeking clarifications and carrying out in-class-related tasks. One student remarked that:

There are a couple of strategies that we used to deal with such challenges. For the speed of delivery, we sometimes interrupt the instructor and we ask him or her to slow down and repeat the topic or point. We sometimes talk to each other in Arabic and explain the topic to our friends in Arabic. Additionally, we ask the instructors to simplify their language and give examples from real life to make their point clear for us (S2).

All these strategies were apparent during the classroom observations and they were confirmed by another student:

I sometimes have difficulties in taking notes while the lecturers are speaking because of the kind of language they use and the speed of their delivery. I don't have serious problems with the practical parts but my problem is usually with theories and how to put them into practice. We usually work in groups in the practical part and we help each other to do the task. Our teachers often give examples from real life that would usually help us to understand in a better way. I have difficulty in understanding lectures from 2-4pm because they are a bit boring (S7).

For this interviewee, the biggest problems during lectures had to do with understanding theoretical explanations. The practical parts of lectures or lab sessions are arguably easier to follow as the students see what the instructor does. Theories must be visualised and, in most cases, students must do that by understanding words and grasping the logical connection being made between them.

In contrast, an engineering teacher stated that he simplified concepts and repeated things, and used facial expressions and gestures during lectures to facilitate comprehension. He would also

ask his students to go through the materials of forthcoming lectures beforehand to be better prepared for explanation later on.

...we ask them to go through the course material, the lectures thoroughly and prepare themselves well, then, they can somehow cope with this problem, certainly to a large extent; they cope with the problem. I deal with that [lecture comprehension difficulties] first of all, I become simple in my explanations. I make use of the easiest words, simplify things, and just make it as simplified as possible first of all. Then the second thing I do is repetition. You know, I can read the faces while I'm delivering a lecture, so I can read that whatever I have said needs to be delivered again and again (Eng. T3).

It can be seen that teachers used a number of communication strategies because they were aware of their students' EMI-related difficulties and problems.

The data for this chapter was collected through interviews and classroom observation, and the review of documents collected from three groups of participants. This chapter presented and described the results of the data collection and sought to illustrate key aspects of the impact which EMI had on the learning experiences and studies of this study's target groups as well as the coping strategies which these students used to overcome their EMI-related difficulties. The next chapter will be devoted to analysis of the students' own perceptions of the extent to which they possess the necessary skills and attributes to successfully complete their English-medium programme, as well as subsequently find a job in the engineering sector.

Chapter 7: Omani Engineering Students' Perceptions of EMI and the Skills and Attributes Required in their EMI Classes and Future Career

7.1 Introduction

This chapter has a twofold goal. On the one hand, it considers the views and perceptions of Omani engineering students in relation to the use of English as medium of instruction in their engineering degree programme. On the other hand, it investigates the students' views of the skills and attributes which are necessary to succeed in their engineering classes as well as in their future employment.

7.2 Students' perceptions of English as a means for international communication

Although four of the students would have preferred Arabic as the language of instruction, others clearly perceived EMI as a positive experience for them. In fact, S1 stated:

I believe that English has become the international language and you need it to communicate with the outside world. Also, I think the use of English as a medium of instruction is good for our future. If we go out of the country doing any business dealing and interacting with engineers from other countries it should be done in English. So English is the lingua franca and success in jobs, training and business is heavily linked to mastering English (S1).

This extract illustrates that at least some students were aware of the importance of English as the world's lingua franca. Furthermore, they can also link it to their future employment and everyday business. Although, as the passage reveals, this particular student has problems with English as code (or 'langue'), he still recognised that it is an important language (as 'parole') which will be needed if he has to do business overseas or work for international companies. Students frequently do actually acknowledge the need to learn English well enough to use it in real life every day and professional situations. Furthermore, the passage above indicates that this student understands that success in the engineering sector in Oman (e.g. in oil refineries) is, at least partially, linked to their mastery of English. In fact, there are companies that require IELTS band 5 as a requirement for accepting a candidate's job application.

On the other hand, other students pleaded for bilingual—i.e. both English and Arabic—education. In other words, they acknowledged the significance of English in the globalised world and their

need to be fluent in it, but they also believed that their L1 should play an active role in their education.

Both English and Arabic should be used within the degree and students could choose the language-medium that they liked, but still English is important and it would need to be given special care in the case of an Arabic-medium programme to help students to read and write in English effectively. Engineering teachers who are bilingual, who speak Arabic and English, should be given the priority because they understand their students in a better way, and they can explain in Arabic things which are difficult to be explained in English. General English or everyday English is something really important for students as well as technical English. It should be taught regularly across the degree to help engineering graduates to be good communicators (S4).

This passage points to both bilingual education and translanguaging in engineering classes at government colleges. Some students are of the opinion that they should be given the option to enrol in parallel English and Arabic programmes in keeping with their capability and needs. In fact, the interviews revealed that students are not, in principle, against EMI; what they oppose is its current quasi-universal, centralised implementation at the cost of the quality of the programmes and the students' own success in college (which, they fear, could easily endanger their chances in the labour market later on).

The students generally indicated that they would prefer bilingual lecturers who can teach in both languages, and at least can translanguage the course contents to facilitate students' comprehension. This was reinforced by a student, who stated:

The use of English as a medium of instruction in my engineering degree is good if the students and teachers are well trained and ready for English to be used. English should be used because it is an international language and it is important for our future but decision-makers need to make sure that both students and teachers are ready for this challenge (S5).

Arguably, this student's perception is in line with Martin-Beltran (2014), who views translanguaging as a mediational tool to create and expand zones and opportunities for learning not only technical English, but also general English. Engineering students need both to be able to study in English and to communicate in this medium in work-related situations (e.g. with non-Omani colleges, including writing emails and field reports).

Some of the EAP faculty also favoured the suggestion of introducing bilingual engineering programmes. One of them articulated this view as follows:

I mean, why not have a bilingual system? You see, if we see that very often the problem is understanding concepts, why not have a, a system that scaffolds, that props itself up, you know? For example, okay, they have to read and study in English. Why not have workshops in Arabic? Because if you understand what you're talking about, at the... at least at the beginning level, you know? At the beginner's level, once you understand things in your own language, once they click, it'll be a lot easier to understand them in English. The language will be... English, French, German, any language, because you already know how it works. I really don't understand why they don't receive support in Arabic. And, in a medium where Arabic and English interact very fluidly, yes, kind of like you use English, English texts, you speak Arabic, you use Arabic texts, you use English. For instance, I would like to have more tests whereby they read Arabic texts and then they convey what's in the text, college texts. They read in Arabic, they convey it in Arabic, and then a similar task in English, and I'm sure that what they write in Arabic will not be so much better than what they write in English, in terms of understanding (EAP T5).

This lengthy quotation suggests that EAP teachers are aware of the problems that EMI causes. They do not wish to defend quasi-universal EMI regardless of what it does to the students. Moreover, given the international character of the engineering labour market in Oman, they would still like to allow English language education and education in English to play a role, but they do not think that Arabic should be turned into a pariah in education in an Arabic-speaking country like Oman. Hence, both teachers and students seemed to be pointing in the direction of a flexible bilingual system.

Students were aware that an EMI college setting requires lecturers and instructors to have learned to teach in English. In other words, EMI teachers need to be trained in how to deliver their lectures and conduct lab sessions effectively in the English medium.

On the other hand, the students themselves need to be prepared linguistically and academically to function in an *engineering* English-medium classroom. As one of the teachers indicated, English is not only important for succeeding in graduate programmes, but also for any other post-graduate degree which the students might wish to pursue in future.

I think they should know English I think it will be very useful for them in future if they are going to do an MSc, or if they are going to do their PhD. All the terminologies and reference books are in English, or you can say most of them. So, it will be very easy for them to, to deal with the books and with writing their thesis or their dissertation during their masters or PhD (Eng. 1).

For Omani engineers to be on a par with other engineers world-wide, they must be able to function satisfactorily in English. Moreover, as stated above, the Omani engineering sector functions mostly in English, and English directly influences students' future employability.

7.2.1 Students' perceptions of EMI as scaffolding language proficiency

The data collected revealed that the interviewees felt that EMI had a significant impact on their language proficiency and competency. They considered themselves as empowered by the engineering classes delivered through the medium of English. A student explained:

Using English as the medium of teaching is a challenge for us, but it has helped us to learn new terms and concepts and improve our language skills (S7).

Students considered EMI as an important opportunity for them to maximise their exposure to English and to improve their literacy skills despite the challenges which EMI represented for them. Engineering courses in English had exposed the students to the engineering register, as well as to technical terms and concepts which were, in the main, new to them. Accordingly, the students believed that their English academic literacy had improved as a result of the EMI policy.

Another student added:

My engineering teachers help me with my English and they sometimes correct my grammar mistakes in my reports and projects. I use English to communicate with them and this has made me feel confident when I speak English. My speaking, writing and reading skills have improved (S8).

This student clearly appreciated the impact of EMI on his English proficiency. Additionally, this extract illustrates, on the one hand, what an important role non-language content teachers can play in ensuring the success of EMI when they are able to coach the students, not only in the area of engineering, but also occasionally in English. On the other hand, this also shows that although most engineering teachers that were interviewed believed that their job was to teach subject content, some of them still helped their students with their language problems.

In summary, although there were English foundation classes which were offered pre-sessionally and in-sessionally, EMI classes were of great value to students because they enhanced their

language proficiency and competency. Moreover, the interviews indicated that developing students' language abilities should be a shared responsibility between language and content teachers. However, in order to do that in a systemic fashion, there must be cooperation and collaboration between the teaching staff across subjects and programmes.

7.3 Omani engineering students' perceptions of skills and attributes needed for EMI classes and employment

As in all disciplines, so too in engineering; there are certain core skills and attributes which students must acquire to succeed in their study programmes and future career. However, in this study the focus is not on the ideal skills and attributes, but on what the students think those skills and attributes are.

It was noticeable that all those who participated in this study deemed transferable skills and attributes (such as communication, writing, critical thinking, problem solving and numeracy skills) to be important for their study and potential jobs. This can be interpreted as being the result of their realisation that these skills had been important and useful to them, that they now assumed that this would also be the case in relation to their careers.

7.3.1 Perceived skills and attributes

During the interviews, all the participants in the study, both students and teachers, believed that there are certain academic skills and attributes which are key to succeeding in their engineering programme and their future workplace. Noticeably, they viewed communication skills as one of the most important skills for engineers. In addition, among the essential skills for would-be engineers, they mentioned writing, critical thinking, numeracy, team spirit, and organisational and planning skills.

7.3.2 Oral communication skills

The participants unanimously agreed that developing communication skills was of paramount importance for engineering students. S7 succinctly articulated this view as follows.

To succeed in your job as an engineer, you need to have good communication skills. You need to have teamwork and critical skills. Moreover, you need to be a good team player and have good command of skills such writing, reading, speaking and listening. Additionally problem-solving skills are necessary for all engineers to carry out their jobs successfully (S7).

The students believed that in order to succeed in their job as engineers, they would need to have a good command of both spoken and written communication skills in English, for in Omani companies, especially refineries, English functions as the lingua franca as employees need to communicate with people from diverse linguistic backgrounds.

One of the teachers mentioned the need to consider the pragmatic dimension of English. In other words, English is not merely a code made up of grammar, spelling and punctuation rules, but also a living reality made up of language acts capable of fostering and maintaining, as well as thwarting and damaging, relationships.

[Students]... need some kind of communication skills. It seems that they lack these skills actually. I can see it from the way they deal with their teachers, interact among, you know, the interaction among, among themselves, even. It's very obvious that they lack something which is really important for their study and their future job (EAP T2).

Teachers – especially those who were native English speakers – would often complain in private that Omani students are ‘very rude’. Students would sometimes say things such as “I want a pen” or “see you later alligator” when addressing a teacher. However, this directness, or seemingly inappropriately casual expression, was mostly unintentional rudeness and was generally a result of their poor knowledge of functional English and L1 interference (as Omani Arabic is more direct than English is when asking for things; the Arabic equivalent of “Could I possibly have...?” would come over as unnatural or affected language). However, it became manifest during the interviews and classroom observations that even after several English courses, students were still unaware, or did not quite believe, their teachers that English marks politeness and intimacy differently from Arabic and that appropriate Arabic expressions can be inappropriate and rude when translated literally into English.

Additionally, the interviews also revealed that the students were keenly aware that there are other skills which they should also acquire, for example:

I think communication skills are of utmost importance for today's labour market. We need to know we have job hunting and time management skills. Good communication in English can help in getting a job in big companies such as PDO and Oxy (S10).

This would suggest that skills such as these should be embedded within the curriculum due to their importance, in their foundation courses as well as parallel to their degree courses.

Additionally, the interviewees also believed that teamwork, critical thinking and basic literacy skills were equally important for their successful entry to the job market.

One of the engineering teachers shared the same view as the students.

In the employability of any good graduate, the most important things are the oral and written communication skills, time management and analytical skills. In order to get a job in an international company, you need to speak English. Yes, at the moment in the current state yes, their communication skills in English are of crucial importance because they have to communicate all around. With the inception of advanced technology in terms of, you know, fast communications, the internet is one of the biggest examples (Eng. T2).

In addition to the skills mentioned previously, this teacher underlined time management, analytical skills, the ability to keep up with advanced technology and digital literacy. Given the significance of these skills and attributes in the engineering job market, higher education institutions ought to reconsider their syllabi and explicitly focus on them in order to help their graduates meet today's job market needs and demands.

The previous interview extracts from both students and teachers clearly indicate that both groups agree that engineers in Oman must be able to freely communicate in English, both orally and in writing. Consequently, the English language components of the engineering curriculum, both in the foundation and degree programmes, cannot be seen as negligible electives. On the contrary, English courses are a necessary addition to content courses. However, students' results show that it is arguably not enough to rely on the language centres and foundation programmes to teach students all these necessary language and workability skills. Content and language teachers cannot but cooperate and collaborate on a common educational project with cognitive, metacognitive and employability dimensions.

In summary, the extent and quality of students' interactions in English with their friends, classmates and teachers were considered to be unsatisfactory, both by the students themselves and by their teachers. Although oral communication courses were offered across the foundation and post-foundation programmes, teachers' expectations of the students' oral communication abilities were not met. This suggests that foundation and post-foundation programmes need to be revisited in order to meet students' study and future workplace needs. However, accuracy in English should be envisaged in terms of global competencies, including socio-linguistic aspects of how English is used in real-life interactions, not only to communicate content, but also to

establish and qualify relationships. Additionally, the curriculum should view oral communication as including non-linguistic skills such as critical and analytical thinking. In other words, good communication acts are not only about *how* to say something, but also about *what* to say.

7.3.3 Writing skills

The previous section highlighted students' (and teachers') perceptions of the significance of being able to speak English in an engineer's life in Oman. Now, the importance of writing skills will be expanded on.

Writing in a foreign language is not easy because it entails a number of sub-skills which need to be mastered before one can write effectively and with a considerable degree of freedom and flexibility. Engineering students, to a large extent, agreed that writing in English is one of the most important skills in the engineering sector. The importance of writing skills in universities and colleges is determined by students' performance in their assignments, written exams and tests (Evans and Green, 2007). The following interview extract from one of the students shows his belief that students believe that both speaking and writing in English are important skills which Omani engineers must acquire.

I feel that speaking and writing are the most important skills in the engineering industry. Communicating in English is something that is more important today's world business. You meet people from different parts of the world and you need to do business with them. Moreover, you need to write business emails and proposals and give presentations (S1).

This student was aware that engineers regularly need to communicate in writing with people from their own companies as well as with outsiders. This view was corroborated by another student:

I think we need to be good writers and speakers in order to be successful engineers (S8).

Other students expressed a similar view.

To be a successful engineer, you need to have good communication and mathematical skills. Further, he or she needs good writing skills to write site reports, emails, memos, etc. (S3).

Engineers need to write reports and emails (S5).

These students were not wrong in assuming that companies will expect them to communicate in English via email as well as to write CVs, job application letters, memos, field reports and, depending on their position, business reports, too. This is why the College of Innovation included these items in its post-foundation English courses. However, one of the EAP teachers, while implicitly agreeing with the need to fine-tune the curriculum in relation to the students' future needs, also complained that the textbooks do not always contain real-life writing tasks or texts.

Students, for example, they have to write a CV and prepare a letter of application, and they have to fill a job application form that is pre-printed in a textbook (EAP T2).

This teacher probably meant that instead of having a mandatory textbook with templates, students could be asked to search for jobs and use the actual templates that companies in Oman are using. Such a course of action would certainly be realistic; however, it would also require that the necessary logistics be in place (e.g. sizeable labs with computers and uninterrupted access to the internet).

As for lab report writing, an engineering teacher highlighted some of the challenges which students are faced with.

As you know they are not good at report writing. If you see their writings, particularly lab reports, they are not okay. We'll be teaching them before starting the experiment, and we'll be explaining to them what is the objective of the experiment, what they are going to do, what the details of the mission, okay? And there is a part in the report that they write in their own words. Everyone will write IN their own English. It is okay but many students they will just copy. They are lazy in thinking and writing (Eng. T3).

After each experiment, students were supposed to write a report based on the instructions and procedures assigned by their teachers. However, it seemed that some of them just copied from each other rather than write their own texts. Privately, Omani teachers were aware that this infelicitous practice went back to secondary school or, as one of them put it, "the students have eight years of experience of having someone else doing their homework, either partially or fully".

Another EAP teacher was critical and raised the issue of the inadequacy not only of EAP materials in the foundation and post-foundation programmes, but also of the centralised decision-making process which makes it harder for the colleges to adapt to their own students' needs.

The foundation materials are not adequate, really, especially in foundation. People are trying to change, but we are, I think, six colleges together, you cannot just change, and books are bought in bulk, you know? In bulk for everybody. So you are not so free to change stuff. So my advice has always been levels 1 and 2 should be general English. So that they communicate in English in a natural kind of way that sounds English. I think that's important. It should be English enough. Let's not fool ourselves (EAP T5).

This teacher's comments implicitly refer to the fact that the Omani colleges of technology are found in different parts of the country and serve student populations with diverse characteristics and needs.

According to this teacher, this diversity is not reflected in how the system is organised and works. Moreover, EAP T5 was critical about the foundation materials as he believed that they were not adequate. Teachers were keen to make changes to the materials to meet their students' needs, but it was not possible as the programme was run in sync at the seven colleges. Making changes or modifying materials would require the agreement of different layers of the decision-making process. This teacher's suggestion was that levels 1 and 2 should focus on general English to enable the students to communicate in English in a (socio-linguistically) natural way. Consequently, he was in favour of reviewing the foundation and post-foundation courses.

7.3.4 Numeracy skills

There is an essential connection between computer engineering and numbers, and the students seemed aware of this link. For example, S9 stated:

The skills required for computer engineer are different from other engineers. (...) A good computer engineer should have numeracy and mathematical skills (S9).

Consequently, the students expected themselves to be numerate. S7, an engineering student, confirmed the need for numeracy skills for all engineers regardless of their discipline or speciality. He added that communication and technical skills are important skills.

Further, numeracy skills are also important for all engineers across the globe. But communication and technical skills are the most important skills for engineers they need to do their jobs (S7).

However, one of the engineering teachers thought that his students were neither good in numeracy nor in analytical thinking:

Numerical skills, I mean, I cannot say all good, very few are good in, but in terms of analytical skills, very few of them. I mean the majority of the students they are not good in analytical and numerical skills which are really important for them (Eng. T3).

This problem would therefore suggest that these numeracy skills should be given more emphasis during foundation and post-foundation years due to their importance and significance for engineering students in their studies and in the labour market.

7.3.5. Critical-thinking, problem-solving and managerial skills

Apart from purely linguistic and numerical skills, critical thinking seems to be one of the most important transferable skills that higher education institutions seek to develop in their students and graduates. Critical thinking skills are at the heart of learning as they make learning of other skills possible (Holi, 2011). The issue of teaching critical-thinking skills for higher education students in general, and engineering students in particular, has been widely discussed and debated. However, some discipline-specific teachers consider transferable skills such as critical thinking to not be a part of their discipline (Holi, 2013). A couple of students considered this idea:

Good engineers should be good problem solvers and thinkers. They need to have good understanding of how machines function and how to operate them. They need to know how to develop software and how to troubleshoot problems. They need to have both a good imagination and good concentration (S8).

The skills required for computer engineers are different from other engineers. You need to have a good command of communication skills, particularly your ability to communicate in English. Moreover, you need to have good understanding in relation to computer applications and software. Further, you need to know how to solve technical problems and how to fix problems with both soft and hardware. A good computer engineer should have numeracy and mathematical skills (S9).

Another student also added:

Engineers (...) need to read manuals and instructions and listen to others. They need to speak with their team members and diagnose technical problems. Moreover, they need to know how to solve problems and how to think outside the box. The good engineer is a good problem solver, because engineering is all about fixing and solving problems (S5).

Engineers must not only be able to operate machines, but also to understand how they function. In this way, they can troubleshoot computer technical problems. Also, they must be knowledgeable, familiar with software, imaginative and focused.

Another engineering student shared this view, adding that other skills and attributes are needed in the engineering class and workplace:

...They [students] need critical-thinking skills, teamwork, analysis, and synthesis, research and presentation skills in the engineering classroom and workplace (S1).

Yet another engineering student stated:

To be a successful engineer, (...) he needs problem-solving and creative-thinking skills. The ability of how to deal with figures, digits and facts and how to give out presentations to experts are important (S3).

In addition to critical-thinking skills, students must acquire mathematical, numeracy and analytic skills. In other words, they must be completely familiar with numbers, figures, digits and facts, and to integrate them in oral presentations for expert audiences.

Teachers, too, considered critical-thinking skills to be of the essence.

Critical thinking is another important thing for our engineering students and of course all these things they should be guided by clear logic. They should know the step-by-step thinking process (EAP T1).

Creativity skills, thinking outside the box, thinking critically and questioning things and your own thoughts, and communication skills are the most important skills (Eng. T3).

Finally, one of the teachers argued that students ought to acquire managerial skills.

Whatever industry they are going to work at, they have to apply the management, basically we have the management functions, like first you have planning and organising, then, leadership or leading, and then controlling. All these, for basic aspects are applicable in their future, in their companies, or in the industries in which they are going to work (Eng. T4).

Given that many Omanis believe that managerial positions should go to Omani nationals, students should be introduced to the basics of the managerial mindset regardless of their specialisation.

Combining the data, which was presented previously, and that from this section, it may be said that teachers and students believed that good and employable engineering students are able to think both “inside and outside the box”. They are – or should be—completely conversant with the knowledge base of their disciplines, fluent in their professional language and fully versatile to adapt to changing situations, solve problems and innovate. Moreover, they must be able to do all this, write and speak about it, and make presentations about it in English. Consequently, curriculum designers must develop courses that help engineering students to acquire and enhance a wide range of skills in their foundation and post-foundation programmes. This suggests that both engineering and foundation curricula should consider these skills in their design and implementation process.

7.3.6 Enculturation in the discipline-specific terminology

The data suggests that students and teachers believed that it is important that students be familiar with discipline-specific terms, register and genre as this can help them to more easily and effectively understand their textbooks and lectures.

An EAP teacher thought it was unfair to group all degree students in composite English classes using the same materials for all regardless of the students’ own specialities, namely business, engineering or IT. He believed that EAP courses suffered from this lack of discipline-based focus.

The problem that we have, or a challenge, is that all the specialisations are together, in technical writing level 1 and 2. So you cannot go deep into any kind of vocabulary, because it wouldn’t be fair. So you have to give some vocabulary from business, some vocabulary from engineering and IT to all students (EAP T4).

The interview extract above suggests that post-foundation courses, such as Technical Writing I, Technical Writing II, Technical Communication and Public Speaking should be tailored according to students' specialities. Having one post-foundation course book or shared material for all disciplines seemed to be inappropriate or, at least, not as helpful and efficient as the courses could be if they were customised in terms of the specialisation or discipline of the students.

Post-foundation English courses should familiarise students with their own discipline-specific terminology and genre. This could arguably help them to better cope with their specialities. This could also have a positive impact on their content learning and exam results. To do this, both foundation and post-foundation programmes would have to be restructured and reviewed in close cooperation with content courses teachers.

Another issue which seems to be important for engineering students is adding some discipline-specific terms and concepts in the pre-EAP courses during their foundation programmes. This would help them to get enculturated in their disciplines and genres from an early stage.

Moreover, as EAP and engineering teachers talked about the importance of familiarising students with domain-specific language, a student suggested that engineering texts, terms and register should be gradually introduced during their foundation. This could guarantee an easier and smoother transition into degree programmes for the students.

Engineering texts should be introduced during the foundation and post-foundation years to familiarise students with technical terms and engineering register. Students should be encouraged to use English on campus. Study skills courses should be taught and assessed across the degree (S7).

The students' concerns about their discipline-specific terminology and their familiarity with the engineering register were an important and recurrent theme within the dataset.

One of the engineering teachers expressed his concerns about the difficulties students faced when they joined their speciality:

...the first time it's difficult to talk to students in English and to use the terminology and concepts related to their discipline because they are not used to them (Eng. T2).

It is obvious that students encountered a number of difficulties and challenges at the beginning of their degrees and content courses due to their lack of familiarity with discipline-specific terminologies and concepts during their foundation programmes.

There are a number of skills and attributes which both students and teachers considered essential, or highly advisable, for engineering students. These skills and attributes are believed to contribute significantly to success in college and in job searches later on. They therefore deserve attention when curricula are designed and implemented.

The next chapter will address the suggestions made by the students, as well as the EAP and engineering teachers who participated in this study, to help ameliorate some of the challenges involved in studying engineering through the medium of English.

Chapter 8: Engineering Teachers', EAP Teachers' and Engineering Students' Suggestions for Overcoming the Challenges Presented by Studying Engineering through the Medium of English in Oman

8.1 Introduction

The findings to be discussed in this chapter were obtained from the analysis of three sources: interviews, classroom observation and documents. In this chapter, engineering students' and their EAP and engineering teachers' suggestions to overcome the challenges presented by studying through the medium of English will be presented and analysed. A number of issues and suggestions were identified from the dataset, and a number of themes emerged from the analysis, namely, the need to reform the school system; a need to review and restructure foundation and post-foundation programmes; the need for more strongly emphasised oral communication courses; the importance of hiring engineering teachers with high language proficiency levels; and a need to establish cooperation mechanisms between language teachers and engineering tutors, as well as to embed critical-thinking skills on English language syllabi. Both teachers and students thought the above-mentioned issues should be considered during the foundation and post-foundation stages where students were expected to be well prepared for their speciality in terms of language proficiency and other skills.

8.2 Reforming the school system

Students S1, S2, S4, S6 and S10 were of the view that reforms should start in schools, and all science-related courses, such as physics, maths, chemistry and so on should be taught in English to help prepare students for their future studies. For example, S2 stated that:

...I would suggest that English should be used in schools as a medium of instruction for teaching physics, maths, science and chemistry; this will help students when joining universities and colleges (S2).

S2's suggested solution involved reforming the school system by replacing the science-related medium of instruction, which is Arabic, with the English medium. This would help students gain exposure to English and science-related terminology that will assist them with their English-medium programmes in potential higher education institutions; if English is used to deliver these science-related subjects in Omani government schools, where all courses are

taught in Arabic, and English is taught as only a subject. This is why students do not have a formal introduction to engineering and science-related terms, resulting in them encountering a number of language-related difficulties and problems. Participants thought that unfamiliarity with discipline-specific terms made it difficult for them to cope with their EMI demands and needs.

Another student was of a similar view:

They need to start from scratch, I mean: schools... They need to improve the curricula in schools and they need to increase the number of hours devoted to teaching English language. Additionally, English language teachers in schools should be trained on how to teach English and they should speak only English with their students. All science-related subjects in schools should be taught in English (S1).

S1 suggested that increasing the number of hours allocated for English in schools might impact students' language proficiency in a positive way. The suggestion that all science-related courses in schools should be delivered in English implies that all other subjects should be taught in Arabic, or in both languages. Participant S6 made the following comment:

I suggest that students should not be allowed to leave school and join college unless their English is up to the standard. Engineering terms should be introduced in schools and at the foundation levels. Much emphasis should be given to English in schools (S6).

This might help students get enculturated in their potential speciality. Moreover, the English language should be given special care and emphasis during the school stage.

S10 suggested the following:

I think there are several things that can be done to improve the use of English as a medium of instruction in our engineering programme and to help students to overcome their language-related problems and difficulties. First, special care should be given to English language in the schools such as the number of contact hours and the level of exposure. Secondly, subjects such as physics, maths, chemistry and so on. They should be delivered in English particularly during post-secondary in grades 10, 11 and 12, because this will help students be familiar with science-related terms before joining their foundation programme. There should be English for engineering students, business students and so on in the foundation and post-foundation programmes. This would help teachers and students be more focused on discipline-specific English that they need in

their speciality, and at the same time there should be some general English courses that could help students communicate effectively with their clients and customers (S10).

A number of other suggestions were made by students. First, English should be given special care during schooling in terms of the number of contact hours and exposure. Second, subjects such as maths, physics, chemistry and biology should be delivered in English in schools, particularly at the post-secondary grades 10, 11 and 12, as this will help students be familiar with scientific terms and the engineering associated register and jargon. Third, foundation and post-foundation courses should be discipline-oriented. There should be English for engineering, business, humanities and IT students. This will help teachers to be more focused and equip students with the necessary disciplinary knowledge and expertise. Additionally, there should be general English courses that help students develop their communication skills where they could communicate effectively with their teachers and classmates across the campus as well as customers and clients in the workplace.

On the other hand, a student was critical of the use of English as a medium of instruction. He suggested bilingual engineering education as an alternative for helping students overcome their language-related problems:

Reform should start in schools, and both English and Arabic should be used within the specific degree programme. Students can choose the language medium they like, but still, English is important and it should be given special care, even with the Arabic-medium programme, to help students read and write in English effectively. Engineering teachers who are bilingual and speak Arabic and English should be given the priority because they understand their students in a better way and can explain things in Arabic which are difficult to be explained in English. General English or everyday should be taught regularly across the degree to help engineering graduates to become good communicators. The methods of teaching and ways of delivery should be changed in more innovative and creative ways (S4).

Having both English-medium and Arabic-medium programmes is not as an easy task, as it would require resources and more budgets. In addition, teaching methods need to be reconsidered in order to accommodate students' learning preferences and strategies. Adopting current trends in teaching methodologies could help students overcome their learning problems and difficulties.

8.3 Reviewing and restructuring foundation and post-foundation programmes

The participants in this study stressed the importance of reviewing and restructuring foundation and post-foundation programmes. S2 suggested that:

There should be a separate foundation programme for engineering students and all the materials, whether reading or writing, should be oriented to engineering. All key technical terms should be embedded within the foundation programme because the moment that students joined their speciality they wouldn't find much difficulty in understanding these key concepts. Also, the number of the post-foundation courses should be increased to six instead of four and public speaking should be taught until graduation.

The four current foundation courses referred to above are: Technical Writing I (TWI), Technical Writing II (TWII), Technical Communication (TC) and Public Speaking (PS) (see appendix 6). Finally, it was suggested that public speaking should be offered across the entire degree programme in order to help students improve their oral communication skills and cope with their EMI challenges.

The post-foundation programme has equipped us with necessary academic skills such as how to write a report, how to write an essay, how to reference, how to quote, how to paraphrase, how to speak in public and how to describe equipment or to give technical explanations. However, the post-foundation programme needs to be reviewed and restructured to meet the students' academic needs. Some courses are repeated and there is no need for them. More emphasis and focus should be given to speaking and communication skills. Technical terminologies should be introduced earlier to enable students to be familiar with them (S3).

This student clarified his expectations about the post-foundation programme that was expected to equip students with some necessary academic study skills, such as report and essay writing, citation skills, how to reference, how to quote and paraphrase, how to speak English in public, how to describe equipment or gadgets and how to give technical explanations or descriptions for something. However, it appeared that some of these necessary academic skills were overlooked by foundation and post-foundation programmes. These courses and materials need to be needs-responsive to bridge the gap between the academic study needs and the needs of the labour market (Holi, 2013). They stressed the need for reviewing and revising foundation programmes. Communication and speaking-related courses should be given more emphasis within the degree courses.

Furthermore, a student shared:

... I would suggest addressing the problem from scratch...by improving the provision of English in schools and the foundation year. The students should be equipped with necessary skills and attributes before joining their speciality. Post-foundation courses should be tailored according to students' specialities and needs. For example, there should be special foundation and post-foundation courses for business students and some other courses for engineering students because they need to be familiar with their technical vocabulary and key terminologies before joining their speciality. There should be study skills courses that can help in their studies such as note-taking, problem-solving activities, critical-thinking exercises, puzzles and games which can make learning a bit fun and useful (S4).

Indeed, some students believed that the only possible solution would be through addressing the problem from its roots by improving the provision of English language courses in schools and foundation programmes. Additionally, it was suggested that students should be equipped with the necessary skills and attributes that could enable them to function effectively in their studies before joining their degree programme. Furthermore, there should be a study skills course that incorporates skills such as note-taking, problem-solving activities and critical-thinking activities. These kinds of activities might make students more engaged in their learning and studies.

A student believed that the solution might well originate from students themselves:

Well...I think the best solution can come from students themselves. The internet is the best solution to this problem, and the aptitude for learning is something of utmost importance. However, there are some factors that have to do with the teacher and the syllabus. I think the syllabus is not strong enough, and the numbers of hours that are allocated for teaching are not enough for learning English. The moment students join the college they will be familiar with most of the terms and concepts. All these subjects are taught in Arabic, and therefore students find them difficult when they join college. Moreover, EAP/ESP courses (post-foundation) should be geared to engineering rather than to teaching general English. Public speaking should be taught throughout the degree because it is the most useful course that students need in their future career and everyday life (S1).

Another student expressed his views in relation to the length of the foundation programme:

The post-foundation should be two years instead of one year. Students should be clustered and placed according to their speciality. Engineering students should be taught alone and special English coursebooks should be designed for them instead of having one textbook for all. English

clubs and forums should be established to encourage students to speak English. Public-speaking courses should be taught during the entirety of the degree programme (S6).

It was clear that some students were not satisfied with the length of the foundation year. They believed that one year of foundation was not enough for them to study both general English and technical terms as well. This suggests that two textbooks should be used: one for general English and the other for EAP/ ESP. English clubs that provide forums for students to speak English should be established. Additionally, public-speaking courses should be taught along the entire degree programme due to their importance and significance for students' futures.

Another student shared a similar view with regards to public-speaking courses:

Public-speaking courses should be taught to all students during their degree programmes because they have been useful for all students. I think engineering education can only be improved if it started reforming language education from the beginning that is from schools. Post-foundation courses such as technical communication and technical writing should be improved to cater to students' real needs. Public-speaking courses should be provided to all students as it is important for them to speak in public when they complete their studies. Foundation and post-foundation courses should be updated and reviewed regularly to meet the changing needs of the job market and industry needs (S7).

The above interview extract demonstrated this student's view in relation to the potential strategies for overcoming challenges presented by their studies through the medium of English. Reforming language education from the schools was of utmost importance as they would help students to cope with their speciality once they joined tertiary education. The four post-foundation courses should be reviewed and improved regularly to meet the dynamic study and workplace needs and demands. There was also a need for courses that could cater to problem-solving and critical-thinking skills. Students' difficulties with problem solving in their in-class activities were apparent during classroom observations undertaken for this study (see appendix 5).

8.4 Adopting a bilingual engineering education system (translanguaging)

The findings of this section are derived from interviews, classroom observations and collected documents. It presents data to demonstrate the views and suggestions of Omani engineering students and their EAP and engineering teachers in relation to strategies for overcoming EMI

challenges in their engineering education by adopting bilingual education. The idea of bilingual education (translanguaging) is supported by Barnard (2014) who argues that most Asian EFL/ESL students lack the ability to critically engage with academic content delivered through the medium of English. Thus, he suggested that bilingual education would better prepare students to meet the challenges of today's globalised world. A student suggested that the solution could be having two engineering syllabi, involving an Arabic engineering textbook and an English engineering textbook:

I would suggest having two textbooks for each core subject. One is in Arabic and the other is in English. Those who find it difficult to understand things in English can opt for the Arabic option. This would help them study their core subjects in a good way. However, all engineering students should study English and should speak fluently. There should be a learning environment conducive for studying English and the number of hours allocated for studying English should be increased (S9).

However, English proficiency is still needed for all students as they have to speak English fluently, whether they are studying through the medium of English or Arabic. Moreover, the student's suggestion that the number of English contact hours should be increased to meet student study needs and demands, as mentioned before, has resource implications.

On the other hand, S9 made the following comments:

I would suggest that engineering should be taught in English only, and Arabic shouldn't be used in class so as to help shy students to speak the language. Moreover, the post-foundation courses should be increased, and they should be taught along with the degree courses across the programme. All English courses within the degree should be assessed and credited. The foundation, post-foundation and core subjects should be linked together to support each other and should be based on students' real and exact needs. English clubs and forums should be established to help students practise their English regularly. English textbooks should be reviewed and updated regularly based on needs analysis to meet the students' and job market's needs. Students should be encouraged to speak English with each other and with their teachers instead of using broken Arabic. Technical writing courses should be different from foundation writing courses (S9).

This student was critical about the use of Arabic, perhaps because of his own relatively high levels of competence in English.

8.5 Considering the language proficiency level of disciplinary teachers

The majority of interviewees expressed concerns in relation to their English language proficiency. A student commented:

Core subjects' teachers should be carefully selected and their high English proficiency must be one of the requirements for accepting them to be teachers in an English-medium programme (S4).

The above interview extract is indicative of students' concerns about the level of subject teachers' English language proficiency. This suggests that when recruiting engineering teachers there is a need to consider the level of their language proficiency as a key factor in the selection process in addition to their disciplinary knowledge and other recruitment requirements. Teaching in an English-medium programme requires a high level of language proficiency to help students overcome their own language-related challenges. Some of the students believed that both the language and engineering teachers are equally responsible for helping them with their language difficulties and correcting their language errors and mistakes:

...I think engineering teachers should help students with their language problems, and they should correct their language mistakes because this will help students improve their language competence (S3).

Clearly, S3's experiences suggest that his language teachers should help him with his language problems, and they should even correct his mistakes as he believed that this might help him improve his language competency.

Similarly, a student raised the issue of subject teachers' training on how to deliver courses through the medium of English:

Engineering teachers should be trained in how to teach engineering in English, and they should be informed to help students with their English, and not only engineering. They should be informed that their job is not only engineering but also English (S5).

Students' concerns about the importance of the training of engineering teachers in how to use EMI to deliver their engineering courses in an effective manner is of vital importance. This suggests that engineering teachers need to be made aware that developing students' language proficiency and that helping them to handle their language-related problems should be a shared responsibility between both language teachers and engineering teachers.

Another student expressed:

Engineering instructors and lecturers should be trained in how to teach engineering in English, and they should have a good command of English in order to teach engineering successfully (S1).

For this student participant, training engineering lecturers in how to teach engineering through the medium of English was important.

S8 was critical about teaching styles and the existing methodology:

The way of teaching should be changed. Teachers usually do most of the talking in class and students just listen passively. I think teachers need to engage their students in speaking by creating good, engaging activities and tasks. Engineering texts should be introduced during the foundation and post-foundation years to familiarise students with technical terms and the associated engineering register. Students should be encouraged to use English on campus. Study skills courses should be taught and assessed across the degree programme (S8).

The above interview extract suggests the need for a student-centred approach. Additionally, it was suggested that the key engineering terms should be introduced during the foundation and post-foundation years. Moreover, teachers should encourage their students to speak English while they are on campus, and study skills courses should be taught and assessed explicitly across the degree course due to their importance and significance.

Moreover, another student reflected on who is responsible for helping students handle their language-related problems:

Both English language teachers and engineering teachers should help students with their English. They need to correct their writing and spoken errors and give them feedback accordingly. Teaching English should be addressed during core subject lectures, labs and during office hours as this would help students realise the importance of English as a medium of instruction and the primary language of communication within college premises (S7).

It can be argued that based on the above quote, both English language and engineering teachers should work together as a team to help students with English. They both need to correct their students' errors and give them feedback on their work.

The evidence gathered through interviews and observations strongly suggests that there should be a criterion for benchmarking and assessing teachers' language proficiency levels before

appointing them. This would help content teachers to assist their students with language during lectures and lab sessions and would improve the quality of written feedback.

8.6 Strengthening the role of communication-related courses

The data illustrates the need for strengthening the role of communication-related courses within foundation and degree courses. A student claimed that engineering students need to be made aware of the importance of English for their studies and their future careers:

... I think the most important thing for engineering students to do is to consider English as equally important to their engineering subjects. They need to give much time to their English and communication skills because technical knowledge alone is not enough for carrying out your engineering job. Foundation courses should be linked up with the speciality and speciality key terms should be introduced during the foundation year to help students survive their speciality and degree. Study skills courses should be given great emphasis through the entirety of the degree. EAP/ESP courses should be tailored to students' academic and study needs (S5).

Students need to appreciate the importance of English in terms of their future employability. They need to give more time to their English studies because they are as important as their engineering studies. Having technical knowledge is not enough to secure a job in the future. Communication skills are equally important in the job market. Therefore, higher education institutions need to tailor their courses and programmes based on their students' academic needs and the changing labour market demands.

In the same vein, another student added:

English communication courses should be given more emphasis than other courses as the graduates need them in the job market. Key technical terms should be introduced in schools and in the foundation and post-foundation years to familiarise students with them before they join their speciality (S9).

Another student added:

Communication and speaking courses should be taught across the whole degree programme because they are important for students' future employability (S4).

This suggests that it is necessary for engineering colleges to consider such courses when formulating their policies, designing their syllabi and developing their teaching materials. It is

not enough to rely on foundation courses to equip students with the necessary skills; they should also be embedded within the content courses.

8.7 Establishing cooperation mechanisms between engineering and EAP teachers

All participants highlighted the importance of establishing cooperation mechanisms between EAP teachers and engineering tutors in order to share information about students' progress, any learning difficulties and their needs in terms of skills and attributes required in their engineering classes. It seems there was no formal cooperation between EAP teachers and engineering teachers due to the absence of the structured mechanisms within the Omani colleges of technology. The institutional support for such cooperation is of vital importance to ensure that EAP courses are geared towards skills, attributes and needs required by engineering programmes, as this would necessitate that EAP courses should cater for students' needs in their academic courses and their potential workplace. This cooperation could potentially bridge the gap between EAP courses and engineering courses which would encourage students to be engaged in their content courses. An EAP teacher expressed his concerns about the lack of contact and cooperation between EAP and engineering teachers due to a couple of reasons:

One year ago I taught technical writing, and I found a lot of engineering terms, engineering stuff there when I wanted to teach. And I felt like I need to sit with engineering teachers in the department to see which of these were really important for our students (or not). But because of the pressure at that time we didn't have time to do that. So I think they should tell us which areas we need to focus on, what are things that their students need [to improve to cope with their engineering study], so that we can work together. I think [improving student language abilities] to some extent is a shared responsibility, but when it comes to the first stages it is our responsibility as English language teachers. The basics should be corrected by us, and the students should be strong [before joining their degree]. At later stages it is the engineering department's responsibility to encourage students to read a lot, to research a lot and this will reflect also on their linguistic abilities (EAP T1).

A key constraint that must be considered with regards to cooperation between EAP and engineering teachers is lack of time. The EAP teacher above was of the view that cooperation is important and it was important for him to sit with an engineering teacher to help with understanding the meaning of some engineering-related technical terms; however, he was busy and could not meet them. The EAP teacher believed that cooperation is important and saw

improving students' language proficiency as shared responsibility between both EAP and engineering teachers:

We don't have any kind of collaboration. Students are weak even in the core subjects. We don't have any formal mechanism of contact [with the English language teacher] (Eng. T2).

Similarly, the above quote indicated the lack of cooperation and contact; however, it seems that cooperation alone cannot solve the problem, as some of the students are weak not only in English but also in their engineering core subjects. Eng.T2 explicitly stated above that they did not have any sort of contact with language teachers as they do not have any formal mechanism for cooperation and collaboration.

On the contrary, some engineering teachers expressed that they did talk to language teachers about their engineering students' difficulties and problems, but these conversations were informal in nature.

I sometimes talk to language teachers as I have some friends who are teaching in English [at the language centre]. Yeah, sometimes we talk and we discuss things related to students' difficulties, but we don't have a formal mechanism (Eng. T5).

The quote above confirms that there were no formal cooperation mechanisms between the two parties and despite they were operating in the same college but in two different departments.

8.8 Integrating higher-order thinking skills into language courses

The findings in relation to students' suggestions with regards to embedding critical-thinking skills into the foundation courses' syllabi were based on data generated through interviews and observations. Higher-order thinking skills have become a major issue in contemporary education as they appear to hold so much promise for the individual and for society (Felming et al., 1995). Higher-order thinking skills appear to be important for students to overcome their challenges presented by the use of English in their engineering education, and to develop and build their knowledge capacity since critical and higher-order thinking involves a variety of skills such as self-regulation, application of multiple criteria, analysis, synthesis, identifying the source of information, analysing credibility, reflecting on the new information and drawing conclusions based on evidence (Linn, 2000; Resnick, 1987).

The need for students to develop critical-thinking skills recurred in the data. Engineering students need these higher-order thinking and problem-solving skills to deal with engineering-related technical problems and reinforce their understanding of their disciplinary content. Critical thinking fosters students' critical attitudes which may help a learner to reflect in such a way as to be able question, interpret, analyze and judge others' ideas (Shaheen, 2012).

An engineering teacher stated:

During their schooling they can enrol them in critical thinking as well as analytical sounding capabilities and so on. It can be done from the schooling level. Of course, many countries are developing these skills during, in school, school days and they can improve those skills in college. That can be done. If this could be done automatically whatever we face, the problems in college, can be automatically solved (Eng. T4).

Engineering teachers perceived critical thinking as important for engineering students to study and work in the engineering industry and labour market.

Moreover, the view of the importance of critical thinking for engineering education was stated by a student:

There should be courses during the foundation year that help students with how to solve problems and how to think critically (S7).

These comments highlight the fact that higher-order thinking skills are significant during the foundation and post-foundation stages as they could help students analyse and synthesise technical issues and facilitate their understanding in their English classes. An engineering teacher suggested:

If they can tailor materials, for example, to the students [who] are going to engineering. If they can also tailor the curriculum for a specialisation, that would be very good for students to be able to cope and to study (Eng. T2).

This is essentially the same suggestion that was made by another participant, noting how gearing EAP materials towards specialisation by integrating critical-thinking skills is important, as it has an impact on students' language-related problems that are presented by EMI. Foundation and post-foundation courses require rigorous review and revision to develop students' higher-order thinking skills that are needed in their academic and workplace settings.

Equipping students with a domain of specific knowledge is not enough for them to successfully study engineering. Moreover, higher-order thinking skills could be integrated into study skills courses which are offered during the foundation and post-foundation stages as they are important for building students' disciplinary knowledge. One of the students expressed the importance of these courses for academic needs:

Study skills courses should be given great emphasis through the entirety of the degree. EAP/ESP courses should be tailored to students' academic and study needs (S5).

Having presented and analysed the data on how the participants perceived suggestions for overcoming challenges presented by EMI, the data analysis was centred on five study questions which progressively emerged as the most salient and frequent issues in the dataset. The next chapter will move on to discuss the findings of the study's relationship to the existing relevant literature.

Chapter 9: Discussion of Findings

9.1 Introduction

This chapter discusses the key findings of the study. Major themes were identified through analysis of the data collected via three methods, namely, interviews, observations and the review of documents. In the previous chapter, the data was discussed in relation to existing literature and its theoretical underpinnings. In this chapter, the key findings are summarised and discussed in light of the existing relevant literature. The study was undertaken to accomplish the following five aims:

- 1) to identify and investigate Omani engineering students' perceptions of the challenges which they face when English is used as the medium of instruction (EMI) in their engineering programmes;
- 2) to identify the impact of said challenges on the students and their studies;
- 3) to identify how the students cope with EMI challenges during the course of their studies;
- 4) to offer some suggestions for Omani engineering students to overcome the challenges inherent in their studying through the medium of English;
- 5) to critically examine the concept of EMI in the context of Oman and identify the views of engineering and EAP teachers, and of their students, in relation to the skills and attributes which are important for success in English engineering programmes in Oman.

The chapter is divided into five main sections based on the aims and questions stated above. The first section deals with Omani engineering students' perceptions of the challenges which they faced during their engineering studies in English. The second section undertakes the key language-related challenges encountered and their impact on the students and their studies. The third section encompasses the coping strategies which the students employed to handle and cope with the challenges. The fourth section presents the suggestions made by students and engineering and EAP teachers to overcome the difficulties caused by English as a medium of instruction. The last section identifies the views of students and engineering and EAP teachers of the skills and attributes which are important for success in engineering programmes run in English.

9.2 Engineering students' perceptions of EMI

The findings of the present study revealed that Omani engineering students have mixed feelings about EMI which are, perhaps, indicative of the controversies, debates, threats and challenges which surround it. Ultimately, their attitudes towards EMI were generally not negative.

The findings of this study are similar to those of other studies, which suggest that the implementation of EMI motivates teachers and students to improve their English language skills, and opens up opportunities for universities and colleges to internationalise and modernise their programmes in dialogue with HEIs in countries (Coleman, 2016; Vu, 2015; Belhiah and Elham, 2015; Floris, 2014; Begum, 2014; Ryhan, 2014; Al Mashikhi and Al Mahrooqi, 2014; Hu and Lie, 2014; Sivaraan et al., 2013; Manh, 2012; Al Tatam et al., 2010; Wong, 2010; Byun et al., 2011; Wu, 2006; Al Jarf, 2004; Crystal, 2002). In fact, the literature review revealed that both students and teachers tend to be positive about the use of English as a medium of instruction in the HEIs despite the linguistic challenges which it often presents to them.

Most of the literature referred to above does not relate to studies conducted in the context of engineering disciplines. In contrast to the present study, a number of the studies reviewed have predominantly focused on business and other disciplines. However, the data shows that some of the students hold negative attitudes towards EMI and they preferred the medium of Arabic, i.e. their mother tongue, in their education.

Aspects of the findings of the study are consistent with those of other research projects (Solloway, 2016; Mouhanna, 2016; Al-Issa, 2014; Dearden, 2014; Al-Bakri, 2014; Shi, 2013; Lau and Yuen, 2011; Troudi, 2009; Ibrahim, 2001; William and Cooke, 2002). While those researchers considered EMI from critical perspectives, this study focuses on EMI in the particular context of learning engineering whilst adopting a relatively pragmatic stance to EMI as it has become a reality in higher education in EFL/ESL contexts.

The extant literature indicates that despite the challenges of EMI, many students and teachers believed that EMI could offer opportunities for students and teachers to develop their language competencies and potentially learn the technical/subject content in a better way (Ibrahim, 2001; Crystal, 2002; Ryhan, 2014; Missingham, 2006; Hu and Lie, 2014; Teng, 2009; Wu, 2006). These findings suggest that whatever people may think about EMI as an educational policy, the

practice of it does seem to help students and teachers to develop their language proficiency, which helps students both during their academic period and later as graduates in the workplace.

For example, S11 reported that the use of EMI was helpful for him, his college and for his country:

The use of English as a medium of instruction is good for me and for my college, and for Oman as well. It helps me to improve my speaking and it can help the college to be known internationally, and students may then come from different countries to study in Oman and know our culture and traditions. This will improve our economy and develop our country. The use of English is a great idea because without English I can't find a good job or improve my skills. The use of English has good value for us as students, and for our future careers and for pursuing further degrees abroad (S11).

Despite the challenges presented by EMI, S11 believed that EMI could open the door for internationalisation for both his college and Oman. Consequently, this might develop higher education institutions and the host country. It could potentially also increase local job opportunities.

S12 expressed his views about the importance of EMI in his engineering degree:

The use of English as a medium of instruction in my engineering degree is good as it helps students to improve their English. Our listening and speaking abilities are enhanced as you listen to engineering teachers speaking and teaching in English. It helped us to access technology in a better way, as most of the engineering topics are written in English. Consequently, this will help us to study engineering in a better way. It is difficult for the engineering graduates to get a good job in big companies in Oman, such as PDO, unless your English is really good. The use of English as the medium of instruction is a good idea, and I hope this will be applied to schools to help students speak this international language (S11).

9.3 Difficulties of learning due to English as a medium of instruction

The aim of the first research question was to identify and investigate the perceptions of Omani engineering students in relation to the challenges posed by English as a medium of instruction (EMI) in their engineering programmes. The study revealed that the students experienced a range of difficulties in their EMI engineering programme, which were related to academic literacy, speaking and communication skills, discipline-specific terminology and lecture comprehension. Students also mentioned some debilitating factors, such as inadequate prior

learning experiences and contextual variables, which made studying in English more difficult for some. These findings seem to be consistent with the literature (Shamim et al., 2016; Belhiah and Elham, 2015; Chuang, 2015; Goodman, 2014; Al-Hassan, 2104; Vu, 2014; Ryhan, 2014; Al-Mashikhi, 2014; King, 2014; Tamtam et al., 2013; Tatzl, 2011; Troudi and Jendli, 2011; Evans and Morrison, 2011; Chang, 2010; Mouhanna, 2010; Brock-Utne, 2007; Jackson, 2005; Wilkinson, 2005; Bielenberg, 2004; Kyeyune, 2003). Studies like these have shown that EFL/ESL students experience a range of difficulties when English, rather than their mother tongue, is used as a medium of instruction in higher education in a variety of disciplines. The institutions where they study may be either in the English ‘inner circle’ or the expanding ‘outer circle’.

9.3.1 Academic literacy-related challenges

Academic literacies are a fundamental component of the process whereby students become integrated not only in college, but also into their community of practice. Students need academic literacy skills to learn their disciplinary subject and to demonstrate both their theoretical and technical knowledge (Lea, 2004). Therefore, mastering academic literacy skills and possessing the ability to communicate effectively in different settings, have become essential for a professional engineer (Nguyen, 1998; McGregor, 2000). However, the demands of acquiring academic literacy are considerable and, in some (disciplinary, national and cultural) contexts, they are likely to represent additional difficulties to those involved in any college education.

My data showed that Omani engineering students experienced a number of problems related to academic literacy, more particularly with writing, reading and oral communication. S12 articulated this as follows:

I had problems with my reading and writing skills and I feel that they are ‘beyond the bar’. I have difficulties in understanding the meaning of technical terms and words. Also having different teachers with different accents was a problem for me. Moreover, writing assignments and projects were difficult for me so I sometimes pay people to write for me (S12).

This student’s difficulties resonated throughout the interviews. Most of the interviewees struggled with in-class writing, reading and speaking tasks. This situation materialises in very concrete ways, for example, in the heightened levels of plagiarism. These problems often

correlated to students' general lack of domain-specific knowledge. These findings matched those reported in the literature (e.g. King, 2014; Sivaraman et al., 2014; Basibek et al., 2014; Al-Bakari, 2014; Troudi and Jendli, 2011; Mouhanna, 2010).

In the case of Oman, the use of English in college contrasts with the Arabic-only instruction in school, and their pre-sessional and in-sessional English courses do not seem to have the desired results as a means to prepare the students for engineering programmes in English. The persistent failure of these courses may be due partly to institutional variables (e.g. curriculum, textbooks, timetables, teachers, exams, etc.) as well as student factors (motivation, dedication, expectations, preparedness, IQ, major-talent match, etc.).

9.3.2 Speaking and communication-related problems

In Oman, and many similar countries, both the classroom and the workplace require engineers to be able to communicate effectively in English, regardless of their being native or non-native speakers of the language (Nguyen, 1998; McGregor, 2000; Rajala, 2012). In fact, Al-Issa (2006) and Al Mahrooqi (2012) suggested that lack of English language proficiency could be a barrier not only to the students' advancement in college and the labour market, but also to the government's 'Omanisation' of the workforce. Abdel-Jawad and Radwan (2011) also found that Omanis are aware of the importance of communication in English and attribute a considerable impact on modernisation, success and their professional lives to it. There is no denying that nowadays both colleges and international companies place English language demands on Omanis. This happens elsewhere, too. Similar cases were discussed by Brock-Utne (2007), who studied Tanzanian students in an English-medium programme. Those students, too, were apprehensive about communicating in English, and their problems correlated with the shortcomings of their foundation and post-foundation programmes, as well as with the students' educational language background, which was in Swahili. Additionally, Goodman (2014) reported problems in Ukrainian English-medium programmes. The challenges experienced in these contexts were similar to those experienced by Omani engineering students and their subject teachers. Given that communicating in English affects both students and subject teachers, EMI raises questions, not only about the students, but also about the teachers' proficiency in English.

Students who study English as a foreign or second language, because it is the language in which they are trained, need more than just general English. They must undertake English for

academic purposes (EAP), which is a type of English, for specific purposes (ESP) (Hyland, 2006).

The importance of communication in English was highlighted in the literature by stating that conversancy in the various discourses means the ability to appropriately and effectively understand and use spoken and written languages, which are specifically required to take on different roles, and to behave appropriately and perform successfully in different contexts (Klinger and Murray, 2012). Moreover, there are a number of studies in the literature which emphasise the importance of communication in English in education and the labour market, especially in engineering (e.g. Kakepoto et al., 2012; Al-Mahrooqi, 2012; Abdel-Jawad and Radwan, 2011; Tamtam et al., 2010; Al-Issa, 2006; Joesba and Arado, 2005; Prichard and Nasr, 2004; Crystal, 2002). As a result, higher education institutions need to ensure that their students are offered communication courses when designing and delivering content courses. Communication courses can be taught explicitly to students or embedded within other content and language courses.

This study has found that the learners focused on English-speaking skills during their pre-sessional and in-sessional materials, but the courses did not generally cater for their studies and workplace requirements. The Omani engineering students whom I interviewed invariably spoke of their difficulties in conversing in English with both their classmates and their teachers. For example, S12 told me:

I had problem during the first two years of my study with speaking to my engineering and English tutors in English, but I managed to get rid of the fears and lack of confidence so I can speak confidently now. I found it difficult to write good lab reports and my teacher was telling me my writing was not good or clear enough as I usually use general rather than technical and academic English. Some teachers were speaking so fast during lectures and I felt I was lost at some points in time, so I had to ask them to slow down and/or ask my classmates to explain things for me. I couldn't even take notes when they speak. Teachers need not to speak so fast (S12).

In other words, although the students appreciated the significance of communication skills for their current studies and future employability, they did not generally feel comfortable in the context of English language.

My findings revealed that there was a gap between the core subject in the engineering programmes and the communication challenges in the classroom. The students' and engineering teachers' speaking and communication skills were shown to be in need of further

development. It was apparent that the designers of the English programmes were caught between general English and English for specific purposes and, despite the students' participation in foundation English courses for approximately 20 hours weekly, there were very few who actually excelled in real-life general English, English for academic purposes or English for engineering. Moreover, neither did most of the content teachers. Students and teachers managed to communicate with one another, but the communication was, more often than not, neither conceptually in-depth nor grammatically correct. As a result, such learning and teaching environments may be described as far from ideal for academic excellence.

In summary, communication in English with the purpose of studying engineering subjects was a challenge for most of the participants, students and engineering teachers alike. Ideally, both groups should be able to speak confidently, accurately and insightfully about domain-specific content orally as well as in writing.

9.3.3 Discipline-specific terminology challenges

Appropriating and using a new discourse is extremely difficult for EFL/ESL students, even for native speakers entering an unfamiliar domain or discourse community (Petrić, 2012). Understanding engineering terminologies and jargon constituted one of the difficulties faced by the participants in this study. This might be due to their lack of enculturation in engineering and science. During this research, it became evident that some engineering students, upon starting their core courses, were not yet prepared linguistically and conceptually to study engineering. Studies by Morrison (2011) and Al-Mashikhi (2014) have revealed the problems of discipline-specific terminology for students in educational English-medium contexts. As a result, foundation and EAP teachers were obliged to help students to develop their disciplinary knowledge and language skills before joining their degree programmes. However, as these problems did not disappear, the students had to be supported well into their post-foundation years in order to develop their language proficiency and disciplinary knowledge to cope effectively with their engineering programmes. These findings seem to suggest that the disciplinary enculturation process might not be as easy a task as some might think. It depends on a number of contextual and pedagogical factors.

The literature suggests that disciplinary knowledge and language as such are among the most difficult issues facing EFL/ESL students in their English-medium programmes. For example, the Hong Kong students involved in Morrison's (2011) study reported that they had difficulty

with understanding disciplinary-specific terminologies, comprehending core subject lectures, achieving appropriate academic style and meeting the institutional and disciplinary requirements. In light of this, it may be said that their pre-sessional and in-sessional courses were inadequate in preparing them to cope with their specialities, notably, engineering. Although it would be difficult to include domain-specific language in pre-university English courses, students may expect that their foundation programmes should prepare them for their future through target-oriented foundation curricula (Morrison, 2011).

9.3.4 Study skills – revisited

The usual focus on the study skills model, which was adopted in many EAP courses, cannot help students to become academically better socialised and more aware of the register of their own disciplines (Wingate, 2006). The literature suggests that language teachers and content teachers could play a more collaborative, integrative role in helping students to overcome difficulties arising from discipline-specific terminologies. Academic socialisation is of paramount importance for enabling EFL/ESL engineering students to cope with the academic demands of their English-medium speciality. For example, the Academic Literacies, or ACLITS, framework has provided a useful tool to understand academic literacy skills through the lenses of study skills and academic socialisation approaches (Lillis, 2003; Street, 2009; Wingate and Tribble, 2012; Turner, 2012). Models such as this could help students to better understand their engineering texts and genre and help them to more effectively deal with their content courses.

In short, general English, domain-specific language and the usual EAP courses are not helping students to become socialised in their disciplines. Study skills include both general and specific competencies, but for them to be properly presented and rehearsed in class, they should not be conceived of in isolation of each other, language components being separated from core courses. In other words, both students and engineering teachers ought ideally to be able to engage in professional interactions about engineering using the associated register and abiding by the rules of the genre, and language teachers and language curricula should gradually and increasingly become proactive partners in this process.

9.3.5 Lecture comprehension-related challenges

Understanding lectures in English was another of the difficulties encountered by Omani engineering students. In theoretical classes, students need to listen, take notes and seek

clarification from their teachers by asking questions and raising issues related to the content of the lecture. However, this was not an easy task for my interviewees. Lectures are not only about theories, but also about sounds (e.g. pronunciation and accent), inferences made from body language (e.g. from emphasis or intonation), concentration and multi-tasking (e.g. listening and taking notes). Furthermore, lectures presuppose knowledge of technical registers. My interviewees had problems with most of the above.

This study's findings seem to be consistent with the literature (e.g. Sivaraman et al., 2014; Joe and Lee, 2013; Hellekjaer, 2012; Kagwasage, 2012; Navaz, 2012; Hellekjaer, 2010; Yousif, 2006; Airey and Linder, 2006; Flowerdew et al., 2000; Mulligan and Kirkpatrick, 2000; Arden-Close, 1993; Flowerdew and Miller, 1992; Sally, 1985). It is widely recognised that non-advanced EFL/ESL students tend to experience difficulties with the triple burden "of simultaneously listening, reading/deciphering a visual and taking notes" (Flowerdew and Miller, 1996, p. 126). In the case of Omani engineering students, their difficulties with lecture comprehension seemed to be exacerbated by the teachers' use of inappropriate teaching methodologies and speed of delivery.

Students find it difficult to ask questions during lectures and to seek clarification due to their lack of communication skills and low English language proficiency. For example, Hellekjaer (2010) conducted a comparative study in the Norwegian context related to lecture comprehension. In it, some issues were underlined, such as understanding and distinguishing the meaning of words, dealing with unfamiliar vocabulary and taking notes while listening to lectures. Hellekjaer confirmed that students' language problems with lecture comprehension often resulted from poor pronunciation, and technical and specialised vocabulary. It is noteworthy to add that Hellekjaer detected many of these problems in L1 lectures, too. This would imply that they are a direct consequence of "socializing students into domain-specific academic genres and registers" (p. 248) rather than of the language of instruction.

The present study corroborated Hellekjaer's findings among Omani engineering students. Indeed, the participating students stated that they had difficulties with lectures delivered in English:

I sometimes had problems with following the lecturers when delivering their lectures. Some of them speak very fast and their pronunciations were not clear enough. I sometimes had difficulties in taking notes. I had difficulties in understanding some new technical vocabulary. I had my own diary for the new technical words and take this diary with me wherever I go and I keep repeating the pronunciations and meanings of these words until I understand and memorise them (S11).

The Omani engineering programmes, which were studied in this research, suggest that there is a need for addressing factors contributing to lecture comprehension. The difficulties must be acknowledged and solutions must be sought. For example, students should be helped to familiarise themselves with the engineering discourse, genre and technical terms. This is necessary for their academic socialisation. Naturally, this entails a process that cannot be successful without the participation and commitment of the four main constituents: the Ministry of Manpower (which runs the colleges), the curriculum and exam designers, the language centres (including the teachers) and the students. Such a process is complicated by a relatively rigid centralisation among the colleges of technology, which thwarts localised innovation, and the mentality of the students, who are not convinced that real learning cannot happen without their essential participation. After all, neither the most innovative curriculum nor the best teacher can ever replace the students' input and output.

The importance of the students as a variable can never be overstated. Hence, it is paramount that the education providers understand the factors which influence ESL/ESL students' lecture comprehension, be they related to their speaking or listening, or to the materials and medium of instruction (Boyle, 1985).

Problems with lecture comprehension can arise for several reasons, such as strategies adopted by lecturers, mismatch between students' and lecturers' expectations, and lack of understanding by students due to their poor vocabulary and listening skills. Additionally, there are some other factors related to lecturers' personal attributes, such as speed of delivery, accent, choice of words, grade of abstraction or ability to simplify content, as well as interpersonal factors (Boyle, 1985). Additionally, Yousif (2006), dealing with factors affecting Saudis' lecture comprehension, showed that there were five main factors: linguistic and conceptual variables (e.g. terminology), discourse variables (e.g. difficulty in understanding longer sentences), acoustic variables (e.g. speed of delivery), environmental variables (e.g. noisy classrooms) and psychological variables (e.g. boredom). Interestingly, these difficulties seem to be universal in English-medium programmes in higher education around the world. Evans and Morrison (2011) reported almost identical findings from an interview study conducted among first-year undergraduate students at Hong Kong Polytechnic.

Similar findings were reported by Sivaraman et al. (2014), who surveyed Omani engineering students' and teachers' attitudes towards difficulties arising from EMI, including understanding engineering modules, participating in the classroom and exams. However, most of the findings

of these studies were based on data collected through questionnaires and surveys rather than in-depth interviews and classroom observations. Nonetheless, the present study also found that the interviewed Omani engineering students experienced the usual challenges related to the comprehension of English-medium lectures and the transition from Arabic-medium schools to English-medium higher education institutions.

9.4 Key debilitating factors for EMI challenges

In order to start designing a solution to the problems caused by the English-medium delivery of the engineering curriculum in Oman, a clearer understanding must be gained of the factors which hinder the participants' success in college. These factors can be broadly categorised into the following: inadequate prior learning experiences, lack of enculturation in the disciplinary discourse, inadequacy of foundation and post-foundation course materials, lack of communication between EAP teachers and engineering instructors, lack of EMI training offered to engineering instructors, and lack of the due preparedness and commitment on the part of the students.

According to the data gathered for this study, more than two-thirds of the students believed that their (poor) prior learning experiences were a major contributing factor in their EMI-related predicament. All of them had gone to Arabic-medium schools before they were suddenly transferred to an English-medium college. This transition created many challenges for them.

Additionally, the participants found that they had not been sufficiently enculturated in the engineering disciplinary discourse. They were not fluent in the engineering-specific language and were unable to use its register. This was a great obstacle for their reading and writing.

Moreover, language teachers and engineering teachers, and the foundation and post-foundation course materials, were sometimes found wanting. They seemed to be inadequate in preparing students for their core subjects.

Students' previous educational background in science and engineering-related topics was found to hinder their performance in tasks required within their engineering programmes. Apparently, the differences in styles and languages of instruction in school and college negatively impacted them. Similar findings were reported in the literature (Belhiah and Elham, 2015; Troudi and Jendli, 2011). All these studies highlighted the connection between students' backgrounds and their learning process in new situations. For instance, Troudi and Jendli (2011) attributed students' problems in English-medium education to their previous pre-schooling as their

educational background and their overall competence in English, to a large extent, affected their views of EMI, as well as their coping strategies to deal with their new learning situation. In addition to the effect of the language of instruction, there is a growing realisation that students are entering higher education institutions (HEIs) ill equipped and lacking the necessary skills to acquire the necessary academic literacies to navigate their degree programmes (Murray and Nallaya, 2016). Moreover, in the case of my study, the evidence revealed that a lack of current cooperation between EAP teachers and engineering teachers had an adverse impact on the design and delivery of EAP courses, and students' learning experiences suffered as a result of it. EAP teachers could have played a greater role, not only helping their engineering students with their language, but also with the language dimension of their engineering courses. On the other hand, if the subject teachers were trained to identify language obstacles, they could prepare the content of their lectures and deliver it accordingly. Establishing cooperation between EAP teachers and engineering teachers would potentially help all the parties involved in the teaching-learning encounters.

Dudley-Evans and St John (1998) suggested three levels of cooperation between EAP teachers and subject specialists in order to better inform the provision and delivery of EAP and to help students to more effectively cope with their English-medium learning situation. This would be in keeping with Vygotsky's ideas (1978), who claimed that the secret to effective learning lies in the nature of the social interaction between two or more people who possess different levels of skill and expertise. Therefore, mediation and collaboration are of vital importance in knowledge acquisition and appropriation through interaction. Davies and Cousin (2002) identified three main approaches to teaching academic literacy skills to engineering students: the embedded, integrated and separate course approaches to developing individual skills. The *embedded* approach implies that academic literacy skills can be included implicitly in disciplinary subject content (Lea and Street, 1998). The *integrated* approach endorses the cooperation of disciplinary subject teachers and EAP instructors to improve students' skills as a way to enable them to cope with their technical specialities. In this approach the academic literacy skills are explicitly integrated into the technical and academic content (Davies and Cousin, 2002). This kind of collaboration was found significant for delivering EAP courses and overcoming EMI-related challenges and difficulties. However, it seems there has been a shift in responsibility due to the recognition of the role of subject teachers as insiders and informants in the teaching and learning process (Pawn and Ortloff, 2011). It is argued here that the current responsibility should be shared between language and subject teachers to ensure the successful delivery of content classes. Some higher education institutions are starting to promote

collaboration between EAP instructors and disciplinary teachers, for example, by opening writing centres in which writing in the disciplines underpins the pedagogy, thus fostering collaboration (Wingate and Tribble, 2012).

9.5 Potential impact of EMI on students and their studies (RQ2)

The findings of this study indicate that EMI had a positive impact on students who were comfortably proficient in English and a negative effect on those with low levels of proficiency. This tendency has already been identified by Sohn (2009) in the context of EMI in South Korea. He pointed out that English was treated as more important than the content of the lecture, and students who were not competent in English found it hard to participate in the lecture. Some studies have argued that EMI can minimise interaction between faculty and students, and reduce the level of comprehension of the content of courses taught in English. Additionally, using English to teach non-English native speakers can impede discussion among the students, putting those who struggle with the language in a disadvantageous position. As a result, EMI can lead to lower graduation rates (Byun et al., 2011; Airey and Linders, 2007; Collins, 2010).

Two-thirds of the interviewees who participated in this study had positive views about EMI as they believed that it helps them to improve their English language skills, and that it will help them considerably in their future employment and studies. This view is the result of the ubiquitousness of English in today's job market and the high demand for professional engineers with good language proficiency in both the local and international labour markets. The findings of the present study indicate that EMI may be expected to have a significant impact on students' future employability, which will be either positive or negative depending on whether or not it has helped them improve their English language proficiency and academic attainment in engineering.

Nevertheless, the study revealed that the participating Omani engineering students considered that the mandatory use of EMI had caused them to spend much of their time studying English instead of concentrating on the technical content of the courses. S12 explained:

They [his English-related difficulties] have a negative impact as I devote much of my time to studying English rather than engineering and telecommunication courses. They impact on my comprehension and understanding negatively as I need to read things several times in order to

understand. I need to check online dictionaries and text my friends to ask them about the unknown technical terms and concepts. Another impact was on my marks. Because of the language barriers I sometimes lose marks as I couldn't understand the questions well, or I couldn't express myself clearly when responding to exam questions. However, EMI has had a positive impact as my English was improved due to the engineering classes, and I managed to know most of the important technical vocabulary in my speciality. My writing was improved because of practising writing in the labs and writing projects and lab reports. I am able now to understand things more easily because of the engineering classes delivered in English, and I am able to speak to teachers and my classmates in English which was not possible when I was in the foundation years. English-medium classes are great and have been useful for us (S12).

It was apparent from the students who participated in this study that in this particular Omani college the chosen language of instruction was hindering the technical education of engineers, and this is likely to have applied elsewhere given the similar approaches. Sivaraman et al. (2014) reported similar findings in Oman and showed that the language barrier negatively affected the performance of Omani engineering students in their engineering modules. Consequently, English as their foreign language of instruction may be regarded as partly responsible for poorer academic performance and lower GPAs, which, incidentally, are being increasingly utilised by the bigger oil and gas companies as a key criterion in the recruitment of (Omani) engineers. Also, the small number of the participating students in the present study believed that the English language was a barrier for them to understand engineering concepts and the register associated with their discipline.

At the same time, all core subject teachers were of the view that their job was not to teach English, so their informal individual assessment criteria did not overemphasise the linguistic correctness of their students' output. This was a clear indication that general English, EAP, ESP and core subject teachers must come to a shared understanding of their students' linguistic needs to work towards target-oriented goals which are dictated by their students' present and future language needs. Half the number of students appear to be unable to study effectively in English after one and a half years of full-time foundation English courses (approximately 20 hours a week), which also suggests something about the students themselves. Without the personal commitment of the students to their own learning (e.g. by preparing for lectures beforehand by previewing texts and using dictionaries and online resources to learn domain-specific vocabulary on their own), no existing language programme will be able to perform academic miracles. Therefore, considering that the students are notionally well aware of the importance of English, both in the college and the labour market, teachers across disciplines

must continue to strive to motivate their students to commit themselves to learning English proactively before, during and after classes.

English plays a key role in the Omani gas and oil industry. Even though in everyday life, pidginised Omani Arabic may be the most common means of communication in the Sultanate, in oil and gas refineries, English is the language for spoken interaction and, above all, professional, written communication. Hence, since college must ideally prepare students for employment in oil and gas refineries, English has become the undisputed means of communication in education, too. The interviewees recognised that this is part of the rationale behind EMI in Oman. Two-thirds of the participating students in the present study also concurred that college offers them countless opportunities to acquire and develop their English language and communicative skills. Notwithstanding this, too much of the students' time was currently being channelled into learning English rather than engineering subjects (which are the very reason why engineering students are in higher education). This imbalance in time management has repercussions. It negatively impacts on students' learning and GPA. It also entails that engineering teachers have to modify, and frequently simplify, what they teach and calculate which concepts they will be able to explain in English and their students will be able to grasp.

9.6 Omani engineering students' coping strategies (RQ3)

My data shows that engineering students developed their own largely intuitive/informal coping mechanisms to help themselves study in English. For example, they frequently resorted to their mother tongue (Arabic) as a compensatory strategy, used online translation applications and bilingual dictionaries, sought the support of their peers, group and families, and hired English tutors. At the metacognitive level, they also developed their own personal strategies and applied lecture comprehension strategies.

Something that emerged repeatedly during the interviews was that the students (and occasionally also the teachers) continuously switched between English and Arabic, especially when explanations were needed and certainty was paramount. However, Wilkinson (2005) found that EMI can lead to ineffective content learning if the instructional technique of code-switching between L1 and L2 is adopted.

The findings of the present study seem to be consistent with other findings related to coping strategies used by EFL/ESL students (e.g. King, 2014; Joe and Lee, 2013; Marie, 2013; Suliman and Tadros, 2011; Alginahi et al., 2009; Saat and Othman, 2010; Hung, 2009; Peacock, 2001; Spack, 1997; Flowerdew and Miller, 1992). Students tend to use similar coping strategies whenever they have to study in English as a foreign language. For instance, Marie (2013) found this when examining the coping strategies of multi-lingual students in Rwanda who were studying in English. One of their most common strategies was translanguaging, i.e. the use of other languages at their disposal to handle their academic tasks.

In the Omani case, a telling example of translanguaging was given by S11.

When sometimes we have group discussion or reading we use Arabic to exchange information and aid understanding and comprehension. Some concepts were really difficult to be understood in English, therefore, my friends explained them in Arabic and we were able to understand them quickly and in a better way. Arabic translation was useful in assignment writing and when practising exams (S11).

S11 exemplified the extent to which L1 was used by students in their engineering classes. Students were supporting each other through the medium of Arabic even though the lectures were delivered in English. This implicitly suggests that translanguaging could be used in some cases to scaffold learning as it can help learners to figure out the meaning of a particular vocabulary item or scientific concept (Sayer, 2013). L1 need not be completely excluded from college. On the contrary, its use in EMI classes ought to be recognised by instructors, students and administrators. Second language teaching practitioners have often believed that L1 use is always detrimental to learners' acquisition of L2 as it presumably limits their exposure to the target language. However, numerous studies have shown that L1 can function as an effective academic tool for clarification and emphasis, and to summarise and repeat important content. It can also help to strengthen the rapport between students and their instructors – which is a key strategy for classroom management. The use of LI in EMI classes can apparently even help with many disciplinary issues (Lasagabaster, 2013).

The findings of this study showed that teachers adopted some other (beside the use of L1) coping strategies to deal with the challenges presented by EMI. For example, they simplified materials, code-switched, repeated their exposés and re-emphasised key points. These findings are consistent with Saat and Othman (2010), who studied Malaysian students' EMI coping

strategies in an undergraduate programme. Their findings are consistent with those of the present study. S11 stated that:

I often asked teachers to repeat the taught points and concepts several times and to simplify the content and materials. Moreover, I seek help from my father's electricians and mechanics [the father was an employer]. They explain things practically for me. In lab sessions I sometimes ask my friends to explain things for me in Arabic. For my writing my sister was a great help. She sometimes helps me with my reading tasks by explaining the main ideas of texts. I used the internet and online dictionaries to know the meaning of technical terms and I sometimes ask friends to help me with the meaning of unknown technical words (S11).

The study at hand, focusing on the engineering discipline in Oman, corroborated what previous EMI studies conducted in the other disciplines in other parts of the world have indicated, that is that EFL/ESL students tend to employ a range of coping strategies in order to deal with English-medium lectures. For instance, Morrison (2011) reported that Hong Kong University students were able to study in English by developing learning strategies, relying on peer support and working hard. King (2014), too, found that both EFL students and teachers in the UAE used a number of strategies in English-medium programmes, including avoidance, simplification of materials, reduction of content and code-switching into Arabic. Additionally, Flowerdew and Miller (1992), as well as Airey and Linder (2006), showed that the most salient coping strategies used by EFL students were asking questions after lectures, reading the sections related to the lecture before class, asking for the help of peers or lecturers, attempting to concentrate harder and note-taking. In short, it transpired from the literature and my own findings that EFL/ESL students in different disciplinary and geographical/cultural contents tend to use similar coping strategies to deal with the challenges posed by English-medium higher education programmes.

9.7 Perceptions of EMI and necessary skills and attributes (RQ4)

This study's findings revealed that 80% of the participating students held positive views of the use of EMI in their engineering education. S11 articulated this as follows:

The use of English is a great idea because without English I can't find a good job or improve my skills. The use of English has good value for us as students and for future careers and for studying for further degrees abroad (S11).

However, the remaining 20% would like to study in Arabic or, at least, in Arabic and English. On the other hand, all the teachers were supportive of EMI as they believed that English language proficiency is necessary in today's labour market as well as in post-graduate studies. This results from the status of English as the international lingua franca and the main language for the internationalisation of higher education.

The above findings resonate with others reported in the literature (e.g. Shamim et al., 2016; Chuang, 2015; Tamtam et al., 2013). Numerous studies have shown that students who study in English, be it as a foreign language (e.g. in Oman) or as a second language (e.g. Spanish speakers in the US) have positive attitudes towards EMI.

9.7.1 Skills and attributes required in engineering academic and workplace settings

The present study found that Omani engineering students were required to undertake tasks in their academic and workplace settings, which demanded certain skills and attributes, and which they were not always able to complete effectively. Moreover, the study indicated that the most salient skills required in both engineering workplaces and academic settings had to do with oral and written communication, interpersonal negotiation, critical thinking and problem solving, numeracy, team spirit, and organisation and planning. S12 stated that:

In order to be a successful engineer you need to have soft, transferable and communication skills. These skills are needed in your study and your future workplace too. You need to know maths, logic and calculations. Moreover, you need to know English and other languages to communicate with different types of people. Communicating in English is the most important skill that you need to master. You need to know how to write good site and lab reports and how to write proposals and professional emails. You need to know how to hold meetings, run a business and how to manage people. You need to know how to speak in public and how to negotiate with others in business activities and tasks. You need to be a good listener, speaker, reader and problem-solver as well (S12).

The importance of communication skills for professional engineers was highlighted by Singh (2012), who claimed that leading petroleum companies, which offer good salaries, attractive perks and incentives, along with prospects for career growth, favour engineers with good communication and presentation skills. Employers realised the importance of presentation skills in certain situations in the engineering industry and turned them into criteria for recruitment. Besides, nowadays engineers often need to solve technical and non-technical problems in their workplace. Given that these problems demand critical-thinking skills, it is

necessary to embed them into the foundation and post-foundation syllabi and integrate them into engineering textbooks and projects.

According to S11, it has become mandatory for Omani engineering graduates to possess these transferable skills:

I need to be articulate and to have good thinking skills in order to solve technical and non-technical problems. I need to have leadership and team work skills. I need to be a multi-tasker who can work under pressure and with different nationalities and with people coming from different backgrounds (S11).

Students such as S11 were aware that transferable skills are important for engineers in today's labour market. EAP and engineering teachers should, therefore, bridge the gaps between the engineering classroom and the engineering workplace, and this includes the language gap, too. After all, the ultimate objective of engineering courses is to prepare their graduates for the workplace by equipping them with the necessary disciplinary knowledge and transferable skills and attributes.

Additionally, my findings also showed that students viewed writing skills as one of the most important skills in both academia and the workplace. For their English courses students were required to carry out a wide range of writing tasks, including lab reports, emails and memos. Furthermore, they had to write papers and reports for their engineering courses, too. However, as mentioned on several occasions, these tasks and assignments were perceived as burdensome and difficult. The students' lack of grammatical dexterity, lexical knowledge and formal writing skills could sometimes condition them to resort to plagiarism: it was a choice between failing and cheating. In fact, some students would have been equally unable to perform these tasks without plagiarising in their mother tongue, too. It became clear during classroom observations that most students lacked academic literacy, regardless of the language being used. Without academic and professional literacy, students could hardly be expected to understand the specific discourses associated with a given discipline such as engineering. As a result, it would be difficult for them to successfully negotiate the academic and professional demands of their discipline (Klinger and Murray, 2012).

This Omani study corroborates Maturro's (2013) Uruguay-based study's conclusion that soft skills, such as the ability to communicate well with others, lead, work on teams, analyse issues, solve problems, and understand and serve consumers' needs, were vital in software

engineering. Higher education institutions should ensure that students not only acquire all the important academic literacy skills, but also the necessary array of soft skills. Institutional support seemed to be important for fostering students' soft and transferable skills to enable them to deal with their study and be ready for the demands and needs of their future workplaces.

Tertiary education institutions need to adopt the appropriate EAP materials, such as the pragmatic approach, which aims to prepare students for the literacy demands at the tertiary level. This approach is a skills-based, instrumental approach that attempts to familiarise students with dominant conventions in Anglo-American writing (Harwood, 2004). It stresses that students should be exposed to dominant discourse norms. In other words, engineering students need to be exposed to the writing conventions found in their academic and workplace settings in order to function effectively in doing their required tasks and jobs. The integration of the pragmatic and critical approaches to EAP should help the learners to learn the academic conventions of their discourse community and do their job successfully (Lea, 2004). Omani engineering students need to be familiar with their discipline's academic discourse and to be able to use it so that they can gradually learn how to function effectively in their academic community and their future workplace. So, aligning the academic components with the tasks and activities required in the workplace could help the students to function more effectively at present and in their future career.

In short, the curriculum should be both integrated and true to life, i.e. college (at present) and the workplace (in future). Students ought to be helped to acquire the appropriate academic knowledge and skills, as well as the necessary soft skills, which are required in academia and their careers. The findings of this study have indicated that both teachers and students held similar views of the skills and attributes which are necessary in the engineering classroom and the workplace.

The following section will outline some of the suggestions, which were made by engineering students, engineering teachers and EAP teachers, for minimising the difficulties encountered by Omani students in English-medium engineering programmes in Oman.

9.8 Overcoming the challenges inherent in English-medium engineering programmes in Oman (RQ5)

A number of suggestions were made by the participating engineering students, EAP teachers and engineering teachers for overcoming the challenges resulting from studying engineering through the medium of English in Oman. Some students seemed to have given thought to their difficulties and had constructive suggestions to make. S12 was an example of this:

I think the government need to do the following: first, increase the number of contact hours for teaching English in schools. Second, all science subjects should be delivered in English in schools particularly for science stream students. Third, foundation courses should be linked with school subjects. Fourth, post-foundation courses should be taught up to the final year from year one up to the fifth year. The foundation courses should be oriented towards the degree, i.e. some technical terms related to engineering should be introduced in the foundation and post-foundation year. Fifth, they need to bring good English language and engineering teachers from all over the world not only from two or three countries. Finally, teachers should encourage students to speak English on campus and outside the colleges. They could establish English clubs and forums for students to use English only. Students should not be allowed to communicate in Arabic while they are on campus as this will not help them to develop their confidence and improve their speaking and communication skills. Students should be trained to give presentations in English during their schooling as this will help them to develop their speaking and communication skills. Teachers should encourage students who are good in English by giving those rewards (S12).

When all the suggestions are considered, the following general recommendations can be distilled from them.

a. Reform the school system

The existence of foundation programmes lasting between one and one-and-a-half years across Oman is clear proof that students leave secondary education unprepared for tertiary education. The same could be said about their unpreparedness for any type of employment, be it vocational or clerical.

This resonates with the findings of Troudi and Jendli (2011), who investigated Emirati university students' EMI-related challenges and found that students who had attended private English-medium schools were more prepared to face the academic demands of studying in English than their colleagues who had attended governmental Arabic-medium schools. The

language gap between Arabic-medium secondary schools and English-medium tertiary institutions is currently too high for Gulf students to successfully cope with it.

The ministries responsible for tertiary education in the case of this research, for engineering programmes in Omani colleges of technology – need to create a language support infrastructure that can help to bridge the gap between general education in schools and EMI engineering programmes at college (Lawrence et al., 2017). However, since this study was focused on students’ and teachers’ perceptions, this is not the place for me to directly delve into issues pertaining to the system and, more specifically, to the Ministry of Manpower, under which the colleges of technology have been grouped.

b. Review and restructure foundation and post-foundation programmes

Teachers and students, each in his or her own way and based on their perceptions, spoke of the need to reform higher education. Three main wishes were stated: to see (1) communication-related courses being given more prominence, (2) higher-order thinking skills being integrated into language courses, and (3) Arabic-English bilingualism being formally accepted in Omani colleges. These transferable skills were not fully embedded within the foundation and post-foundation courses (see appendix 6).

1. Strengthen the role of communication-related courses

Time and time again, students regretted that they could not express themselves effectively in English. Their perception that communication matters, even to engineers, has repeatedly been confirmed by researchers. For example, Missingham (2006) underlined the importance of the role played by communicative competence in professional success within the engineering industry. Consequently, many researchers believe that an inter-disciplinary approach to teaching and learning in engineering programmes should combine communication and design courses in holistic ways. In other words, communication skills should not only be taught explicitly in specially designed courses, but also integrated within core courses.

2. Integrate higher-order thinking skills into language courses

The emphasis on communication would be thwarted if it did not provoke reflection about the content and depth of the communication process. In fact, it has become increasingly apparent in the current climate of ‘fake news’ that it is not enough to merely be ‘saying something’ if it is incorrect, a lie or not accurately thought through. People need to receive news and

knowledge with a critical and open mind. Hence, the present study confirmed the importance of integrating communication and higher-order thinking skills into the engineering programme and, more specifically, in EAP courses.

Furthermore, the interviews revealed that analytical skills, together with oral and written communication skills, were viewed by the participants as important not only for college, but also for the workplace.

3. Adopt a bilingual engineering education system (translanguaging)

One of the major suggestions of the findings was that a bilingual engineering education system (translanguaging) should be adopted. After all, bilingual students face numerous challenges as they seek to develop their disciplinary knowledge, and this can be particularly challenging in content areas such as science (Esquinca, 2014). One aspect of the Omani engineering learning experience is the students' use of Arabic (their L1) and translanguaging to cope with their English-medium engineering programmes and to communicate with their teachers and classmates. Besides, some of the teachers indicated that they, too, combine English and Arabic when they think that this can benefit their students. Given that translanguaging is increasingly being used within the academic community as an approach to the teaching of science-related courses elsewhere (García, 2009), this raises the question as to why not do likewise in Oman.

However, setting up bilingual education is easier said than done. It requires material and human resources and infrastructure. Therefore, ministries must be creative as to how they design and implement linguistically double systems as colleges could hardly ever offer the same course twice, once in English and once in Arabic. Having said this, given the homogeneity of the student population of the Omani colleges of technology, where practically every student is Omani, the theory could be explained in Arabic-medium theoretical courses, while its application and practice could be taught and supervised in English. This would make sense, since the absolute majority of the graduates from these colleges, aim to get jobs as engineers in English-medium workplaces similar to their practical classes and workshops rather than in academic settings similar to their theoretical classes.

The literature has various examples of studies of the importance of translanguaging in higher education (Kim, Kweon and Kim, 2016; Wahi, 2013; Lasagabaster, 2013; Macaro, 2009). The informal incorporation of this strategy could be beneficial for Omani EFL students with low language proficiency and problems with content courses delivered through the medium of English.

4. Consider the language proficiency level of disciplinary teachers

Some of the students participating in this research also suggested that the language proficiency of core subject teachers was a factor making English-medium education more difficult for them. The language proficiency of the teaching staff in English-medium programmes must be ensured. This can be problematic at times as core subject teachers often believe that they are not responsible for teaching language (Airey, 2012). However, knowing one's subject well is one thing, and being able to package said knowledge and unpack it in ways that enhance students' grasp of it is something else (Lawrence et al., 2017).

Lawrence et al. (2017) stated that "in technical subjects such as engineering and medicine, it is often the case that the teachers have conducted research in the field in English, thus their technical language is well developed, but their ability to answer ordinary questions and engage in non-technical discussion may not be as effective" (p. 40). Knowledge of the technical language and the associated register is not enough for content teachers to deliver their subjects effectively. They also need to master the non-technical language necessary to communicate effectively with students and deliver content successfully. Lawrence et al. (2017) claimed that it is noticeable that EMI content teachers make systematic linguistic errors when delivering their content, and these errors are in turn repeated by their students in their writings and presentations. Consequently, it would be recommended that core subject teachers are tested before recruitment on their linguistic and methodological ability to teach through the medium of English. Furthermore, EMI induction workshops and courses should be offered to the faculty to help them hone their oral expression, classroom interaction techniques and methods of delivery.

In short, acting on the above recommendations would imply a systemic and systematic revision of the engineering programmes with one overriding pedagogical goal: how to enhance the quality of the students' and colleges' output. Achieving this might call for the reform of the school system as an interconnected whole, not only with a view to scaffold the ongoing nation-building process, but also to secure the growth and sovereignty of the Omani economy by allowing Omanis to compete effectively with foreign workers and to depend less on the latter.

However, there are some practical difficulties that must be kept in mind. Reforming the school system and giving greater prominence to English and higher-order skills in pre-college education cannot be done overnight. It is also financially onerous, especially at the current time of low crude oil prices.

The problems of the Chinese business students in English-medium courses, studied by Jackson (2005), were often caused by the learners' inadequate preparation during their schooling and pre-university courses. This suggests that schools and foundation courses at that time were incapable of preparing students for their disciplinary degrees in terms of their language proficiency and transferable skills. Regardless of the discipline, transferable and soft skills are of vital significance in higher education, and all education systems should strive to equip their students with them. Creating on-campus English language zones, such as for students to practise their English, would be a good idea to sustain students' oral and aural communication skills and to foster their confidence and motivation. Both EAP teachers and engineering teachers need to encourage students to speak English both on campus and outside the college. EAP teachers, in particular, need to build up good personal relationships with content teachers to create an atmosphere of trust and support so as to discuss the issue of students' language-related difficulties and problems, and suggest ways to handle these problems (Lawrence et al., 2017). Nevertheless, such a pre-emptive, interactive and inter-disciplinary approach cannot be realised when the teachers' timetables have not been designed with it in mind. In short, although short-term solutions may be the easier ones to implement, they cannot be implemented at the expense of longer term, more systemic ones.

9.9 Chapter summary

The discussion highlighted the main findings and points covered in the analysis chapters. This included the significant experiences of Omani engineering students learning through the medium of English. Challenges and difficulties presented by EMI were apparent. The first part of the discussion considered engineering students' perceptions in relation to the challenges of study through EMI and the factors that contributed to these challenges. The second part of the discussion dealt with the impact of EMI on Omani engineering students and outlined their coping strategies. The third section handled the Omani engineering students' perceptions of EMI and the skills and attributes required in the EMI classes and in engineering careers. The final part discussed the findings related to engineering students, EAP teachers and engineering teachers' suggestions for overcoming challenges presented through the medium of English in Omani engineering education. The next chapter will be the concluding chapter where the major conclusions will be drawn. The pedagogical implications of the study will be discussed and some recommendations will be made.

Chapter 10: Conclusion

10.1 Introduction

This qualitative interpretative study was carried out to explore Omani engineering students' learning experiences studying through the medium of English at an Omani governmental technical college. The study utilised semi-structured interviews as the main source of data collection, along with classroom observations and the review of documents. A multi-theoretical analytical framework was adopted, employing elements of socio-cultural theory; academic literacy theory; translanguaging theory; and some EAP-related theories to analyse, interpret and understand the experiences and stories of these EFL/ESL students. This chapter summarises the main findings of the study, outlines the pedagogical implications of the study and proposes some recommendations for informing the successful implementation of EMI and the provision of delivery of EAP courses.

10.2 Summary of the main findings

The current study was framed to achieve the following five main aims:

- Identify and investigate Omani engineering students' perceptions about challenges they face when English is used as the medium of instruction (EMI) in their engineering programmes;
- Identify how these challenges impact on students and their studies;
- Identify how engineering students cope with EMI challenges during the course of their studies;
- Offer some suggestions for overcoming the challenges presented by studying through the medium of English;
- Critically examine the concept of EMI in the context of Oman;
- Identify engineering teachers', engineering students' and EAP teachers' views in relation to the skills and attributes that are important for success in the study of engineering through EMI.

The study seeks to answer the following research questions:

- 1) What are Omani engineering students' perceptions of their experiences when English is used as a medium of instruction?
- 2) What challenges did engineering students in Oman encounter when English was used as a medium of instruction in their engineering programmes?
- 3) How did these challenges impact on these students and their studies?

- 4) How did these engineering students respond to these challenges?
- 5) What skills/attributes did these engineering students, engineering teachers and EAP teachers in Oman think are important for success in learning in the context of engineering taught through the medium of English?
- 6) What were the engineering teachers', EAP teachers' and engineering students' suggestions for overcoming the challenges presented by studying engineering through the medium of English in Oman?

Based on the above-mentioned study aims and questions, this section discusses and synthesises the main study findings in answering the research questions and briefly discusses these findings in relation to existing literature.

10.2.1 Engineering students' perceptions in relation to the challenges of study through EMI

Students' stories demonstrate that they held positive views and attitudes towards the use of EMI in their engineering education despite the challenges it presents. MI offered opportunities for them and their engineering teachers to practise and improve their language proficiency and repertoire. This study, therefore, argues that EMI has become a reality in tertiary education in most parts of the world, and its effectiveness could be enhanced by establishing appropriate EMI infrastructure and pre-university preparation programmes in order to help Omani students to overcome any potential difficulties resulting from the implementation of EMI. Additionally, the students interviewed indicated that there were limitations within their foundation and post-foundation programmes behind the challenges that they had experienced during their study of engineering. Many students believed that this undermined their academic performance and negatively impacted their GPA.

Student interviews also revealed a belief that EMI could open the door for internationalisation by attracting international students from all over the world and this might develop higher education institutions in Oman. Moreover, comments by participants in the study also suggested that bilingual education, where students could choose to study through the medium of Arabic, was an approach that would be welcomed by some of the students with low English language proficiency. Difficulties in understanding lectures delivered in English, and the problem of communication in English and handling the discipline-specific terms and concepts in their engineering studies, were particular problems.

Moreover, evidence from the study indicated that participants experienced major learning difficulties and challenges with EMI, namely, a lack of proper acculturation in the discourse communities of the engineering discipline; speaking and communication; discipline-specific terminology; study skills; lecture comprehension; and a number of task-related activities. The key challenge encountered by students was their inability to communicate effectively in English in either written or oral forms. This reflects their major difficulties in their English-medium context. Some of the students were critical of the use of English as the medium of instruction despite the benefits they gained from it. They felt that EMI might hinder their creativity and waste their time on language issues rather than studying their content courses. They believed that their educational background in schools and pre-university preparation courses were not strong enough to make them ready to handle their engineering tasks through the medium of English. However, the results suggest that students had benefited from their foundation programmes despite the shortcomings and limitations of this provision. The findings showed a need for reviewing these programmes to include a range of communication and transferable skills components. This would in turn help students to successfully acquire the essential study and transferable skills and would help them to handle their engineering studies more effectively and they would be more engaged in their content classes. Most importantly, it would also help them in carrying out their tasks and activities in their future career and workplace. Students felt that teachers, both EAP and core subject, should encourage them to use English on campus and outside the college when communicating with each other and to create opportunities for them to practise the language.

Students' responses indicated that they appreciated the importance of EMI in an EFL/ESL context as it could help to access disciplinary content written in English, as in some instances translation may not help in understanding disciplinary concepts and content.

Given that those participants reported positive views about EMI, despite the challenges it presented for them, higher education institutions should consider establishing and setting up pre-university preparation programmes which could cater for students' study and career settings. This could help students to experience fewer challenges when embarking on their engineering speciality. These EAP/ESP courses could be run pre-sessionally and in-sessionally and should strive to develop students' academic and professional skills, including oral and written communication skills, and presentation and analytical skills. These skills could also be integrated into disciplinary and engineering courses to help students to acquire them further and to deploy them in their workplace.

10.2.2 What challenges did engineering students in Oman encounter when English was used as a medium of instruction in their engineering programmes?

Study participants' comments revealed that they had encountered a number of challenges in their English-medium engineering programmes and that these varied. Although the majority of the participants reported that they encountered a number of language-related challenges, they nevertheless held positive views on EMI. Participants' comments indicated the key debilitating disciplinary and contextual factors which shaped these EMI challenges. These EMI language-related challenges can be categorised broadly into four, namely, academic literacy-related challenges; communication-related challenges; discipline-specific-related challenges; and lecture comprehension-related challenges.

The investigation revealed that engineering students experienced a range of academic literacy-related challenges. Academic literacy skills are of vital importance for engineering students and professional engineers as well. However, there are a number of academic literacy-related challenges experienced by Omani engineering students, which can be further classified into in-class writing task-related challenges and in-class reading-related challenges. As for in-class reading tasks, students experienced a number of problems with understanding and comprehending engineering texts and the associated disciplinary-specific terms and genre. These problems were attributed to students' lack of disciplinary background and the use of mother tongue as a medium of instruction in their pre-schooling, and the inadequacy of their pre-sessional and in-sessional programmes in preparing them to cope with their speciality in an effective manner.

Likewise, two-thirds of the students experienced challenges with in-class writing tasks and activities. The in-class writing challenges were caused by a lack of the basic academic writing skills and knowledge of the conventions. Additionally, this may have been exacerbated by unfamiliarity with the engineering associated register and their lack of enculturation in the disciplinary subjects and contents. The participants attributed the difficulties with understanding engineering and other discipline-specific terms and concepts to their lack of academic socialisation in their discipline. This study suggests that the main challenges that Omani engineering students faced in their engineering studies were associated with some key debilitating factors, such as inadequate prior learning experiences, lack of enculturation in the disciplinary discourse, inadequacy of foundation and post-foundation course materials, and a

lack of communication between EAP teachers and engineering instructors, as well as an absence of EMI training for engineering instructors.

Evidence from this study also indicated that students faced difficulties with communication in English with both their classmates and their teachers. A number of studies highlighted the importance of communicating in English for engineering students and professional engineers all over the world. However, some of the Omani engineering students reported that they felt inhibited and apprehensive when trying to speak in English. This reflects their inability to communicate freely in English due to their lack of experience of speaking English, despite its crucial role in the academic and career settings. Moreover, it was found that both engineering and EAP teachers expressed their concerns about students' oral and written communication-related problems and their effect on their academic performance and achievement in their engineering studies. Thus, participants in this study believed that there is a need for more academic- and industry-responsive communication courses, which should be run throughout the degree, to enable students to acquire the essential skills for their study and their future workplace.

The participants also indicated the lecture comprehension-related challenges faced by students in their English-medium engineering programme. These challenges could also be attributed to a number of contextual and language-related factors. The problems with lecture comprehension seemed to be exacerbated by the use of inappropriate teaching methodologies and teachers' speed of delivery. Students may not be able to interrupt their teachers and ask questions to seek clarification due to their lack of communication skills and low English language proficiency. These findings suggest that there is a need for addressing key factors contributing to lecture comprehension difficulties and challenges. Familiarity with engineering discourse, genre and technical terms is of vital importance in understanding engineering lectures and technical discourse. Therefore, academic socialisation in the engineering registers seems vital for all engineering students and graduates to be a part of that discourse community. Moreover, the students indicated that their educational backgrounds in schools, and the use of Arabic as a medium of instruction, were a major contributing factor to these difficulties and challenges. The key problem encountered in EMI lectures was their inability to take notes and to use English to communicate with their engineering teachers by asking questions, seeking clarification or commenting on the delivered content. This reflects the problem with comprehending lectures in an EMI engineering context in Oman. The majority of these problems and difficulties have been experienced by other EFL/ESL students and have been

reported in the literature. Thus, gearing the foundation and post-foundation programmes towards the engineering speciality would help students to be socialised and enculturated in their academic disciplines and discourses. Moreover, from the responses presented, it could be argued that reviewing and restructuring the pre-university preparation programmes is a must and the tensions between content subject teachers and EAP teachers about students' language-related problems could only be effectively addressed through collaboration and cooperation between the two parties. Nevertheless, this can only be done by establishing official mechanisms for cooperation and collaboration for the sake of helping students to overcome their language-related difficulties more effectively and successfully.

10.2.3 How did these challenges impact on these students and their studies?

Students' conversations revealed that they believed that EMI has provided opportunities for them to improve their language proficiency, despite its associated challenges and difficulties. This suggests that the use of EMI in Omani engineering education should be promoted and sustained as it enhances students' language competence and enables them to find good jobs in the future in the engineering-related industries. However, a considerable number of the participants expressed their concerns about EMI and its impact on their academic achievements and their GPAs. Further evidence comes from a number of studies, which have indicated undesirable effects of EMI on students and their studies, such as EMI minimises interactions between faculty and students; reduces the level of comprehension of the content of the course; impedes discussions among students; disadvantages students with low proficiency; and it lowers graduation rates (Byun et al., 2011; Airey and Linders, 2007; Collins, 2010).

In contrast, engineering and EAP teachers believed that EMI had a positive effect on students and their future career regardless of the challenges that EMI presented to EFL/ESL students. This suggests that higher education institutions need to ensure that they offer appropriate EMI infrastructures and promote adequate pre-university preparation courses before launching their EMI programmes and degrees. This would enable students to study their disciplinary courses successfully and minimise EMI language-related challenges and difficulties. In order to run an effective EMI programme, higher education institutions need to meet successful EMI implementation needs, demands and requirements. The dialogue between engineering teachers and EAP teachers should take place before implementing EMI programmes by creating bridges between them and avoiding any barriers that might develop in the future.

10.2.4 How did these engineering students respond to these challenges?

Omani engineering students participating in this study revealed that they adopted a number of coping strategies to deal with EMI language-related challenges and difficulties. The key coping strategies used were the use of their mother tongue (Arabic) as a compensatory strategy; using translation, bilingual dictionaries and the internet; usage of peer, group and family support; opting for English tuition classes; using personal strategies; and some other lecture comprehension-related strategies. Some of these strategies were used more than others. For example, the use of mother tongue (Arabic) as a compensatory strategy was the most widely used coping strategy. This acknowledged the role of mother tongue on learning content subjects when delivered in English. Therefore, it could be argued that the use of mother tongue (L1) in content classes is not always problematic; it could be used to help students understand some of their content courses which they could not fully understand in English. Additionally, mother tongue (Arabic) was used by students to help each other during lectures and this was noticed during classroom observations. Translation was also another widely used coping strategy used by students to overcome their EMI challenges and difficulties.

Students reported that they used technology-driven translation machines to translate their assignments, engineering textbooks and materials in order to have a good understanding of them and make sense of them. These machine translation tools were perceived by students to be effective in helping them to translate the engineering content written in English into Arabic. It was evident that translation was creating opportunities for learning within content courses. However, teachers believed that these translation tools were not effective and that they mistranslate concepts in some cases, which might mislead students and impede their comprehension and understanding of those concepts and ideas. In the literature, it is evident that translation is one of the widely adopted coping strategies used by EFL/ESL students to handle their EMI-related challenges and difficulties (Sayer, 2013; Lasagabaster, 2013; Marie, 2013; Saat and Othman, 2010). This study suggests that mother tongue had a positive impact on studying engineering through the medium of English and these students recognised its importance and significance in helping them to study engineering. It scaffolded students' learning, particularly those with low language ability and proficiency levels. In considering whether it is appropriate for students to use their mother tongue in content classes, Langman (2014) argued that the reason for using L1 (translanguaging) is its pedagogical value for developing teachers' and learners' awareness and its importance as a mediating tool which

fosters learning and the teaching process. It could be argued that EFL/ESL higher education institutions need to accept the need to adopt a policy which accommodates L1 use, particularly among learners with a low level of L2 proficiency. This could ease the transition for the students into tertiary education, which requires them to adapt to a very different culture of learning to that experienced within their previous Arabic-medium schooling (Mouhanna, 2010).

Evidence also indicated that students used their group and family support as a coping strategy. They sometimes sought help from friends and family members in dealing with EMI and engineering-related challenges. This social support, which Vygotsky (1978) called ‘mediation’, is one of the fundamental concepts within socio-cultural theory, which refers to the part played by other significant people in the learners’ lives, whereby their learning is enhanced by selecting and shaping their learning experiences. The cooperation within groups and help from family clearly helped Omani students to learn, to complete their assignments and to effectively address their engineering tasks. Additionally, Omani engineering students used L1 in some situations in their classrooms as a means to mediate their learning and as a strategy to cope with their EMI challenges and difficulties. Moreover, students employed a range of personal strategies in addition to including opting to pay for English tuition classes to overcome the challenges presented by studying through the medium of English. These were the key strategies employed by Omani engineering students to minimise their EMI-related challenges and carry out their engineering tasks and activities successfully.

10.2.5 What skills/attributes did these engineering students, engineering teachers and EAP teachers in Oman think are important for success in learning in the context of engineering taught through the medium of English?

An essential aspect for success in learning, in the context of engineering taught through the medium of English, is transferable and soft skills. Yaacoub et al. (2011) highlighted that transferable and soft skills are significant in workplace contexts and that they are increasingly in demand for engineers working in today’s highly independent and globalised world. Additionally, Pulko and Parikh (2014) stated those engineering departments have recognised the need to equip students with effective study and professional skills in their early pre-university education before their graduation. Globalisation has put pressure on higher education institutions to produce graduates with skills and expert knowledge. These graduates should be capable of thinking technically, internationally, socially and financially in terms of

relationships (Hopp, 2000). However, the literature showed that there was a shortage and gap in engineering skills (e.g. Grainge, 2005; Mulder, 2007; Anderson, 2008).

Participants' conversations revealed a number of transferable skills and attributes important for success in learning engineering delivered through the medium of English. Their comments revealed that the skills which are in high demand in engineering classrooms and career settings are: oral and written communication skills; negotiation skills; critical-thinking and problem-solving skills; numeracy; team skills; and organisational and planning skills. Arguably, it is imperative for engineering graduates to acquire disciplinary knowledge, experiences and skills that equip them with the necessary workplace skills and attributes which can enable them to continue learning throughout their life and career (Harun et al., 2017). However, literature shows that there was a gap between academic education and the required skills in industry (Wahl et al., 2012).

Given the importance of oral and written communication skills, higher education institutions pay particular attention to these skills in their syllabi and teaching process (Krassadaki et al., 2014). These skills should be incorporated and integrated into the foundation and disciplinary courses. Classroom observations undertaken during this study showed that students were struggling to understand in EMI engineering classes and to communicate their ideas in English to their teachers successfully and that this was due to their inadequate language proficiency and communication skills. This suggests the need for revisiting foundation and post-foundation courses to make them responsive to both the academia and industry needs in terms of transferable and communication skills. Having a motivating learning environment, which offers tasks and activities which enable students to communicate in English, is of importance. The post-foundation public-speaking course was perceived by students as useful but it runs only once. The study highlights the importance of offering more public-speaking courses to enhance students' oral communication skills and attributes. By developing such skills, the higher educational institutions in Oman would potentially be producing engineering graduates who were more capable and more able to carry out their jobs successfully. As for oral communication, engineering students are expected to master their own discourses and writing conventions which distinguish them as an academic community from other discourse communities. They need to possess discipline-specific writing skills to write emails, lab reports, research papers, memos, meeting minutes and so on for the workplace. Both engineering and EAP teachers need to provide tasks and activities which would encourage and promote such important and significant skills. EAP teachers and engineering teachers are

recommended to adopt teaching strategies and to create opportunities which could encourage students to practise the language communicatively.

Evidence from this study also indicated that both the teachers and the students who participated in this study believed that critical and analytical-thinking skills are required in the engineering study and workplace settings. Engineers need to synthesise and analyse information in order to come up with an innovative solution to the problem and to make a clear statement and report about it. This suggests that tertiary education institutions need to update their curricula and teaching materials to meet their labour market critical-thinking skills needs and demands.

10.2.6 What were the engineering teachers', EAP teachers' and engineering students' suggestions for overcoming the challenges presented by studying engineering through the medium of English in Oman?

Participants felt that there is a need for doing the following to minimise EMI challenges and difficulties experienced by Omani engineering students: reforming the school system; reviewing and restructuring foundation and post-foundation programmes; adopting a bilingual engineering education system (translanguaging); considering the language proficiency level of disciplinary teachers; strengthening the role of communication-related courses; and integrating higher-order thinking skills into language courses.

This study suggests that reforming the school system in Oman could be one of the strategies for overcoming EMI challenges in higher education specifically by helping students to overcome their language-related difficulties. The reform could be done by replacing the school medium of instruction, which is Arabic, with English, particularly in teaching science-related subjects such as physics, maths, chemistry and biology. This would help students to become familiar with the associated English register and with technical terms and concepts. This would also accelerate the disciplinary enculturation process and enhance their language development. Additionally, the Omani colleges of technology need to review the current structure and content of their foundation and post-foundation programmes in terms of academic literacy skills, transferable skills, discipline-specific terms, and oral and written communication skills to meet the classroom and industry changing needs and demands. It is important for engineering students to master their disciplinary writing and speaking conventions and norms to successfully communicate with their clients throughout the world. The results also highlighted the importance of pre-university courses in shaping students' experiences and perceptions of the challenges encountered by studying through the medium of English.

Therefore, the EAP courses offered in the foundation and post-foundation courses need to be regularly reviewed and updated to cater for students' classroom and study needs. One of the shortcomings of EAP and literacy courses is their focus on one skill, such as writing, as was echoed by Braine (2002), who found that one of the fundamental shortcomings of academic literacy studies is their focus on writing tasks alone. Embedding disciplinary literacies within pre-university courses and core subjects is of vital importance. Students need academic literacy and disciplinary literacy skills to learn their disciplinary subject and to demonstrate their technical knowledge and what they have learned (Lea, 2004). Having considered all these aspects, this would minimise the challenges associated with studying engineering through the medium of English and help students to handle their engineering study more successfully. Participants were of the view that adopting a bilingual engineering education system (translanguaging) would provide students with the freedom to choose their English-medium programme based on their existing language proficiency and capability. However, this would be costly as higher education institutions would need to employ bilingual engineering teachers and provide engineering curricula and textbooks in both English and Arabic. However, teachers need to be able to appropriately interpret bilingual phenomena and use students' L1 as a resource for learning in their classes (De Jong and Harper, 2015), rather than seeing it as an obstacle for learning. Translanguaging has the potential to empower the critical voice and consciousness of the learner and to impact classroom participation positively (Melo-Pfeifer, 2015). Bilingual teaching can help learners to figure out the meaning of a particular vocabulary item or scientific concept (Sayer, 2013). This reflects the need to have engineering teachers with bilingual skills who can utilise students' mother tongues in some cases to help them understand certain concepts and terms which were difficult for them to understand in English. The language proficiency level of disciplinary teachers was an issue. This suggests that the role of the subject teachers should not be restricted to teaching their content courses but should also be used to help students to develop their language skills. Universities and colleges need, where appropriate, to train subject teachers in EMI methodology and pedagogy in order to enable them to deliver their content classes successfully.

The outcomes of this study indicate a need for strengthening the role of communication-related courses; and for integrating higher-order thinking skills into language and content courses—this would help students cope with their speciality more effectively. From the evidence presented, it can be argued that communication-related courses and critical-thinking courses should be offered throughout the engineering degree, and that they should be taught explicitly due to their

importance in the classroom and industry. Literacy courses also, particularly writing projects, speaking and reading, should include analytical and communication skills both for the academic and professional settings. This would contribute significantly to helping students handling the language-related challenges presented by studying through the medium of English. All these suggestions made by study participants could help higher education institutions to establish and implement their EMI courses more effectively and this would facilitate learning content through EMI.

10.3 Study implications and recommendations

In light of the study findings, some implications and recommendations for EAP teachers, engineering teachers and policymakers will be presented and discussed. These implications and recommendations are intended to help improve the content, provision and delivery of EAP courses and give insight into engineering teachers on how to best deliver their content courses through EMI, and how to help their students overcome language-related challenges and difficulties.

Having interviewed engineering students and observed engineering classes, the study suggests some possible strategies which could help students to overcome EMI challenges and difficulties. The findings of the present study could also be used to provide materials for training engineering teachers on how to successfully deliver their content through the medium of English. Ideally, this could be done by using extracts from EAP and engineering teachers' suggestions on how to help students to overcome their EMI-related problems and difficulties. There is clear evidence that if subject teachers know their students' mother tongue this helps them to enable learning. Collaboration between English language teachers and engineering and core subject teachers is needed in order to address the roots of these linguistic problems. Study skills courses on note-taking, academic and transferable skills should be introduced to engineering students before they join their technical specialities. Further, engineering teachers should be trained on pedagogical issues and how to use EMI successfully and purposefully to release the great potential of EMI higher education in Oman.

This study has pedagogical implications for improving the uses and policies of EMI in EFL contexts. The findings might help teachers, practitioners and decision-makers in improving engineering education. The findings might promote the use of EMI in engineering and science-

related education as they might raise EAP teachers' and engineering teachers' awareness about their students' difficulties and challenges in their EMI programmes and how best to adopt teaching materials and coping strategies to handle their students' learning difficulties and problems.

The findings of the present study could also be used to provide insights for EAP/ESP textbooks, materials writing and development, and teacher training programmes, and the findings may be used to reduce the potential negative impact of EMI on students' learning of the content courses. Finally, the study recommends that engineering teachers need to promote the judicious use of L1 by students in their engineering classes, in some cases as a coping strategy, as this might help students' understanding and comprehension of their disciplinary terms and concepts.

10.4 Contribution of the study

The present study makes a contribution to knowledge, specifically to the field of EAP/ESP, EMI and language education as it explored the learning experiences and perceptions of Omani engineering students in relation to their study through the medium of English. This study, to the best of my knowledge, is the first study conducted in the Sultanate of Oman that looked closely at engineering students' experiences and perceptions about the use of EMI in their tertiary education. Additionally, the present study introduces a new perspective (pragmatic views on EMI) which contributes to the expansion of EMI research and presents EFL/ESL voices on EMI in engineering education. Moreover, this study draws on a multi-theoretical approach, which includes socio-cultural theory, as an overarching framework of reference to help to illuminate, conceptualise and understand engineering students' learning experiences through the medium of English in higher education in Oman. Other theoretical perspectives, which were also considered in order to make sense of the data in this study, were those associated with socio-cultural theories, academic literacy, EAP, and classroom translanguaging. The application of a multi-theoretical approach to a context such as the Gulf, more specifically Oman, would be significant. Additionally, the study makes a contribution to knowledge of EAP teaching and learning in the Gulf region, particularly in Oman. The study also provides evidence that the use of L1 could help students in their content subject classes if it is used judiciously.

Another important contribution of this study is that it focuses on engineering students', EAP teachers' and engineering teachers' perceptions about difficulties and challenges in learning engineering through the medium of English. Few studies have looked into this area from this perspective in the discipline of engineering. The present study therefore contributes to the existing literature on EMI in both the local and international contexts.

The study also provides an insight into students' coping strategies, revealing unexpected strategies used to handle their EMI-related challenges, such as L1 was being utilised by EFL/ESL students in order to cope with their English-medium programmes. Moreover, the study shows that there is clear evidence that EMI in practice operates in a complex web of informal language switching. The study makes another important contribution which is methodological. It provides an important contribution with regards to qualitative methodology in this context as most of the studies, which were carried out in this particular context, were survey-based studies. The study contributes to EMI research as most studies conducted in this area were from critical perspectives. Those studies were focused on problematising EMI and its use and implementation in EFL/ESL contexts. The main contributions of this study were stated from the perspectives of EAP teachers, engineering teachers and engineering students in an EFL context.

Limitations of the study and suggestions for further research

The current study is significant as it focused on the experiences and perceptions of a group of Omani undergraduate students who were studying their engineering bachelor degree through the medium of English and is the first to investigate the experiences of Omani engineering students studying through the medium of English. The study centred on a specific case within a single college, one of seven colleges of technology in, Oman, which may impede generalisation, though it may give insight into, and could be applicable and transferable to, other similar contexts.

The study did not include engineering graduates, employers or professionals from industry whose voice could have contributed much to the analysis of data and issues related to the academic and career settings and provided further insights into students' learning experiences and their perception of studying through the medium of English. Moreover, the study did not consider non-language-related challenges encountered by students which could impact on students' learning experiences and academic performance. Considering such non-language-

related challenges could have given more insights into students' difficulties and challenges by studying through the medium of English.

The study focuses only on the engineering discipline rather than other disciplines taught through the medium of English in the colleges of technology. A study with a more cross-disciplinary nature, which included disciplines such as business, IT and media and communication studies, could have given insights into students' learning experiences by studying through the medium of English and how far EMI challenges and difficulties were similar or different across the different disciplines.

Based on the findings and insights of the present study, other noteworthy questions have emerged that are worthy of consideration and might prompt further research in this particular area. The current study focuses on the experiences of Omani students learning engineering through the medium of English. Further research is suggested to explore the topic in other disciplines and this would provide a more comprehensive picture of EFL/ESL learning experiences through the medium of English. Further research might be undertaken in humanities and related disciplines to see to what extent EFL/ESL students experience similar or different difficulties and challenges when studying their content courses through the medium of English. Issues related to engineering students' experiences during their schooling would require further research.

There is vast potential for future research on EMI, and this could possibly include students' experiences of EMI in assessment and examination settings. Additionally, research should be conducted on EAP teachers' and engineering teachers' perceptions about cooperation and collaboration between them and its impact on students' learning of content courses.

10.5 Chapter summary

This chapter concludes the study. The study's main findings were summarised and discussed in relation to the research questions, study aims, relevant existing literature and the adopted multi-theoretical approach. Some limitations and suggestions for further research were presented and discussed. The study implications and recommendations for improving EMI pedagogy and helping students to learn effectively through the medium of English were presented and discussed. Finally, the potential contributions of the study, particularly those related to EAP and EMI-related areas were presented.

10.6 A postscript to the study: a reflection

Having completed my study, I would like to close with some reflections on what has been a rewarding and empowering academic journey. The process has opened new vistas for my thinking. Conducting a qualitative study on this scale was an experience which I found rewarding, despite the challenges encountered as a part-time researcher with the commitments of a full-time academic post. Having taught in two EMI-engineering colleges in Muscat in Oman, specialising in the teaching of academic writing and study skills for EFL engineering students, I realised that students were facing complex learning challenges. Conducting this study has motivated me to publish in regional and international peer-reviewed journals, as well as to present my work at regional and international conferences and symposia.

The seven years spent in conducting this research involved experiences which were exciting and memorable, while some others were difficult and frustrating. I found the extensive travelling fascinating and rewarding, if at times exhausting. In the end, my doctoral journey took longer than I had expected, due to the demands of my job and also due to methodological developments. I initially planned to approach this study from a quantitative perspective and spent more than two years collecting data on that basis; however, I came to the realisation that to better understand the Omani engineering students' learning experiences, I needed to listen to them narrating their stories and to observe them in their EMI classes. Interviews and classroom observations served the aims of my research better than purely quantitative data would have done.

Through systematically reviewing the literature in relation to academic literacy, translanguaging, socio-cultural theories and studies related to EMI at both national and international levels, I gained insight into the debates surrounding English language education and EMI. Employing a multi-theoretical framework provided me with a new lens to look into EMI, pragmatically, as a reality which has become an intrinsic part of higher education in EFL/ESL contexts. Studying science-related disciplines through EMI was, for some EFL/ESL students, a traumatic learning experience owing to their relatively poor linguistic backgrounds. However, students creatively deployed a number of coping strategies to help them understand the engineering associated register and the discipline-specific terminology. Students' language-related challenges were common across the literature, but students differ in their use of strategies that help them to cope with their EMI lecture-comprehension difficulties and in-class-related tasks.

The data collection, coupled with the interview transcription, was the most demanding and time-consuming task for me. The challenge was how to manage and reduce the huge amount of qualitative data that I collected to make it suitable for addressing my research questions.

I reiterate that my research project has been a great opportunity for me to think critically about EMI and examine it from different perspectives, and my understandings have been shaped by the pragmatic stance towards EMI. I learnt that students' views, voices and experiences should be fundamental in constructing language policies and in pedagogical decisions taken with a view to helping students learn. However, an exclusive reliance on students' voices would not have proved enough. Therefore, I utilised both EAP and engineering teachers' views in order to investigate students' learning experiences. Indeed, considering the views of all stakeholders would be helpful in achieving more encompassing and practical pedagogical and learning experiences.

As I reflected on my experience in producing this thesis, I realised that I was reflecting on my personal professional journey in the world of scholarship and research. This was a 'rites de passage'. I found that it was essential to share and develop ideas with other colleagues. I was encouraged and supported by my supervisors to present my preliminary findings nationally and internationally. Informed by the current debates and by my own findings, I recognise a need for more research to be conducted on EMI in the Middle East and in the North Africa region, where the field is still in its infancy.

References

- Abdel-Jawad, H. R. & Abu Radwan, A. S. (2011). The status of English in institutions of higher education in Oman: Sultan Qaboos University as a model. In A. Al-Issa and L.S. Dahan (Eds.), *Global English and Arabic: Issues of language, culture and identity*, 31, 123-151. Oxford: Peter Lang.
- Aguilar, M. & Rodríguez, R. (2012). Lecturer and student perceptions on CLIL at a Spanish university. *International Journal of Bilingual Education and Bilingualism*, 15(2), 183–197.
- Ahmed, S. I. (2011). Issues of medium of instruction in Pakistan. *International Journal of Social Sciences and Education*, 1(1), 66-82.
- Airey, J. (2009). Science, Language and Literacy. Case Studies of Learning in Swedish University Physics. Acta Universitatis Upsaliensis. Uppsala Dissertations from the Faculty of Science and Technology 81. Uppsala, Sweden: <http://www.diva-portal.org/smash/record.jsf?pid=diva2%3A173193&dswid=-4725>.
- Airey, J. (2012). I don't teach language: The linguistic attitudes of physic lecturers in Sweden. *AILA Review*, 25 (1), 64-79.
- Airey, J., & Linder, C. (2006). Language and the experience of learning university physics in Sweden. *European Journal of Physics*, 27(3), 553-560.
- Al-Bakri, S. (2014). Problematizing English medium instruction in Oman. *International Journal of Bilingual and Multilingual Teachers of English*, 2(1), 19-33.
- Al-Bakri, S. (2017). Effects of English medium instruction on students' learning experiences and quality of education in content courses in a public college in Oman. Unpublished PhD thesis, University of Exeter, UK.
- Al-Bandary, M. S. (2005). Meeting the challenges: The development of quality assurance in Oman's Colleges of Education. *Higher Education*, 50,181–195. Retrieved from DOI 10.1007/s10734-004-6348-y
- Al-Busaidi, K. (1995). English in the labour market in multilingual Oman with special reference to Omani employees. Unpublished doctoral dissertation, University of Exeter, England.

- Al-Busaidi, S.S. (2003). Academic Needs of EFL Learners in the Intensive English Language Program at Sultan Qaboos University in the Sultanate of Oman. Unpublished PhD thesis, University of Illinois at Urbana-Champaign.
- Alginahi, Y. M. et al. (2009). ICT Students, Stress and Coping Strategies: English Perspective A Case Study of Midsize Middle Eastern University. *TRIM*, 5(2), 111-127.
- Al-Hassan, A. (2014). EFL students' experiences, problems, and needs on an English-medium business programme: an ethnographically-oriented study of the MBA in Khartoum University, Sudan. Unpublished PhD thesis, University of Essex, UK.
- Al-Husseini, S. S. N. (2004). An analysis of the English needs of Omani students on vocational and technical courses with implications for the design of foundation year English language programmes. Unpublished PhD thesis, University of Leeds, UK.
- Ali, N. L. (2013). A changing paradigm in language planning: English-medium instruction policy at the tertiary level in Malaysia. *Current Issues in Language Planning*, 14(1), 73-92.
- Al-Issa, A.S.M. (2002). An Ideological and Discursive Analysis of English Language Teaching in the Sultanate of Oman. Unpublished Doctoral Dissertation. University of Queensland.
- Al-Issa, A. S.M (2006). The cultural and economic politics of English language teaching in Sultanate of Oman. *The Asian EFL Journal Quarterly*, March 2006, 8(1), 194-218.
- Al-Issa, A. S. M. (2007). The cultural and economic politics of English language teaching in Sultanate of Oman, Sultan Qaboos University. *Asian EFL Journal*. Retrieved from www.asian-efl-journal.com/March06_asmai.pdf
- Al-Issa, A. S. M. (2007). Ideologies governing teaching the language skills in the Omani ELT system. *Journal of Language and Learning*, 14(2), 218-231
- Al-Issa, A.S.M. (2014). A critical examination of motivation in the Omani English language education system. *Journal of Language Teaching and Research*, 5(2), pp 406-418. Retrieved on 2nd January 2015 from doi:10.4304/jltr.5.2.
- Al-Issa, A. and Dahan, L. (2011). Global English and Arabic: Issues of Language, Culture, and Identity (Contemporary Studies in Descriptive Linguistics).(eds.). Peter Lang AG, Internationaler Verlag der Wissenschaften

- Al Jarf, R. (2004). College students' attitudes towards using English and Arabic as a medium of instruction at university level. *World Arabic Translator's Association (WATA)*. Retrieved on 17 January 2015, from <http://sona3.orgvb/showthread.php?p=13592>
- Al-Mahrooqi, R. (2012). English communication skills: How are they taught at schools and universities in Oman? *English Language Teaching Journal*, 5(4), 124-130
- Al-Mahrooqi, R. & Denman, C. J. (2016). Omani graduates' English-language communication skills in the workforce: Employees' perspectives.
- .Al-Mahrooqi, R. and Tuzlukova, V. (2010). Introduction: Cultural perspectives and ELT in Oman. In R. Al-Mahrooqi and V. Tuzlukova (Eds.), *The Omani ELT Symphony: Maintaining Linguistic and Socio-cultural Equilibrium* (pp.13-29). *Muscat: Sultan Qaboos University Academic Publication Board*.
- Al-Mahrooqi, R. and Tuzlukova, V. (2014). English communication skills and employability in the Arabian Gulf: The case of Oman. *Pertanika Journals; Social Sciences & Humanities*, 22(2), 473-488.
- Al-Mamari, A. S. (2012). General foundation programme in higher education institutions in Oman national standards: implementations and challenges. *Oman Quality Network Regional Conference*, 20-21 February 2012, 1-6.
- Al-Mashikhi, E., Al-Mahrooqi, R. and Denman, C.J. (2014). Investigating college of science student attitudes towards using English as a medium of instruction. *The 2014 WEI International Academic Conference Proceedings, New Orleans, USA*99-113.
- Al-Nabhani, M. (2007). *Developing the Education System in the Sultanate of Oman through Implementing Total Quality Management: the Ministry of Education Central Headquarters – a Case Study*, Unpublished doctoral dissertation, University of Glasgow, Glasgow, Scotland.
- Al-Shmeli, H. (2009). Higher Education in the Sultanate of Oman: Planning in Context of Globalization. *IIEP Policy Forum*.
- Anderson, B. (2008). Dire skills gap. *Fineweek*, (17) April, 81.
- Archer, A. (2006). A multimodal approach to academic 'literacies': Problematizing the visual/verbal divide. *Language and Education*, 20(6), 449-462. Archer, W., & Davison, J. (2008). *Graduate employability*. The Council for Industry and Higher Education.

- Archer, A. (2008). The place is suffering: Enabling dialogue between students' discourses and academic literacy conventions in engineering. *English for Specific Purposes*, (27), 255-266. Doi: 10.1016/j.esp.2007.10.002.
- Arden-Close, C. (1993). Language problems in science lectures to non-native speakers. *English for Specific Purposes Journal*, (12), 251-261.
- Armstrong, M., Dannatt, J., & Evans, A. (2012). The development of, and response to, an academic writing module for electrical engineers at the University of Bath. *Journal of Learning Development in Higher Education*.
- Babbie, E. (1998). *The practice of social research*. London; Belmont, Calif: Wadsworth.
- Baker, C. (2011). *Foundations of bilingual education and bilingualism* (5th ed.). Bristol: Multilingual Matters.
- Baker, S. (2006). English language learners and reading first: Some preliminary evidence of effectiveness. *Paper presented at the CORE Literacy Leadership Summit*, San Francisco, CA.
- Baker, S. E. and Edwards, R. (2012). How many qualitative interviews is enough? Expert's voices and early career reflections on sampling and cases in qualitative research. *In National Center for Research Methods Paper*, UK, Middlesex, Southampton. Retrieved from [http:// eprints. ncrm. ac.uk/2273/4/how_many_interviews.pdf](http://eprints.ncrm.ac.uk/2273/4/how_many_interviews.pdf)
- Balakrishnan, B. & Low, F. S. (2016). Learning Experience and Socio-Cultural Influences on Female Engineering Students' Perspectives on Engineering Courses and Careers. *Minerva*, (54)2, 219- 239.
- Baporikar, N. (2012). Quality of higher education in 21st century – a case of Oman. *Journal of Educational and Instructional Studies in the World*, 2(2), 9-17.
- Barnard, R. (2014). English medium instruction in Asian Universities: Some concerns and a suggested approach to dual-medium instruction, *Indonesian Journal of Applied Linguistics*, 4(1), 10-22.
- Barret, R. C. (2011). Oman: The present in the context of a fractured past. *JSOU Report*, 11-15.
- Barrie, S. C. (2004). A research-based approach to generic graduate attributes policy. *Higher Education Research and Development*, (23), 261-275.

- Barton, D., Ivaniç, R., Appleby, Y., Hodge, R., Tusting, K. (2007) *Literacy, lives and learning*. London: Routledge.
- Basibek et al. (2014). Lecturers' perceptions of English medium instruction at engineering departments of higher education: A study on partial English medium instruction at some state universities in Turkey. *Procedia-Social and Behavioral Sciences*, (116), 1819-1825. Doi: 10.1016/j.sbspro.2014.01.477.
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544-559.
- Bazerman, C., Bonini, A., & Figueiredo, D. (Eds.). (2009). Genre in a changing world. Perspectives on writing. Fort Collins, Colorado: *The WAC Clearinghouse and Parlor Press*. Available at <http://wac.colostate.edu/books/genre/>
- Beckett, G. H. & Li, F. (2012). Content-based English education in China: Students' experiences and perspectives. *Journal of Contemporary Issues in Education*, 7 (1), 47-63.
- Begum, A. (2014). Importance of English language in India: Its role in present national and international setup. *International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)*, 1(10), pp.126-128. Retrieved on 3 December 2014 from <http://www.ijims.com>.
- Belhiah, H. and Al Hussein, A. (2016). Instruction through the English medium and its impact on Arab identity. *Arab World English Journal (AWEJ)*, (7)2,342-357, DOI: 10.24093/awej/vol7no2.23
- Belhiah, H. and Elham, M. (2015). English as a medium of instruction in the Gulf: When students and teachers speak. *Journal of Language Policy*, (14)3, pp.3-23. Doi: 10.1007/s10993-014-9336-9
- Benesch, S. (2001). *Critical English for academic purposes: theory, politics and practice*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Benesch, S. (2009). Theorizing and practicing critical English for academic purposes. *Journal of English for Academic Purposes*, (8), 81-85. Doi: 10.1016/j.jeap.2008.09.002.
- BERA (2011). *British ethical guidelines for educational research*. UK.
- Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, 15(2), 219-234

- Bielenberg, B. (2004). Identifying linguistic challenges for English language learners in mathematics and IT classrooms. In P. Davidson et al. (Eds.), *The Proceedings of the 9th TESOL Arabia Conference: English language teaching in the IT age* (pp. 109-118). Dubai, TESOL Arabia Publication.
- Borg, S. (2001). The research journal: a tool for promoting and understanding researcher development. *Language Teaching Research*, 5, (2), 156–177
- Boyatzis, R. E. (1998). *Transforming qualitative information: thematic analysis and code development*. London: Sage.
- Boyle, J. P. (1985). Factors Affecting Listening Comprehension. *ELT Journal*, 38(1), 34-38. <http://dx.doi.org/10.1093/elt/38.1.34>
- Bradbury-Jones, C. (2007). Enhancing rigour in qualitative health research: Exploring subjectivity Through Peshkin I.'s *Journal of Advanced Nursing* 59(3), 290–298.
- Braine, G. (2002). Academic literacy and the non-native speaker graduate student. *English for Academic purposes*, (1)1, 59-68.
- Braun, V. and Clarke, V. (2006). Using thematic analysis in Psychology. *Qualitative Research in Psychology*, 3(2), pp.77-101.
- Brock-Utne, B. (2007). Language of instruction and students' performance: New insights from research in Tanzania and South Africa. *International Review of Education*. 53 (5/6), 509-530. <http://dx.doi.org/10.1007/s11159-007-9065-9>
- Bryman, A. (2003). *Quantity and quality in social science research*. London. Routledge.
- Bryman, A. (2008). *Social research methods*. Oxford: Oxford University Press. *English for Academic Purposes*, (1), 59-68.
- Bryman, A. (2012) *Social Research Methods Student Researcher's Toolkit*, Oxford University Press. Available from: <http://fdslive.oup.com/www.oup.com/orc/resources/sociology/brymansrm4e/01student/toolkit/index.htm>
- Burns, A. (1999). *Collaborative action research for English language teachers*. Cambridge: Cambridge University Press.

- Byun, K., Chu, H., Kim, M., Park, I., Kim, S., & Jung, J. (2011). English-medium teaching in Korean higher education: Policy debates and reality. *Higher Education*, 62(4), pp.431-449. <http://dx.doi.org/10.1007/s10734-010-9397-4>
- Canagarajah, A. (1999). *Resisting linguistic imperialism in English teaching*. Oxford: Oxford University Press
- Canagarajah, S. (2011). Codemeshing in academic writing: Identifying teachable strategies of translanguaging: *Modern Language Journal*, (95), 401-417.
- Carroll, M.I. (2007). The Case for Foundation Program Standards and Accreditation (Keynote Address). *The Proceedings of the symposium Towards National Standards for Foundation Programs*, [Sultan Qaboos University, Oman].
- Carter, M. (2007) Ways of knowing, doing, and writing in the disciplines. *College Composition and Communication*, 58(3), 385–418.
- Chang, Y. (2010). English-medium instruction for subject courses in tertiary education: Reactions from Taiwanese undergraduate students. *Taiwan International ESP Journal*, (2)1, 55-84.
- Chang, Y. (2012). The use of questions by professors in lecture given in English: influences of disciplinary culture. *English for Specific Purposes Journal*, (31), pp.103-116. Doi: 10.1016/j.esp.2011.08.002.
- Chapple, J. (2015). Teaching in English is not necessarily the teaching of English. *International Education Studies*, 8 (3), 1-13.
- Chuang, D. (2013). Aspects of English medium instruction research: Retrospect and prospect. Retrieved from <https://www.researchgate.net/publication/262451486>.
- Chuang D. (2015). Exploring and assessing effectiveness of English medium instruction courses: The students' perspectives. *Procedia-Social and Behavioral Sciences*, (173), 71-78, Doi: 10.1016/j.sbspro.2015.02.033.
- Clughen, L., & Connell, M. (2012). Writing and resistance Reflections on the practice of embedding writing in the curriculum. *Arts and Humanities in Higher Education*, 11(4), 333-345.
- Coffey, A. and Atkinson, P. (1996). *Making sense of qualitative data*: Sage Publications.
- Cohen, L., Manion, L. and Morrison, K. (2000). *Research Methods in Education* (5th Edition) London: Routledge Falmer.

- Cohen, L., et al. (2011). *Research Methods in Education* (7th Edition) London: Routledge Falmer.
- Coleman, H. (2011b). Developing countries and the English language: Rhetoric, risks, roles and recommendations. In H. Coleman (Ed.), *Dreams and realities: Developing countries and the English language* (pp.2-22). London: British Council.
- Coleman, J. A. (2006). English-medium teaching in European higher education. *Language Teaching*, (39)1, 1-14.
- Collins, A.B. (2010). English-medium higher education: dilemma and problems. *Eurasian Journal of Educational Research*, (39), 97-110.
- Conley, D. T. (2003). *Understanding university success*. Eugene, OR: Center for Education Policy Research, University of Oregon.
- Costa, F. and Coleman, J. A. (2013). A survey of English-medium instruction in Italian higher education. *International Journal of Bilingual Education and Bilingualism*, 16(1), 3–19.
- Cox, L. R. and Lough, K. G. (2007). *The importance of writing skill to the engineering students*, University of Arkansas-Fort Smith / University of Missouri-Rolla.
- Crabtree, B.F. and Miller, W.L. (eds) (1999) *Doing Qualitative Research*, 2nd edition. Thousand Oaks, CA and London: Sage.
- Craig, R. (2014). The development of transferable skills through continuous improvement: a case study in the UAE. *IEEE*.
- Creswell, J. (2007). *Qualitative inquiry and research design: choosing among five approaches*. London: Sage Publications.
- Creswell, J. (2012). *Educational research: planning, conducting, evaluating and qualitative research*. London: Pearson.
- Creswell, J. and Clark, V. (2011). *Designing and conducting mixed methods research*. England: Sage Publications.
- Crowe, et al. (2011). *The case study approach*. *Journal of Medical Research Methodology*. 11(100), 1-9.
- Crystal, D. (1997). *English as a global language*. Cambridge, UK: Cambridge
- Crystal, D. (2003). *English as a global language*. 2nd ed. Cambridge: Cambridge University Press.

- Dafouz, E. and Camacho-Minano, M.M. (2016). *English for Specific Purposes Journal*, (44), pp.57-67. DOI:org/10.1016/j.esp2016.06.001
- Davies, J. W., & Cousin, G. (2002). Engineering students' writing skills. *In Proceedings of the International Conference of Engineering Education* (pp. 1-6).
- Dearden, J. (2014). English as a medium of instruction-a growing global phenomenon: phase 1 Interim report. *Going Global 2014*. Retrieved on 10 January 2015 from www.Britishcouncil.org/education/ihe.
- Dearden, J. (2015). English as a medium of instruction – a growing global phenomenon. British Council: UK. Retrieved November 2015, from: www.teachingenglish.org.uk
- De Jong, E.J., and Harper, C. A. (2015). Preparing Mainstream Teachers for English-Language Learners: Is Being a Good Teacher Good Enough? *Teacher Education Quarterly*, Spring, 100-124.
- De Wit, H. (2011) Internalization misconceptions. *International Higher Education*, (64)1, 6-7.
- Deniz, N. and Lincoln, Y. (2000). *Handbook of qualitative research*. London: Sage publications.
- Deniz, N. and Lincoln, Y. (2003). *Collecting and interpreting qualitative materials*. Thousand Oaks, CA: Sage.
- Deniz, N. and Lincoln, Y. (2005). *The Sage handbook of qualitative research* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Deniz, N. and Lincoln, Y. (2008). *Handbook of critical and indigenous methodologies*. London: Sage publications.
- Denscombe, M. (2010). *The good research guide for small-scale social research project* (4th ed.). Buckingham: Open University Press.
- Direito, I. et al. (2012). Engineering undergraduates' perceptions of soft skills: relations with self-efficacy and learning styles. *Procedia-Social and Behavioral Sciences*, (55) 2012, 843–851
- Dhillon, J. K., McGowan., M. and Wang, H. (2008). How effective are institutional and departmental systems of student support? Insights from an investigation into the support 299 available to students at one English university. *Research in Post-Compulsory Education*, (13)3, 281-293.
- Dörnyei and Taguchi (2010). *Questionnaire in second language research: construction, administration, and processing*. UK: Routledge.

- Drury, H., Airey, D., & O'Carroll, P. (2010). Improving report writing for undergraduate students in engineering through an online learning environment: the case of second year civil engineering. *In Proceedings of the 21st Annual Australasian Association for Engineering Education (AaeE) Conference, Past, Present, Future the 'Keys' to Engineering Education Research and Practice.*
- Dudley-Evans, T. and St John, M-J. (1998). *Development in ESP: A multi-disciplinary approach*, Cambridge: Cambridge University Press.
- England, K.V.L. (1994). Getting personal: reflexivity, positionality, and feminist research. *The Professional Geographer*, 46(1), 80-91.
- Erlandson, D.A. et al. (1993). *Doing naturalistic inquiry: a guide to methods*. London: Sage.
- Esa, A. et al. (2013). Applications of soft skills in engineering programme at polytechnic Malaysia. *Procedia-Social and Behavioural Sciences*, (140), 115-120.
- Esquinca, A. et al. (2014). Meaning making and translanguaging in a two-way dual-language program on the U.S-Mexico border. *Bilingual Research Journal*, (37)2, pp.164-181. Doi: 10.1080/15235882.2014.934970.
- Evans, K. (2006). The rainbow concept of lifelong learning. *British Educational Research Journal*, 32(3), 527-534.
- Evans, S. & Green, C. (2007). Why EAP is necessary: A survey of Hong Kong tertiary students. *Journal of English for Academic Purposes*, (6)3, 3-17.
- Evans, S. and Morrison, B. (2011). Meeting the challenges of English-medium higher education: The first-year experience in Hong Kong. *English for Specific Purposes*, (30), 198-2088. Doi:10.1016/j.esp.2011.01.001
- Fandrych, I. (2009). The importance of English communication skills in multilingual settings in Southern Africa. *English Today Journal* 99, 25(3), 49-55.
- Findlow, S. (2006). Higher education and linguistic dualism in the Arab Gulf. *British Journal of Sociology of Education*, (27)1, 19-33.
- Finlay, L. (2002). Negotiating the swamp: the opportunity and challenge of reflexivity in research practice. *Journal of Qualitative Research*, 2(2), 209-230.

- Fisher, R. and Webb., K. (2006). Subject specialist pedagogy and initial teacher training for learning and skills sector in England: the context, a response and some critical issues; *Journal of Further and Higher Education*, 30(4), pp. 337-349. Issn 1469-9486.
- Fleming, J. et al. (1995). The critical thinking skills of minority engineering students: An exploratory study. *Journal of Negro Education*, (64)4, 47-453.
- Floris, F.D. (2014). Learning subject matter through English as the medium of instruction: students' and teachers' perspectives, *Asian Englishes*, 16(1), pp.47-59, DOI: 10.1080/13488678.2014.884879 To link to this article: <http://dx.doi.org/10.1080/13488678.2014.884879>
- Flowerdew, J and Miller, L. (1992). Student perception, problems and strategies in second language lecture comprehension. *RELC Journal*, (23)2, 60-80.
- Flowerdew, J. et al. (2000). Chinese lecturers' problems and strategies in second language lecture comprehension. *RELC Journal*, (31)1, 116138.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Journal of Qualitative Inquiry*, 12(2), 219-245.
- Fontana, A., & Frey, James H. (2005). *The interview: From neutral stance to political involvement*. In N. K. Denzin, & Lincoln, Yvonna, S (Ed.), *The Sage handbook of qualitative*, (3), pp. 695-727. Thousand Oaks. London: Sage Publications.
- Ganga, D. & Scott, S. (2006). Cultural "Insiders" and the issue of positionality in qualitative migration research: Moving "Across" and moving "Along" researcher-participant divides. *Forum: Qualitative Social Research*, (7)3 Article 7.
- García, O. (2009). *Bilingual education in the 21st century: A global Perspective*. Oxford: Blackwell.
- García, O. (2011). From language garden to sustainable languaging: Bilingual education in a global world. *Perspective: A publication of the National Association for Bilingual Education* Sept/Oct 2011, 5–10
- García, O., Flores, N., & Chu, H. (2011). Extending bilingualism in US secondary education: New variations. *International Multilingual Research Journal*, 5(1), 1–18. doi:10.1080/19313152.2011.539486

- García, O., & Kleifgen, J. A. (2010). *Educating emergent bilinguals: Policies, programs, and practices for English Language Learners*. New York, NY: Teachers College Press.
- García, O. and Leiva, C. (2014) Theorizing and Enacting Translanguaging for Social Justice. In A. Blackledge and A. Creese (eds) *Heteroglossia as Practice and Pedagogy*, 199–216. Netherlands: Springer.
- García, O. & Sylvan, C. E. (2011). Pedagogies and practices in multilingual classrooms: Singularities in pluralities. *The Modern Language Journal*, (9)11, 385-400.
- Gibbs, G. (2007). *Analyzing qualitative data*. London: Sage.
- Gimenez, J. (2008). Beyond the academic essay: discipline-specific writing in nursing and midwifery. *Journal of English for Academic Purposes*, (7)3, 151-164.
- Gobo, G. (2008). *Doing ethnography*. London: Sage.
- Goodman, A. B. (2014). Implementing English as a medium of instruction in a Ukrainian University: Challenges, adjustment, and opportunities. *International Journal of Pedagogies and Learning*, (9)2, pp.131-141, Doi:10.1080/18334105.2014.11082026
- Gort, M. (2015). Transforming literacy learning and teaching through translanguaging and other typical practices associated with “doing being bilingual”. *International Multilingual Research Journal*, (9)1, pp.1-6. Doi: 10.1080/19313152.2014.988030.
- Graddol, D. (1997). *The future of English*. London. British Council.
- Grainge, Z. (2005). Flood engineers drying up. *Utility Week*, (23)7, 30
- Grant, C.D., and Dickson, B., R. (2006). Personal skills in chemical engineering graduates: the development of skills within degree programmes to meet the need of employers. *Edu.Chem.Eng.*, 1(1), 23-29.
- Grasso, D., & Burkins, M. B. (2010). Beyond technology: The holistic advantage. In *Holistic Engineering Education* (pp. 1-10). Springer New York.
- Green, S. (2016). Teaching disciplinary writing as social practice: moving beyond 'text-in-context design in UK higher education. *Journal of Academic Writing*, (6) 1, 98-107.
- Guba, E. (1990). *The alternative paradigm dialogue*. London: Sage Publications.

- Guba, E., & Lincoln, Y. S. (1994). *Competing paradigms in qualitative research*. In N. K. Denzin, & Lincoln, Yvonna S (Ed.), *The landscape of qualitative research*. California: Sage.
- Gunn, C., Hearne, S., & Sibthorpe, J. (2011). Right from the start: A rationale for embedding academic literacy skills in university courses. *Journal of University Teaching & Learning Practice*, 8(1), 6., 1-10
- Hamid, M. O. (2011). Globalisation, English for everyone and English teacher capacity: Language policy discourses and realities in Bangladesh. *Current Issues in Language Planning*, 11(4), 289-310.
- Hammersley, M., Peter, F., & Rogers, G. (2000). *Case study method: key issues, key texts*. London: Sage.
- Hammersley, M. (2005). What Can the Literature on Communities of Practice Tell Us About Educational Research? Reflections on Some Recent Proposals. *International Journal of Research and Method in Education*, 28(1), 5-21.
- Harvey, L. et al. (2002). *Enhancing employability, recognising diversity-Universities UK and CSU*.
- Harun, H. et al. (2017). Employability skills and attributes of engineering and technology graduates from employers' perspective: Important vs. satisfaction. *Global Business Management Research: An International Journal*, (9)I, pp.572-580.
- Harwood, N. and Hadley, G. (2004). Demystifying institutional practices: critical pragmatism and teaching the academic writing. *English for Specific Purposes*, (23), 355-377. Doi: 10.1016/j.esp.2003.08.001
- Harwood, N & Petrić, B. (2008). *English for academic purposes*.
- Hassam, M.A. (n.d.). *The role of English in the 21st Century*.
- Hellekjær, G. O. (2010). Assessing lecture comprehension in Norwegian English-medium higher education. In C. Dalton-Puffer, T. Nikula & U. Smit (Eds.), *Language use and language learning in CLIL classrooms*, 7 (pp. 233-258). Amsterdam, The Netherlands: John Benjamins.
- Hewitt, E. (2015). Building bridges: the use of reflective oral diaries as a qualitative research tool. *International Journal of Research and Methods in Education*, 40(4), 345-359. Retrieved from <http://dx.doi.org/10.1080/1743727X.2015.1114601>

- Hirst, E., Henderson, R., Allan, M., Bode, J., & Kocatepe, M. (2004). Repositioning academic literacy: Charting the emergence of a community of practice. *Australian Journal of Language and Literacy*, 27(1), 66-80.
- Hodgson, J. (2011). The experience of joint honours students of English in UK higher education. In Gawthrop, J (Eds.), *Report Series*, (26), ISBN 978-1-905846-55-9
- Hodgson, J. and Harris, A. (2010). Writing from A to U. *English Drama Media*, (18).ISSN 1742-5514
- Hodgson, J. and Harris, A. (2012). Improving student writing at HE: putting literacy studies to work, *English in Education*, 46 (1), 8-21.ISSN 0425-0494
- Hodgson, J. and Wilkin, S. (2014). English in Education: the first fifty years. *English in Education*, (48)3, 196-229.
- Holi, A. I. (2012a).Rethinking Critical Thinking: Why & How? in Davidson et al (eds.): A book entitled: *Rethinking English Language Teaching- The proceedings of TESOL Arabia 2011*, No. (16), 56-73-Dubai-UAE.
- Holi, H. I (2012b). Graduate attributes dilemma in Sudanese tertiary institutions: A case of engineering graduates. *TESOL Sudan Conference 2012 Proceedings*, pp.61-78.
- Holi, H. I. (2013). Perceived Views of Language Teachers on the Use of Needs Analysis in ESP Materials Writing (Co-authored Paper). *English Language Teaching Journal*, (6)3, 11-19. Publisher Canadian Centre for Science and Education (CCSENET)-Canada-www.ccsenet.org.
- Hopp, V. (2000). Life sciences, globalisation and engineering education. *Third International on Quality Reliability and Maintenance*, University of Oxford, 295-299.
- Hornberger, N.H and Link, H. (2012). Translanguaging in today's classroom: A biliteracy lens. *Theory into Practice*, (51), 239-247. Doi: 10.1080/00405841.2102.726051.
- Hou et al. (2013). Challenges to quality of English medium instruction degree programs in Taiwanese universities and the role of local accreditors: A perspective of non-English speaking Asian country. *Asia Pacific Education Review*, (14), 359-370, Doi: 10.1007/s12564-013-9267-8.
- Hu, G. and Lei, J. (2014). English-medium instruction in Chinese higher education: a case study. *Higher Education Journal*, (67), 551-567. Doi: 10.1007/s10734-013-9661-5.

- Huang, D. (2015). Exploring and assessing effectiveness of English medium instruction courses: The students' perspectives. *Procedia-Social and Behavioral Sciences*, (173013), 71-78.
- Hung, R.H. (2009). *Disciplinary writing: A case of Hong Kong undergraduate undertaking their writing tasks*: Unpublished PhD thesis, University of Leicester.
- Hyland, K. (2006). Disciplinary differences: language variation in academic discourses. In K. Hyland and M. Bondi (eds), *Academic discourse across disciplines*. Frankfurt: Peter Lang.
- Ibrahim, J. (2001). The implementation of EMI (English Medium Instruction) in Indonesian Universities: its opportunities, its threats, its problems, and its possible solutions. *The proceedings of the 49th International TEFLIN Conference in Bali*, 121-135.
- Issan, S. A and Gomaa, N.M.M. (2010). Post basic education reforms in Oman: a case study. *Literacy Information and Computer Education Journal (LICEJO)*, 1(1), 19-25.
- Jackson, J. (2005). An inter-university, cross disciplinary analysis of business education: perceptions of business faculty in Hong Kong. *English for Specific Purposes*, 24(3), pp.293-306.
- Jennings, A and Ferguson, J. D. (1995). Focusing on communication skills in engineering education. *Studies in Higher Education*, 20(3), 305-314, DOI: 10.1080/03075079512331381575.
- Jensen, J.L. and Rodgers, R. (2001). *Cumulating the intellectual gold of case study research*. Wiley Online Library.
- Jiang, L. et al. (2016). Implementing English-medium instruction (EMI) in China: teachers' practices and perceptions, and students' learning motivation and needs. *International Journal of Bilingual Education and Bilingualism*, DOI: 10/1080/13670050.2016.1231166.
- Joe, Y. and Lee, H. (2013). Does English-Medium Instruction benefit students in EFL contexts? A case of medical students in Korea. *Asia-Pacific Education Research Journal*, 22(2), 201-207. Retrieved on 17 December 2014, from doi: 10.1007/ s40299-012-0003-7.
- Kachru, B. B. (1992). "Models for Non-Native Englishes. The Other Tongue. English Across Cultures". Second Edition. Ed. Braj B. Kachru. Urbana: University of Illinois Press, 48-74.
- Kagwesage, A. M. (2012) Higher education students' reflections on learning in times of academic language shift. *International Journal for the Scholarship of Teaching and Learning*, (6)2, 1-5.
- Kagwesage, A. M. (2012). *English for Academic Purposes: Practices in higher education in Rwanda*. Saarbruen: Lambert Academic Publishing.

- Kagwesage A. M. (2013). Coping with English as Language of Instruction in Higher Education in Rwanda. *International Journal of Higher Education*, (2)2, 1-12.
- Takepoto, I. et al. (2012). Perspectives on oral communication skills for engineers in engineering profession of Pakistan. *International Journal of Applied Linguistics and Literature*, 1(5), pp.176-183. Retrieved on 17 November 2014, from doi:10.7575/ijalel.v.In.5p.176.
- Kennedy, C. (2011). Challenges for language policy, language and development. In H. Coleman (Ed.), *Dreams and realities: Developing countries and the English language* (pp. 24-38). London: British Council.
- Kerklaan, V. et al. (2008). The role of language in the internationalisation of higher education: An example from Portugal. *European Journal of Education*, 43(2), 241–255.
- Kiili, C., Makinen, M. and Coiro, J. (2013). Rethinking academic literacies: designing multifaceted academic literacy experiences for pre-service teacher. *Journal of Adolescent and Adult Literacy*, (57)3, 223-232. Doi: 10.1002/JAAL.223.
- Kim, E., Kweon, S. and Kim, J. (2016). Korean engineering students' perceptions of English-medium instruction (EMI) and L1 use in EMI classes. *Journal of Multilingual and Multicultural Development*. Doi: 10.1080/01434632.2016.1177061.
- Kim, K.S and Sohn, Y. S. (2009). Expert system to evaluate English-medium instruction in Korean Universities. *Experts Systems with Applications*, (36), 11626-11632.
- King, J.M. (2014). *An exploratory investigation into content teacher views on English as a medium of instruction policy enactment in the UAE Feral Tertiary Sector*. Unpublished PhD, the University of Exeter.
- King, N., & Horrocks, C. (2010). *Interviews in qualitative research*. London: Sage.
- Kırkgöz, Y. (2009). Students' and lecturers' perception of the effectiveness of foreign language instruction in an English-medium university in Turkey. *Teaching in Higher Education*, (14)1, 81-93, Doi:10.1080/1356202640
- Kitzinger, J. (1995). *Introducing focus groups*. *BMJ*, (311), 299-302.
- Klinger, C.M and Murry, N. (2012). Tensions in higher education: widening participation, student diversity and the challenge of academic language literacy. *Widening Participation and Life Long Learning*, 14(1), 27-44.

- Koprowska, J. (2006). *Communication and interpersonal skills in social work*: Exeter: Learning Matters Ltd.
- Krassadaki, E., Lakiotaki, K., and Matsatsinis, N. F. (2014). Adopting a Strategy for Enhancing Generic Skills in Engineering Education. *Industry and Higher Education*, (28)3, 185-192
- Kvale, S. (1996). *InterViews—An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Kvale, S., & Brinkmann, S. (2009). *InterViews: learning the craft of qualitative research interviewing*. Thousand Oaks; London: Sage Publications.
- Kyeyune, R. (2003). Challenges of using English as a medium of instruction in multilingual contexts: A view from Ugandan Classrooms. *Journal of Language, Culture and Curriculum*, pp. 173-184.
- Kyeyune, R. (2010). Challenges of using English as a medium of instruction in multilingual contexts: A view from Ugandan classrooms. *Language, Culture and Curriculum*, (16)2, 173-184. <http://dx.doi.org/10.1080/07908310308666666>
- Lang, J.D., Cruse, S., McVey, F.D., & McMasters, J. (1999). Industry expectations of new engineers: A survey to assist curriculum designers. *Journal of Engineering Education*, 43–51.
- Langman, J. (2013). Translanguaging, identity, and learning: science teachers as engaged language planners. *Journal of Language Policy*, (13), 183-200, Doi: 10.1007/s10993-013-9312-9.
- Lasagabaster, D. (2013). The use of L1 in CLIL classes: The teachers' perspective. *Latin American Journal of Content and Language Integrated Learning* (6)2, 10-21. Doi: 10.5294//laclil.2013.6.2.1
- Lasagabaster, D. & García, O. (2014). Translanguaging: towards a dynamic model of bilingualism at school. *Journal of Culture and Education*, (26)3, 557-572. Doi: 10.1080/11356405.2014.973671.
- Lau F.W.W and Yuen, K.H.A. (2011). The impact of the medium of instruction: The case of teaching and learning of computer programming. *Educational Information Technology*, (16), 183-201. Doi: 10.1007/s10639-009-9118-8.
- Lawrence, C. et al. (2017). *A handbook for English-medium instruction in institutions of higher education in Israel*. (eds.).

- Lea, M. R. (2004). Academic literacies: pedagogy for course design. *Studies in Higher Education*, (29)6, 739-756
- Lea, M., & Street, B. (1998). Student writing in higher education: An academic literacy approach. *Studies in Higher Education*, 23(2), 157-173.
- Lea, M., & Street, B. (2006). The 'academic literacies' model: Theory and applications. *Theory into Practice*, 45(4), 368-377.
- Lievens, J. (2012). Debunking the 'nerd' myth: Doing action research with first-year engineering students in the academic writing class. *Journal of Academic Writing*, (2)1, 74-84.
- Leki, I. (2007). *Undergraduates in a second language*. Oxon: Routledge.
- Lemke, J.L. (1990). *Talking science: Language learning and values*. Norwood, NJ: Ablex.
- Lewis, G., Jones, B., & Baker, C. (2012b). Translanguaging: Origins and development from school to street and beyond. *Educational Research and Evaluation*, (18)7, 641–654. Doi: 0.1080/13803611.2012.718488.
- Li, C. (2013). Understanding EAP learners' beliefs, motivation and strategies from a socio-cultural perspective: A longitudinal study at an English-medium university in Mainland China. Unpublished PhD, the University of Liverpool.
- Lillis, T. (2001) *Student Writing*. Access, Regulation, Desire. London: Routledge
- Lillis, T. (2003). An academic literacies approach to student writing: drawing on Bakhtin to move from critique to design. *Language and Education*,. (17)3, 192-207.
- Lillis, T., & Scott, M. (2007). Defining academic literacies research: Issues of epistemology, ideology and strategy. *Journal of Applied Linguistics*, 4(1), 5-32.
- Lincoln, S., and Guba, Egon G. (1985). *Naturalistic inquiry*. Newbury: Sage Publications.
- Linn, M. C. (2000). Designing the knowledge integration environment. *International Journal of Science Education*, (22)8, 781–796
- Litchfield, K. et al. (2016). Technical and professional skills of engineers involved and not involved in engineering service. *Journal of Engineering Education*, 105(1), 70-92. Retrieved from: doi:10.1002/Jee.20109

- Littlewood, W. & Yu, B. (2011). First language and target language in the foreign teaching classroom. *Language Teaching*, (44)1, 64-77.
- Macaro, E. (2009). Teacher use of codeswitching in the second language classroom: Exploring ‘optimal’ use. In M. Turnbull & J. Dailey-O’Cain (Eds.). *First language use in second and foreign language learning* (pp. 35-49). Clevedon: Multilingual Matters.
- Macaro, E. (2015). English medium instruction: Time to start asking some difficult questions. *Modern English Teacher*, (24)2, 4-14.
- Macaro, E. et al. (2016). English medium instruction in universities: A collaborative experiment in Turkey. *Studies in English Language Teaching*, (4)1, 51-76.
- Malderez, A. (2003). Key Concepts in ELT: Observation: *ELT Journal*, (57), 179-181.
- Manakul, W. (2007). Role of English in internalization of higher education: the Case of the Graduate School Engineering, Hokkaido University. *Journal of Higher Education and Lifelong Learning*, (15), 155-161.
- Manh, D. (2012). English as a medium of instruction in Asian Universities: The case of Vietnam. *Language Education in Asia*, (3)2, 263-267.
- Manson, J. (2002). *Qualitative researching*. London: Sage.
- Marsh, D. (2006). English as medium of instruction in the new global linguistic order: Global characteristics, local consequences. *METSMAc 2006*, pp. 2938.
- Martin-Beltran, M. (2014). “What do you want to say? How adolescents use translanguaging to expand learning opportunities”. *International Multilingual Research Journal*, (8)3, 208-230.
- Martin, R., Maytham, B., & Case, J. (2005). Engineering graduates’ perceptions of how well they were prepared for work in industry. *European Journal of Engineering Education*, 167–180.
- Martiz, R. A, Hikida, C. and Duran, L. (2015). Unpacking ideologies of linguistic purism: How dual language teachers make sense of everyday translanguaging. *International Multilingual Research Journal*, (9)1, 26-42. Doi: 10.180/19313152.2014.977712.
- Martinez, K., Cass, M., C. , Kock, N. , & Cass, J. (2011). Pain and pleasure in short essay writing: Factors predicting university students’ writing anxiety and writing self-efficacy. *Journal of Adolescent & Adult Literacy*, (54), 351–360

- Maturro, J. (2013). Soft skills in software Engineering: A study of its demand by software companies in Uruguay. *CHASE*, San Francisco, CA, USA, 133-135.
- Mazak C.M. and Herbas-Donoso, C. (2015). Translanguaging practices at a bilingual university: A case study of science classroom. *International Journal of Bilingual Education & Bilingualism*, (18)6, pp.698-714.Doi: 10.1080/13670050.014.939138.
- McGregor, H. (2000). Engineers at work – Developing communication skills for professional practice. Paper presented at *Society for Technical Communication Conference*. Retrieved April 24, 2008, from <http://tc.eserver.org/13288.html>
- McGrath, L. & Kaufhold, K. (2016). English for specific purposes and academic literacies: eclecticism in academic writing pedagogy. *Teaching in Higher Education*, (21)8, 933-947.Doi: 10.108/13562517.2016.1198762.
- McLeod, S. H. (2002). WAC in international contexts: An introduction. *Language and Learning Across the Disciplines*, 5(3), 4-10.
- Meier, R.L., Williams, M.R., & Humphreys, M.A. (2000). Refocusing our efforts: Assessing non-technical competency gaps. *Journal of Engineering Education*, pp.377–385.
- Melo-Pfeifer, S. (2015). Translanguaging, language, bilingualism and education. *Language and Intercultural Communication Journal*, (15)1, pp.179-183.Doi: 10.1080/14708477.2014.950828.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass.
- Miles, M.B., & Huberman, A.M. (1994) *Qualitative Data Analysis: An Expanded Sourcebook* (2nd ed.). Thousand Oaks: SAGE publications.
- Ministry of Education (1995). Vision and Mission. Retrieved, 2012, from: <http://www.moe.gov.om/English>
- Ministry of Information (2006). Retrieved from <https://www.omaninfo.om/english/>
- Ministry of Manpower (2013). Colleges of technology. Retrieved September, 2013, from <http://www.hct.edu.om/centers/english-language-center/programs-and-courses>
- Ministry of Manpower (2015). Colleges of technology. Retrieved November, 2016, from: <http://www.manpower.gov.om/colleges>

- Ministry of National Economy (1999). Oman strategic plan for 2020-"Vision 2020".Retrieved from: <http://www.ministry-of-national-economy-Oman>
- Missingham, D. (2006). The integration of professional communication skills into engineering education. *The proceedings of the EDU-COM 2006 International Conference*, Edith Cowan University, Perth Western Australia, 346-357.
- Morgan, M., & O'Gorman, P. (2011). Enhancing the employability skills of undergraduate engineering students. *W. Aung*, 152, 239.
- Mort, P., & Drury, H. (2012). Supporting student academic literacy in the disciplines using genre-based online pedagogy. *Journal of Academic Language and Learning*, 6(3), A1-A15.
- Mouhanna, M. (2009). Re-examining the role of L1 in the EFL classroom. *UGRU Journal*, (8), 1-19.
- Mouhanna, M. (2010). The medium of instruction debate in foundation math and IT. What's the role of L1? *UGRU Journal*, fall Issue, 1-15.
- Mouhanna, M. (2016). English as a medium of instruction in the tertiary education setting of the UAE: The perspectives of content teachers. Unpublished doctoral thesis, University of Exeter, UK. Retrieved from [http:// ore.exeter.ac.uk/repository/handle/10871/26316](http://ore.exeter.ac.uk/repository/handle/10871/26316)
- Mudraya, O. (2006). Engineering English: A lexical frequency instructional model. *Journal of English for Specific Purposes*, 25, 235-256.
- Mulder, C. (2007). Nurture the minority who show potential and desire. *Fineweek*, (8) February, p.60.
- Mulligan, D. and Kirkpatrick, A. (2000). How much do they understand? Lectures, students and comprehension. *Higher Education Research and Development*, (19)3, 311-335.
- Murray, N. and Nallaya, S. (2016). Embedding academic literacies in university programme curricula: a case study. *Studies in Higher Education*, (14)7, 1296-1312. Doi: 10.108/03075079.2014.981150.
- Murray, N. and Beglar, D. (2009). *Writing dissertations and theses*. England: Pearson.
- Navaz, M.A. (2012). *Lecture-student interaction in English-medium science lectures: an investigation of perceptions and practice at a Sri Lankan university where English is a second language*. Unpublished PhD, the University of Nottingham.

- Newmann, M. (2001). The academic achievement game: designs of undergraduates' efforts to get grades. *Written Communication*, (18), 470-505.
- Nguyen, D. Q. (1998). The essential skills and attributes of an engineer: a comparative study of academics, industry personnel and engineering students. *Global Journal of Engineering Education*, 2(1), 65-75
- Nguyen, H. T. et al. (2016). English-medium instruction and self-governance in higher education: the journey of a Vietnamese university through the institutional autonomy regime. *Higher Education*, (77), pp. 669-683, DOI: 10.1007/S10734-015-9970-y
- Nguyen, D. and Pudlowski, Z. (2007). Issues and challenges in engineering education and the future outlook of engineering profession in Australia. *Global Journal of Engineering Education*, (11)2, pp. 107-115.
- Northedge, A. (2003). Enabling participation in academic discourse. *Teaching in Higher Education*, Vol. (8), 169-180. doi: 10.1080/1356251032000052429
- Nunan, D. (2000). *Language Teaching Methodology* (2nd Impression), Harlow, Pearson Education Ltd.
- Nunan, D. (2005). *Research methods in language learning*. Cambridge: Cambridge University Press.
- Ochs, E. (1986). Introduction. In B. B. Schieffelin & E. Ochs (Eds.), *Language socialization across cultures* (pp. 1-13). New York: Cambridge University Press.
- Ochsner, R., & Fowler, J. (2004). Playing devil's advocate: Evaluating the literature of the WAC/WID movement. *Review of Educational Research*, 74(2), 117-140.
- Oliver, P. (2010). *The student's guide to research ethics* (2nd Ed.). UK: Open University Press.
- Oman Academic Accreditation Authority (OAAA). (2008). General foundation programme. Retrieved from: <http://www.oaaa.gov.om/Program.aspx#GeneralFoundation>
- Orr, T. (2002). Assessing proficiency in engineering English. *Journal of IEEE Transactions on Professional Communication*, 45(1), 40-44.
- Padgett, D. K. (2008). *Qualitative methods in social work research*. Thousand Oaks, CA: Sage.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd). Newbury Park: Sage.

- Pawan, F., & Ortloff, J.H. (2011). Sustaining collaboration: English-as-a-second-language, and content-area teachers. *Teaching and Teacher Education* (27), 463-471.
- Paxton, M. and Frith, V. (2015). Transformative and Normative? Implications for Academic Literacies Research in Quantitative Disciplines. In Lillis, et al. (Eds.), *Working with academic literacies: Case studies towards transformative practice*, 155-162, Anderson, South Carolina: Parlor Press.
- Peacock, M. I. (2001). Match or mismatch? Learning styles and teaching styles in EFL. *International Journal of Applied Linguistics*, 11(1), 1-20. Retrieved from DOI: 10.1111/1473-4192.00001
- Peacock, M, I. (2001). Learning strategies and EAP proficiency: Teacher views, and student views, and test results. In, Flowerdew, J., Peacock, M. (Eds). *Research Perspectives on English for Academic Purposes*. Cambridge: CUP, pp.268-285.
- Pearsall, T.E. (2010). *The elements of technical writing*. New York: Longman.
- Pecorari, D. and Petrić, B. (2014). Plagiarism in second language writing. *Language Teaching*, Vol.47(3), pp. 269-302. Retrieved from: doi:10.1017/S0261444814000056
- Petrić, B. (2007). Rhetorical functions of citations in high- and low-rated master's theses. *Journal of English for Academic Purposes*, (6), 238-253.
- Petrić, B. (2012). Legitimate textual borrowing: Direct quotation in L2 student writing. *Journal of Second Language Writing*, (21) 102-117. Retrieved from: doi:10.1016/j.jslw.20102.03.005
- Petrić, B. and Harwood, N. (2013). Task requirements, task representation, and self-reported citation functions: An exploratory study of a successful L2 student's writing. *Journal of English for Academic Purposes*, (12), 110-124. Retrieved from: doi.10.1016/j.jeap.2013.01.002
- Phillips, D. K. & Carr, K. (2009). Dilemmas of trustworthiness in pre-service teacher action research. *Action Research*, (2), 207-226.
- Phillipson, R. (2009a). English in globalization, a lingua franca or a lingua frankensteinia? *TESOL Quarterly*, (43)2, 335-339.
- Pineteh, E.A. (2012). Using virtual interactions to enhance the teaching of communication skills to information technology students. *British Journal of Educational Technology*, (43)1, 8596.
- Prior, P. (2004). Tracing process: how texts come into being. In C. Bazerman & P. Prior (Eds.), *what writing does and how it does it* (pp.167-200). Mahwah, NJ: Lawrence Erlbaum.

- Pritchard, R. M. O., & Nasr, A. (2004). Improving reading performance among Egyptian engineering students: Principles and practice. *English for Specific Purposes*, (23), 425-445
- Probst, B., & Berenson, L. (2015). The double arrow: How qualitative social work researchers use reflexivity. *Qualitative Social Work*, 13(6), 813-827. doi:10.1177/1473325013506248
- Pulko, S. H and Parikh, S. (2014). Teaching soft skills to engineers. *International Journal of Electrical Education*, (40)4.
- Punch, K. F. (1998). *Introduction to social research quantitative and qualitative approaches*. Thousand Oaks: Sage Publications.
- Punch, K. F. (2005). *Introduction to social research: quantitative and qualitative approaches* (2nd ed.). New Delhi: SAGE Publications
- Raddawi, R. and Meslem, D. (2015). Loss of Arabic in the UAE: Is bilingual education the solution? *International Journal of Bilingual & Multilingual Teachers of English*, (30)2, 85-94.
- Rajala, S. A. (2012). Beyond 2020: Preparing engineers for the future. *Proceedings of the IEEE*, 100(13), pp.1376-1383
- Rainey, E., & Moje, E.B. (2012). Building insider knowledge: Teaching students to read, write, and think within ELA and across the disciplines. *English Education*, (45)1, 71–90.
- Rex, L. A., & McEachen, D. (1999). “If anything is odd, inappropriate, confusing, or boring, it’s probably important”: The emergence of inclusive academic literacy through English classroom discussion practices. *Research in the Teaching of English* (34), 65-129.
- Resnick, L. (1987). *Education and learning to think*. Washington, DC: National Academy.
- Riemer, M.J. (2002). English and communication skills for the global engineer. *Global Journal of Engineering Education*, 6(1), 91-166.
- Robson, C. (2002). *Real World Research* (2 ed.): Blackwell Publishers.
- Robson, C. (2011). *Real World Research: a resource for users of social research methods in applied settings*. Chichester: Wiley.
- Rogier, D. (2012). The effects of English-medium instructions on language proficiency of students in higher education in the UAE. *Unpublished doctoral thesis*, University of Exeter, UK.

- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Ross, S. (2008). Language testing in Asia: Evolution, innovation, and policy challenges. *Language Testing*, (25)1, 5-13.
- Ryhan, E. (2014). The role and impact of English as a language and medium of instruction in Saudi Higher Education Institutions: Students'-instructors' perspective. *Study in English Language Teaching Journal*, (2)2, 140-148.
- Ryan, G.W., & Bernard, H.R. (2003). Techniques to identify themes. *Field Methods*, (15)1, 85-109.
- Saat, M. S. and Othman, J. (2010). Meeting linguistic challenges in science the classroom: Pre-service ESL teachers' strategies. *Asian Pacific Journal of Education*, (30)2, 185-197. DOI: 10.1080/02188791003721937
- Sageev, P., & Romanowski, C. (2001). A message from recent engineering graduates in the workplace: Results of a survey on technical communication skills. *Journal of Engineering Education*, 685-693.
- Sally, O. (1985). Listening comprehension-A lecture-based approach. *ELT Journal*, (39)3, 187-192.
- Sayer, P. (2013). Translanguaging, TexMex, and bilingual pedagogy: Emergent bilinguals learning through the vernacular. *TESOL Quarterly*, (47)1, 63-88.
- Schostak, J. (2006). *Interviewing and Representation in Qualitative Research*. London: McGraw Hill.
- Schulz, B. (2008). The importance of soft skills: education beyond academic knowledge. *Journal of Language and Communication*, June 2008, 146-153.
- Schwandt, T. A. (2007). *The Sage Dictionary of Qualitative Inquiry* (Third ed.), Thousand Oaks, California: Sage Publication, Inc.
- Semiante, S. (2016). Translanguaging and multilingual turn: epistemological reconceptualization in the fields of language and implications for reframing language in curriculum studies. *Curriculum Inquiry*, (46)1, 45-61. Doi: 10.1080/03636784.2015.1133221.

- Sergon, V. (2011). Playing the blame game: English education in Omani government schools. *Independent Study Project (ISP) Collection, Paper 1132*. Retrieved from http://digitalcollections.sit.edu/isp_collection/1132
- Shamim, et al. (2016). English medium instruction in the transition year: Case from KSA. *Arab World English Journal*, (7)1, 32-47.
- Shaheen, N. (2012). International students at UK universities: critical thinking related challenges to academic writing, University of Huddersfield, (unpublished Doctoral thesis). Retrieved from <http://eprints.hud.ac.uk/16429/>
- Shen, M. Y. (2013). Toward an understanding of Technical University EFL learners academic reading difficulties, strategies, and needs. *Electronic Journal of Foreign Language Learning*, Vol. (10)1, 70-79.
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, (22), 63-75.
- Shi, L. (2012). Rewriting and paraphrasing source texts in second language writing. *Journal of Second Language Writing*, (21)2, 134–148. doi:10.1016/j.jslw.2012.03.003
- Shin, I. (2008). English for Korean postgraduate engineering students in the global academic community: perceptions of the importance of English, skills-based needs and sociocultural behaviour. Unpublished PhD Thesis. Retrieved from http://eprints.ioe.ac.uk/20557/2/535077_Redacted.pdf
- Shohamy, E. (2013). Critical perspective on the use of English as a medium of instruction at universities. In A. Doiz, D. Lasagabaster and J.M. Sierra (Eds.), *English-medium instruction at universities: Global challenges* (pp. 196-210). Multilingual Matters, Bristol: UK.
- Shohamy, E. (2006). *Language policy: Hidden agendas and new approaches*. New York: Routledge.
- Silverman, D. (2005). *Doing qualitative research: a practical handbook* (3rd ed.). UK: Sage Publications.
- Silverman, D. (2006). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction* (3rd ed.) London: Sage.
- Simons, H. (2009). *Case study research in practice*. London: Sage Publications.

- Singh, M.K. (2013). Academic speaking practices of international graduate students in a higher education institution in Malaysia: challenges and overcoming strategies. *International Journal of Education and Research*, (1)7, 1-14.
- Sivaraman, I. et al. (2013). Key performance indicators of employability of graduating engineers from an engineering college in Oman. *International Journal of Multidisciplinary and Engineering*, 4(9), 34-39.
- Sivaraman, I. et al. (2014). Understanding Omani students' (University) English language problems. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 3(1), 28-35.
- Smith, K. (2004). *Studying in an additional language: What is gained, what is lost and what is assessed?* In R. Wilkinson (Ed.), *integrating content and language: meeting the challenge of a multilingual higher education*, 78-93. Maastricht: Universitaire Pers.
- Smith, P.H and M. L.A. (2015). Theorizing translanguaging and multilingual literacies through human capital theory. *International Multilingual Research Journal*, (9), 59-73. Doi: 10.1080/19313152.2014.985149.
- Solloway, A. (2016). English-medium instruction in higher education in the United Arab Emirates: The perspective of students. Unpublished doctoral thesis, University of Exeter, UK. Retrieved from [http:// ore.exeter.ac.uk/repository/handle/10871/26316](http://ore.exeter.ac.uk/repository/handle/10871/26316)
- Spack, R. (1988). Initiating ESL Students into the Academic Discourse Community: How Far Should We Go? *TESOL Quarterly*, (22)1, 29-51.
- Spack, R. (1997). The acquisition of academic literacy in a second language: a longitudinal case study. *Written Communication*, 14 (1), pp.3-62.
- Speight, J.G. (2012). *Clear and Concise communications for scientists and engineers*. CRC Press. Boca Raton. Florida.
- Stake, R.E. (1995). *The art of case study research*. London: Sage
- Stake, R. E. (2005). *Qualitative Case Studies*. In N. Denzin, & Lincoln, Yvonnas (Ed.), *The SAGE Handbook of Qualitative Research* (3 ed., pp. 443-466). Thousand Oaks: SAGE Publications.
- Street, B. (2009). Hidden' Features of Academic Paper Writing-Working Papers in Educational Linguistics, UPenn.

- Suliman, S.M.A. (2002). Towards problem-based engineering education. *The 6th Saudi Engineering Conference, KFUPM*, (1), 303-314.
- Suliman, W.A and Tadros, A. (2010). Nursing students coping with English as a foreign language medium of instruction. *Nurse Education Today*, (31),402-407. Retrieved from <https://doi.org/10.1016/j.nedt.2010.07.014>
- Sun, W. (2010). An overview of engineering education in the US under a globalization environment. *Educating Engineers in the Wild, Wild West*, 76.
- Swales, J. (1990). *Genre analysis: English in academic and research settings*: Cambridge: Cambridge University Press.
- Tamtam, A. et al. (2010). EMI engineering education in Arab World and twenty first century challenges, *3rd International Symposium for Engineering Education*, University Colleges Cork, Ireland.
- Tamtam, A. et al. (2013). The impact of language of instruction on quality of science and engineering education in Libya: Qualitative study of faculty members. *European Scientific Journal*, (9) 31, 19-36.
- Tashakkori, A. and C. Teddlie (1998). *Mixed Methodology: Combining Qualitative and Quantitative Approaches. Applied Social Research Methods Series*, 46. London: Sage.
- Tashakkori, A. and Teddlie, C. (2003). *Handbook of mixed method in social and behavioral research* (Eds.). Thousand Oaks: sage Publications.
- Tatzal, D. (2011). English-medium programmes at an Austrian university of applied sciences: Attitudes, experiences and challenges. *Journal of English for Academic Purposes*, (10), 252-2270.
- Teng, S. C. (2009). *Teachers' beliefs about using English as the medium of instruction and their teaching techniques*. Unpublished M.A thesis, Ming Chuan University.
- Thaiss, C., & Porter, T. (2010). The state of WAC/WID in 2010: Methods and results of the US survey of the international WAC/WID mapping project. *College Composition and Communication*, 61(3), 534-570.
- Thurmond, A. V. (2001). The point of triangulation. *Journal of Nursing Scholarship*, (33)3, 253-258.

- Troudi, S. (2009). The effects of English as a medium of instruction on Arabic as a language of science and academia. In P. Wachob (Ed.), *Power in the ELT Classroom: Critical pedagogy in the Middle East* (pp.199-216). Newcastle Upon Tyne: Cambridge Scholars Publishing.
- Troudi, S. and Jendli, A. (2011). Emirati Students' Experiences of English as a Medium of Instruction in Issa, A. and Dahan, L. (eds.) *Global English and Arabic: Issues of Language, Culture, and Identity*, Oxford: Peter Lang, 2011, 23-48
- Tsui, A. P. and Ngo, H. (2017). Students' perceptions of English medium instruction in Hong Kong University. *Asian Englishes*, 19(1), pp. 57-78, DOI:10.1080/13488678.2016.1230484.
- Tuli, F. (2010). The basis of distinction between Qualitative and Quantitative Research in Social Science: Reflection on Ontological, Epistemological and Methodological Perspectives, *Ethiopian Journal of Education and Science*, (6)1.
- Turner, J. (2012). Academic literacies: Providing a space for the socio-political dynamics of EAP. *Journal of English for Academic Purposes*, 11(1), 17-25.
- Vu, N.T.T. and Burns, A. (2014). English as a medium of instruction: challenges for Vietnamese Tertiary Lecturers. *The Journal of Asia TEFL*, (11)3, 1-31.
- Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.
- Wahi, W. (2013). Reading in engineering: Understanding engineering students' English language academic literacies. DOI: 10.7763/IPEDR (68)18.
- Wahl, H. et al. (2012). Soft skills in practice and education: An Evaluation. *American Journal for Business Education*, 5(2), pp.225-232.
- Wang, L. (2006). Sociocultural learning theories and information literacy teaching activities in higher education. *Reference and User Services Quarterly*, (47)2, pp.149-158.
- Wankat, P. (2017). Perspective: Teaching professional skills. *AIChE Journal*, (63)7, Doi: 10.1002/aic.15747
- Weber, A.S. (2011). Politics of English in the Arabian Gulf. *1st International Conference on Foreign Language Teaching and Applied Linguistics, Sarajevo*.
- Wertsch, J. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.

- Wilkinson, R. (2005). The impact of language on teaching content: Views from the content teacher. Paper presented at *the Bi-AND Multilingual Universities-Challenges and Future Prospects, Helsinki, Finland*. Retrieved from [http:// www.palmenia.helsinki.fi/congress/bilingual2005_presentations/wilkinson.pdf](http://www.palmenia.helsinki.fi/congress/bilingual2005_presentations/wilkinson.pdf).
- Wilkinson, R. (2013). English-medium instruction at a Dutch university: Challenges and pitfalls. In A. Doiz, D. Lasagabaster, & J. M. Sierra (Eds.), *English-medium instruction at universities: Global challenges* (pp. 3–24). Bristol, UK: Multilingual Matters.
- Wikes, J., Godwin, J. and Gurney, L. J. (2015). Developing information literacy and academic writing skills through the collaborative design of assessment task for first year engineering students. *Australian Academic & Research Libraries*, (46) 3, 164-175. Doi: 10.1080/00048623.2015.106
- Williams, E. and Cooke, J. (2002). Pathways and labyrinths: Language education in development. *TESOL Quarterly*, (36)3, pp. 297-322.
- Williams, E. and Cooke, J. (2002). *Language, Literacy and Education in Poverty Alleviation*. Unpublished report. Reading: CfBT Education Services.
- Wingate, U. (2006). Doing away with ‘study skills’. *Teaching in Higher Education*, (11)4, 475-469.
- Wingate, U., & Tribble, C. (2012). The best of both worlds? Towards an English for Academic Purposes/Academic Literacies writing pedagogy. *Studies in Higher Education*, 37(4), 481-495.
- Wisker, G. (2001). *The postgraduate research handbook*. New York: Palgrave.
- Wolcott, H.F. (1990). *Writing up qualitative research*. Sage Publications: UK.
- Wong, R. M. H. (2010). The effectiveness of using English as the sole medium of instruction in English classes: student responses and improved English proficiency. *Porta Linguarum*, (13), 119-130.
- Worp, K.V D. (2017). English medium instruction: away towards linguistically better prepared professionals in the Basque Autonomous Community? *International Journal of Multilingualism*, 14(1), pp.53-68, DOI: 10.1080/14790718.2017.1258994
- Wu, W.S. (2006). Students’ attitudes towards EMI: Using Chung Hua University as an example. *Journal of Educational and Foreign Language and Literature*, (4), 67-84.
- WWW. *World data on education- VII Ed 2010/2011*.

Yaacoub, H. et al. (2011). Engineering soft skills: a comparative study between the GCC area demands and the ABET requirements. *Competition Forum*, 9(1), 88-99.

Yin, R. K. (2003). *Applications of case study research* (2nd edition). London: Sage Publications.

Yin, R. K. (2009). *Case study research: design and methods* (3rd editions) (Applied social research methods). London: Sage Publications.

Yousif, A. (2006). Listening Comprehension Difficulties as Perceived by. *J. King Saudi University*, (19), 35- 47.

Zacharias, N. T. (2013). Navigating through the English-medium-of-instruction (EMI) policy: Voices from the field. *Current Issues in Language Planning*, (14)1, 93–108.

Appendices

Appendix 1: Participants' consent form

University of Huddersfield

School of Education and Professional Development

Researcher: Holi Ibrahim Holi Ali

E-mail: u1077907@hud.ac.uk

Main Supervisors: Dr Roy Fisher

E-mail: r.fisher@hud.ac.uk

Supporting Supervisor: Dr Glynn Jones

E-mail: g.r.jones@hud.ac.uk

Participant Consent Form

What is the purpose of the project?

This research is part of a doctoral study that is currently being undertaken at the School of Education and Professional Development, University of Huddersfield, UK.

You are kindly requested to take part in this study which intends to investigate engineering students' ESP/EAP academic and workplace needs at higher colleges of technology in Oman. You may be assured that your responses will be regarded as confidential and will only be used for research purposes.

Title of Research Study: Exploring ESP/EAP Learning and Target Needs of Engineering Students in Oman

The study

The study seeks to elicit information from engineering students and their views and perceptions about the English language generic skills, such as written and spoken communication in English, which they need in order to function effectively in their core subjects and survive in their potential workplaces. Further, it attempts to investigate perceptions of the adequacy of ESP/EAP materials currently being used, and to identify the gap between their target and learning needs and the ESP / EAP materials used in the selected colleges.

Why have I been chosen?

I have approached you because of your role to play in English language teaching and engineering education in Oman will provide valuable insights for the future development of engineering education in Oman.

Do I have to take part?

No. Your participation in this research is entirely your decision and voluntary and you may withdraw from the research at any time without giving a reason or repercussion by sending an email to the researcher via the following email: u1077907@hud.ac.uk. If you feel unable to be involved for any reason, I shall fully understand.

Are there any disadvantages and advantages to taking part?

I foresee no disadvantages to participating in this study. I anticipate that the findings of this study will be used to develop ESP/EAP materials for engineering students in colleges of technology in Oman. This gives insights which may enhance the engineering graduates' performance and communication skills in English language which would meet their study and workplace needs.

In line with the Data Protection Act, UK, the consent form, any information about participants such as recordings and taped interviews will be securely stored and archived by me during the research. You may access the materials I collect from you at any time during the research. I will dispose of the video recordings, taped interviews, questionnaires, and my research notes after the conclusion of this research. To ensure your anonymity, I will ask you to choose a pseudonym during interviews so that if I make any reference to you in the research your identity will be protected. All identifying details will be changed in any publication resulting from this research.

What will happen to the results of the research paper?

The results of this study will be used in my writing relating to engineering students' study and job linguistic needs in Oman. A summary of the results can be sent upon your request by send an email to the researcher: u1077907@hud.ac.uk.

Contact Address:

Holi Ibrahim Holi Ali

University of Huddersfield, School of Education and Professional Development

Tel: +968 92295223/ E-mail: u1077907@hud.ac.uk

Appendix 2

Letters written to The College of Innovation (Pseudonym) request to access to the site of the study

Dear Sir /Madam

Date

Subject: PhD Research

I am a part-time post graduate researcher undertaking doctoral studies in the School of Education and Professional Development, University of Huddersfield, UK. I am undertaking a study which focuses on engineering students' English language learning and target needs (workplace needs) in four colleges of technology in Oman. One aspect of my research concerns engineering students', English language teachers', engineering teachers', and workplace stakeholders' perceptions in relation to learning and workplace needs for engineering graduates. I would be most grateful to receive your permission to conduct a questionnaire survey, interview some students and teachers and observe some classes in your college. All the research will be confidential and my related publications would not disclose either the individual participants' identities or the participating institutions. Contact with participating students would normally be in their free time.

I am very happy to meet you, or a college designated by you, to discuss my plan so answer any questions you may have. I look forward to hearing from you.

Thank you very much for your cooperation and contribution.

Your Sincerely

Holi Ibrahim Holi Ali, PhD Candidate
School of Education & Professional Development
University of Huddersfield, UK.



24 June 2013

To Whom It May Concern

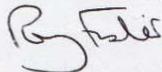
Dear Sir/Madam,

Holi Ali

This is to confirm that the above named individual is currently a postgraduate undertaking doctoral research for a PhD on a part-time basis at the University of Huddersfield, UK.

Please do not hesitate to contact me if you have any queries or wish to verify this information.

Yours faithfully,



Dr Roy Fisher BA (Hons) MSc MPhil PhD CertEd FHEA

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TO WHOM IT MAY CONCERN

HOLI IBRAHIM HOLI ALI
STUDENT NO: 1077907

THE RESEARCH OFFICE
THE UNIVERSITY OF HUDDERSFIELD
QUEENSGATE
HUDDERSFIELD
HD1 3DH

Dear Sir/Madam

This is to confirm that Mr Ali is registered as a part-time research student in the School of Education and Professional Development, undertaking a programme of work leading to the award of Doctor of Philosophy.

The programme of research is entitled:

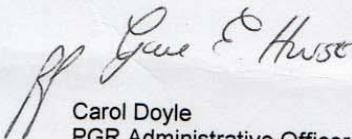
Meeting Omani engineering students' ESP/EAP target and learning needs in material production: A comparative case study

Mr Ali first registered on this programme on 02/Jan/2011 and has an expected end date of 01/Jan/2017

Part-time students are required to spend on average a minimum of at least two weeks per year at the University of Huddersfield. Mr Ali is preparing to make a visit to the UK in July 2012 to meet with his supervisors and develop his research programme further. I would be grateful if you would issue Mr Ali with the appropriate visa for his visit to the UK.

If you require any further information, please do not hesitate to contact me.

Yours faithfully



Carol Doyle
PGR Administrative Officer
Research Office

Tel: 01484 472516
Email: c.m.doyle@hud.ac.uk



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Appendix 3

Interview coding scheme

Students' Interviews Coding Scheme

No.	Code	Definition
1.	EMI LNG CH EMI Language-related Challenges	This code refers to when students talk about their language-related challenges encountered during their undergraduate engineering programme.
2.	LEC COM CH Lecture Comprehension-related Challenges	This code refers to when students talk about the lecture comprehension-related challenges and difficulties.
3.	ST COP STR Student Coping Strategies	This code refers to when students talk about their coping strategies that they used to cope with EMI challenges in their engineering classes.
4.	LI USE First Language Use	This code refers to when students talk about the use of L1 in their engineering classes by their peers and teachers. It also may also include students' views on their preference/non preference for the use of the L1 by teachers in delivering their engineering classes.
5.	CS EMI CH Causes of EMI Challenges	This code refers to when students talk about the causes of these language-related challenges in their engineering classes.
6.	EMI CH IMP ST STU EMI Impact on Students' Studies	This code refers to when students talk about the impacts of EMI challenges on their studies and their entire degree.
	SK EMI ENG PR Skills Required to Cope with English-Medium Engineering Programmes	This code refers to when students talk about the skills they believe to be important for engineering students to cope with their English-medium engineering programmes.

Engineering Teachers' Interviews Coding Schemes

No.	Code	Definition
1.	EMI LNG CH EMI Language-related Challenges	This code refers to when engineering teachers talk about their students' language-related challenges encountered during their undergraduate engineering programme.
2.	LC COM CH Lecture Comprehension-related Challenges Reported by Engineering Teachers	This code refers to when engineering teachers talk about their lecture comprehension-related challenges and difficulties faced by their students
3.	ST COP STRA Student Coping Strategies Reported by Engineering Teachers	This code refers to when engineering teachers talk about their students' coping strategies that they used when coping with EMI challenges in their engineering classes.
4.	LI USE First Language Use Reported by Engineering Teachers	This code refers to when engineering teachers talk about their students' of L1 in their engineering classes.
5.	CS EMI CH Causes of EMI Challenges Reported by Engineering Teachers	This code refers to when engineering teachers talk about the causes of these language-related challenges in their engineering classes.
6.	EMI CH IMP ST STU EMI Impact on Students' Studies Reported by Engineering Teachers	This code refers to when engineering teachers talk about the impacts of EMI challenges on their students' studies and their entire degree.
	SK EMI ENG PR Skills Required to Cope with English-Medium Engineering Programmes Reported by Engineering Teachers	This code refers to when engineering teachers talk about the skills they believe to be important for their engineering students to cope with their English-medium engineering programmes.
7.	PF EAP CRS Teachers' Views on their Post Foundation on their EAP COURSES	This code refers to when engineering teachers talk about the EAP courses at the post foundation level intended to help student to cope their EMI-English medium programmes

EAP Teachers' Interviews Coding Schemes

No.	Code	Definition
1.	EMI LNG CH EMI Language-related Challenges Reported by EAP Teachers	This code refers to when EAP teachers talk about the challenges encountered by their students during their undergraduate engineering programme.
2.	LC CM CH Lecture Comprehension-related Challenges Reported by EAP Teachers	This code refers to when EAP teachers talk about their lecture comprehension-related challenges and difficulties faced by their engineering students.
3.	ST COP STR Student Coping Strategies Reported by EAP Teachers	This code refers to when EAP teachers talk about their students' coping strategies that they used to cope with EMI challenges in their engineering classes.
4.	LI USE First Language Use Reported by EAP Teachers	This code refers to when EAP teachers talk about the use of L1 by their engineering students.
5.	CAS EMI CH Causes of EMI Challenges Reported by EAP Teachers	This code refers to when EAP teachers talk about the causes of language-related challenges faced by students in their engineering classes.
6.	EMI CH IMPC ST STU EMI Impact on Students' Studies Reported by EAP Teachers	This code refers to when EAP teachers talk about the impacts of EMI challenges on their students' studies and entire degree programme.
	SK EMI ENG PRO Skills Required to Cope with English-Medium Engineering Programmes Reported by EAP Teachers	This code refers to when EAP teachers talk about the skills they believe to be important for their engineering students to cope with their English-medium engineering programmes.
7.	PF EAP CRS Teachers' Views on their Post Foundation on their EAP COURSES Reported by EAP Teachers	This code refers to when EAP teachers talk about the EAP courses at the post foundation level intended to help students to cope their EMI-English medium programme.

Appendix 4

An example of observation notes 1 - Engineering Classroom Observation I

Lecture Time	Lecture Room	Level	Instructor	Course	Day & Date
8:00 10:00 am	Lab ME 103	H. Diploma	M	Mechanical Design	26.11.2015
<ul style="list-style-type: none"> ▪ The teacher started his lesson by greeting his students; he then logged into a computer and showed pictures of "Gears" and "motors". ▪ The teacher began his lesson by discussing some issues related to his students' projects and assignments. Some of the students were attentive and took notes; some of them frequently talked to each other in Arabic. ▪ The teacher told them that this chapter was about "Gears" and linked the lesson to the previous ones, which had been about "Shafts". He asked them about the elements of gears and what gear is. A student replied that it is "a machine element that transmits..." ▪ Another a student said that gears are defined as "toothed wheels which are used to transmit power and motion from one shaft to another shaft, when the distance between shafts is small. It is called as passive drive and velocity ration remains constant". ▪ I noticed that some of the students were not able to understand the concepts, and they started using their mobiles dictionaries to figure out some of the technical words. Moreover, some of them talked to each other in Arabic helping out each other to understand the matter in a better way. <p>Further, the teacher wrote the title "Design Considerations for Gear Drive" on the board, together with following subtitles:</p> <ol style="list-style-type: none"> 1. Velocity ration or speed of gear drive 2. Central distance between shafts 3. Input speed for driving gear 4. The strength of gear tooth 5. Wear characteristics of gear tooth for long life. 6. Use of space and material 7. Cost should be economical <ul style="list-style-type: none"> • After that, the teacher shifted to the three circles in gears: <ol style="list-style-type: none"> 1. P.C.D (Pitch Circle Diameter) 2. Addendum Diameter 3. Reddendum Diameter ▪ I realized that some of the students were able to understand these technical terms, while some others were using their mobile dictionaries to check their meanings. There were also some who were talking to their friends. However, the vast majorities were well-versed in understanding the technical terms and formulas. Some of the students had already got their handouts, and they were following their teachers from their handouts. ▪ The teacher repeated the items several times, and only English was used as a medium of instruction. Subsequently, he showed the categories of gears along with their sub-categories: <ol style="list-style-type: none"> 1. Parallel Axes Gears 2. Intersecting Axes Gears 					

3. Non-Parallel and Intersecting Axes Gears

The teacher told the students about the quiz, that they may be given some pictures of gears and be asked to name them. The teacher also asked some questions, and the students were able to come up with their own answers.

- Teacher's Coping Strategies with Students' Difficulties are:
 - Repeating the concepts again and again and relating them to students' everyday life.
 - Simplification strategies (simplifying the language being used)
 - Giving examples from real life
 - revising what is being taught immediately
- Students' Challenges and Difficulties:
 - Understanding concepts from mechanics as well as some of the mathematical terms
 - Pronouncing some of the technical terms such as Addendum
 - Seeking clarifications from their teacher and classmates in English
- Students Coping Strategies:
 - Asking their friends to explain aspects of the lecture to them in Arabic
 - Using their mobile dictionaries
 - Asking the teacher to repeat the point several times
 - Following their handouts during the lecture
 - Asking the teacher to slow down the speed of his delivery

An example of observation notes 2 -Engineering Classroom Observation II

Lecture Time	Lecture Room	Level	Instructor	Course		Day & Date
10:00 12:00 am	Lab ME 103	H. Diploma	S	Thermodynamics		26.11.2015
					<ul style="list-style-type: none"> • The teacher began his lesson by writing "Phase-Change Process of Purse Substance-How can you define the quality steam?" • What is the purpose quality? <p>Some of students were able to come up with different answers using technical vocabulary, such as temperature of the steam, pressure of the steam, saturated liquid, vapour mixture, vaporization, saturated vapour, proportions, total mass, thermal connectivity, etc.</p> <ul style="list-style-type: none"> ▪ The interaction between the teachers and students was just in Arabic in terms of Q and A. Some of the students were talking in Arabic to help each other to understand some of the technical concepts. Most of the class discussions and exercises were centred on problem solving activities: <ul style="list-style-type: none"> • Problem-solving exercises <ul style="list-style-type: none"> ▪ Problem 5: Obtain the saturation pressure (P sat): Specific volume, internal energy and enthalpy of steam with dryness fraction 0.7 at 10 c. ▪ Students worked together with their teacher to solve the problems. Formulas and equations were used to calculate the saturated vapour. ▪ Many abbreviations and mathematical symbols were used, such as V_x, X, V_g, m_v, P sat, etc. Students used their handouts to help them to solve the problem but they were talking to each other in Arabic. They talked to their teachers in numbers, or figures with a very technical registers. All the students collaborated with their teacher to calculate the formula's values and solve the given problem. ▪ Problem 6: Obtain the saturation temperature (T sat), specific volume, internal energy and enthalpy of steam with dryness fraction 0.4. ▪ Problem 7: calculate the amount of heat to be supplied to covert 10 Kg of saturated liquid to saturated vapor at 2 bars. The teacher asked his students whether it was clear or not. ▪ Problem 8: Calculate the dryness fraction of steam which 1.5 kg of water in suspension with 50 kg of steam • Coping Strategies used by the students: <ul style="list-style-type: none"> ▪ I noticed that most of the students were working in groups to solve the above mentioned problems. The teacher was monitoring and responding to their queries in English, but they talked to each other in Arabic discussing the possible solutions to the problem. What I realized was that some of the students were not really good in expressing themselves in English, but they were good in solving the mathematical problems and discussing them in Arabic with their classmate. 	

An example of observation notes 3: Engineering Classroom Observation III

Lecture Time	Lecture Room	Level	Instructor	Course	Day & Date
8:00 10:00 am	EE 302	Diploma	Mr S. K	Power System	20.05.2014
<ul style="list-style-type: none"> ▪ The teacher started his lesson by writing the title: The Three Types of Rectifiers... He told the students that the lecture would be focused on the three types of rectifiers. Most of the interactions between the teacher and students were based on speaking. ▪ The teacher used diagrams to explain the operation of Half-wave Rectifier. Then he asked: What is the function of the diode? What are the common applications of diode? The most widely used skill was speaking. The teacher was using the strategy of over-explanation and simplification to help his students comprehend and understand the subject. ▪ Additionally, the teacher was using diagrams and drawings and asking students to answer some questions. The teacher wrote primary and secondary diodes, and he asked students to explain the circuit. ▪ The teacher asked questions based on his input, and the students answered collectively and in groups without his nominations. Only a few numbers of the students were interacting with him. The teacher walked around the class, and most of the lecture was based on electrical diagrams. Students used their textbooks and handouts to follow their teacher. Most of the lecture focused on the three types of rectifiers: <ol style="list-style-type: none"> 1. Half-Wave Rectifier (HWR) 2. Full-Wave Rectifier (CTFWR) 3. Bridge-Type Full Wave Rectifiers (BTFWR) <ul style="list-style-type: none"> ▪ The teacher used diagrams to explain the operation (number of diodes / operations/ positive half circle/ negative half-circle). He also gave many diagrams to his students and asked them to solve certain problems. Read the following questions: <p style="margin-left: 20px;">Use the diagram and determine the following:</p> <ol style="list-style-type: none"> 1. Secondary voltage of the transfer if $V_P = 220 \text{ V}_{rms}$ 2. Sketch of the rectified signal and peak voltage of the rectified signal V_m. 3. Reading of the DC voltmeter, V_{dc} 4. Reading of the DC ammeter connected in series with the load, I_{dc} 5. Percent ripple, % 6. Diode's Piv <ul style="list-style-type: none"> ▪ A diagram was given and students were asked to use their calculators to work out the answers. Only a few numbers of students were interacting in English. The teacher was circulating around to provide help when needed. ▪ In summary, problem-solving approach is the most dominated during the whole lecture and some students were relying on their mother tongue to seek help and clarifications from their classmates and friends. <ul style="list-style-type: none"> • Language-related Difficulties 					

- I noticed from my observation that some of the students had salient language-related problems, such as lack of understanding the technical vocabulary, inability to talk to their friends in English, and difficulties carrying out in class-tasks and discussions. The coping strategies varied from one student to another, but the most noticeable strategy was seeking help from friends and discussing with them in Arabic.

- I also realized that the students were not willing to take notes during the lecture.

- **Students' Coping Strategies**

- Some of the students used their mobiles to take photos and follow the teacher from their handouts. Interestingly, some of the students were not really good in English and could not express themselves with ease in this language. However, they are quite good in mathematical calculations. Moreover, some of the students used their mobiles during the class to check meanings and spellings.

- **Teacher's Coping Strategies with Students' Language-related Difficulties and Challenges**

I noticed that the teacher repeated key points several times during the lecture and simplified terms and his language to accommodate to the students' needs. Some of the students were attentive, and it seemed that they knew the course and the materials very well. So, repetitions and simplification were widely used as coping strategies in engineering classes.

- **The Role of Students' Mother Tongue in Engineering Classes**

- I noticed that whenever students communicated with one another in classroom, they did it mostly in Arabic. However, when they talked to their teacher, they spoke English. In other words, the use of their mother tongue was both noticeable and helpful.

An example of observation notes 4: Engineering Classroom Observation IV

Lecture Time	Lecture Room	Level	Instructor	Course	No of Ss	Day & Date
12-2 pm	EEL4 (Lab)	B.Tech.	Ms S	Radar System	16 Female	6.12.2015

Lecture in Details

- The teacher started her lesson by discussing matters related to the homework and giving model answers. The title was: Radar Cross Section/PowerPoint Slides.
- The teacher started her lesson by writing problem 1 on the board: A pulse radar operating at 10GHz has an antenna with a gain of 28 db, and a transmitter power of 2 kw (pulse power) to detect a target with a cross-section of 12 m², and the minimum detectable signal is 15 pmin = 90 dbm. Calculate the maximum range? This is a part of your homework.
- Then she showed them the radar range equation and she got the students to work out the solution. A problem-solving approach was used in the lecture and the students worked individually and sometimes in pairs and groups. As they worked out the problem, they interacted with each other in Arabic.
- **Radar Cross Section**
 - Jubmo Jet / Jet Airlines / Helicopter / Four Passenger Jet
- **Radar Frequency Bands: Chapter two: classification of radar.**
 - Classification of radar
 - Working principles
- **Comparison of different types of radar**
 - Radar set / Duplexer
 - Secondary: continuous wave radar/ modulated & unmodulated radar
 - Primary : Pulsed radar/ frequent modulated
 - Bi-static radar
 - Mono-static Radar
- **Imaging radar:** This produces real pictures. It is two dimensional images. The radar captures whole images. Students did not take notes because they had their own lecture notes, and they were using them to follow their teacher.
- **Non-imaging radar:** It does not produce images. It can produce shapes only. Examples of applications are: Broadcasting and weather climate.
 - For scanning, imaging radar is used in medical applications. There is no sensing instrument. An application using imaging radar senses the whole area, it transmits the signal, and it produces two-dimensional images.
- **What are the difference between 2-D and 3- D images?**
 - The students discussed this question and were able to come up with different answers using English,

but the whole discussion was in Arabic.

- The teacher added that Radar communication is often used in SAR Satellite image in various Earth observation applications.
- I noticed that speaking and listening were mostly used in solving problems and doing their in-class tasks. Students did not take notes; they just followed their teacher using their lecture course books along with the PowerPoint slides.
- I also noticed that the teacher used diagrams, graphs, pictures and illustrations to explain how non-static and bi-static radar systems function, as well as operations, applications and electromagnetic frequency (emf). Teacher explained how non-static Radar systems function or work.
- **Advantages and Disadvantages of All Types of Radar**
 - Primary radar transmits high frequency signals and it has an echo signal
 - Secondary radar: combines all advantages of the two types of radar
 - The teacher provided figures and illustrations to explain the advantages and disadvantages of radar applications. She explained how the radar system sends electromagnetic signals to an airport from an aircraft, and how it locates the position of the flight if there is a dangerous situation.
- **Language-related Problems:**
 - I noticed that the lecture was really interesting, and the students were very attentive. They were able to follow the teacher during the whole lecture.
 - The language skills which were mostly used were speaking and listening. Students were asked to take notes and draw figures and illustrations and to solve some mathematical calculations.
 - I noticed that Arabic was used very frequently by the students during classes, particularly when they communicated with each other.

An example of observation notes 5: Engineering Classroom Observation VI

Lecture Time	Lecture Room	Level	Instructor	Course	No of Ss	Day & Date
2-3	MIIE4142 Lab	B.Tech.	Dr S	Human Resource Management	24 (M)	6.12.2015
<ul style="list-style-type: none"> • The teacher started his lesson by displaying some slides, the first of which was entitled: Human resource management and had the following sub-headings: <ol style="list-style-type: none"> 1. Function of HRM process 2. Recruitment and decruitment 3. Selection <ul style="list-style-type: none"> ▪ The teacher used diagrams to explain the HRM process, including the following sub-topics: Motivation, productivity, trade unions, training, rewards system, development, discipline, recruitment, legislation, employment, discipline, etc. ▪ I noticed that all these concepts were explained by using examples, diagrams, illustrations, figures, graphs, charts, etc. ▪ The students were attentive and asked questions seeking for clarification. The teacher discussed the types of interviews, such as technical interview, personal interview, and psychometric interview (where you give a scenario and test how the interviewee responds). It was also mentioned that medical examination is important to make sure that the candidate is fit, and this is part of the selection process. • Who are called high performing employee? <ul style="list-style-type: none"> ▪ Intelligence - How smart are you? ▪ Aptitude - Can you lean to do it? ▪ Attitude - How do you feel about it? ▪ Ability - Can you do it now? ▪ Interest - Do you want to do it? ▪ Students worked in groups and came up with different responses and answers. A number of types of managers were discussed, such as first line managers, middle managers, and top managers. They were all discussed, and examples were given. • Managerial Skills <ul style="list-style-type: none"> ▪ This topic was discussed, and students were asked to work in groups and come up with their own answers. They talked to each other in Arabic, but they used some English words and phrases related to the topic. The managerial skills were presented as including technical skills, such as knowledge and proficiency in special field. ▪ b hbb On the other hand, human skills were described as the ability to work well with others. Finally, conceptual skills were also dealt with as being the ability to think and conceptualize about abstract and complex situations in function of the organization. ▪ I noticed that this course was somewhat theoretical, and it seemed to me that the students did not encounter serious comprehension or language-related problems. In fact, they communicated with the teacher and with each other mostly in English. • Types of Leadership: <ul style="list-style-type: none"> ▪ Transactional /Transformational ▪ Charismatic / Visionary 						

Appendix 5

Classroom Observation Checklist for English and Engineering Classes

Class Observed:	Period:	Time :	Skill Focused:	Teacher:
<p>1. These are the types of skill which are commonly taught:</p>				
<p>2. What type of interaction is used in teaching the English generic skills: reading, writing, speaking, listening</p> <p>a. How do engineering students deal with their linguistic challenges during these classes?</p>				
<p>3. What types of language skills do the students have difficulty with in their core subject courses:</p> <p>a. study skills note taking, following the teachers, seeking clarification, asking questions in English, etc.</p> <p>b. writing and speaking skills (note taking and note making, interacting with teachers in English, seeking help in English, arguing appropriately in English, etc.)</p> <p>c. reading skills</p> <p>d. report writing skills</p>				
<p>4. How do engineering teachers deal with students' language weaknesses and problems during their core subject classes?</p>				
<p>5. How do students interact with their ESP/EAP materials?</p>				

Appendix 6: Table of contents of post-foundation English courses

Public Speaking (PS): Table of Contents

Acknowledgement: The content of this booklet is adapted from Lucas.S.E (2004)
The Art of Public Speaking (Eighth Edition) Mc Graw Hill

Contents

Chapter	Title	Page
1	<i>Speaking in Public</i>	3
2	<i>Ethics and Public Speaking</i>	5
3	<i>Listening</i>	7
4	<i>Choosing a Topic and Purpose</i>	9
5	<i>Analyzing the Audience</i>	12
6	<i>Materials for Your Speech</i>	13
7	<i>Supporting Your Ideas</i>	15
8	<i>Organizing the Body of Your Speech</i>	15
9	<i>Beginning and Ending the Speech</i>	18
10	<i>Outlining the Speech</i>	19
11	<i>Using Language</i>	22
12	<i>Delivery</i>	24
13	<i>Visual Aids</i>	27
14	<i>Speaking to Inform</i>	28
15	<i>Speaking to Persuade</i>	30
16	<i>Methods of Persuasion</i>	32
17	<i>Speaking on Special Occasions</i>	33
18	<i>Speaking in Small Groups</i>	34

Technical Communication (TC): Table of Contents

ACT-ELC Post Foundation

Semester 3 (April 26 – July 9, 2015) Technical Communication Delivery Plan*

Week	What
1 April 26 - 30	<ul style="list-style-type: none"> • Introduction to the Course: issuing Course Book, explaining Course Outline • Unit 1: Technical Vocabulary
2 May 3 - 7	<ul style="list-style-type: none"> • Unit 1: Technical Vocabulary (continued) • Unit 2: Technical Vocabulary
3 May 10 - 14	<ul style="list-style-type: none"> • Unit 2: Technical Vocabulary (continued) • Quiz • Unit 3: Writing Part-by-Part Technical Descriptions
4 May 17 - 21	<ul style="list-style-type: none"> • Unit 3: Writing Part-by-Part Technical Descriptions (continued)
5 May 24 - 28	<ul style="list-style-type: none"> • Unit 3: Writing Part-by-Part Technical Descriptions (continued) • Unit 4 (Section 1): Job Search Techniques (Introduction to CV Writing)
6 May 31 – June 4	<ul style="list-style-type: none"> • Giving effective presentations & spoken descriptions within presentations [Presentation topics issued] • Unit 4 (Section 2): Job Ads & CV Writing <p>END OF MID-TERM EXAMINATION (June 4, 2015)</p>
7 June 7 - 11	<ul style="list-style-type: none"> • Job Search Techniques – CV Writing (Practice) • Unit 4 (Section 3): Writing Targeted Job Application Letters •
8 June 14 - 18	<ul style="list-style-type: none"> • Unit 4 (Section 3): Writing Targeted Job Application Letters (continued) • CV & Job Application letter: Writing Practice
9 June 21 - 25	<ul style="list-style-type: none"> • Writing Practice & Review: CV and Job Application Letters • Students' Presentations
10 June 28 - July 2	<ul style="list-style-type: none"> • Students' Presentations
11 July 5 - 9	FINAL EXAM

*Subject to change

Technical Writing I (TWI)-I: Table of Contents

Technical Writing 1

Al-Musanna College of Technology

Course Objectives

To pass this course, students must show that they can:

- learn the vocabulary and grammar presented in the units, and use them in their writing*
- write definitions, descriptions, texts based on graphs and charts, work-related reports, and college reports
- read and understand newspaper articles and texts posted on websites, as well as discuss their main ideas and supporting elements, and reflect on their possible implications for their own future career and the social, economic, and technological development of Oman

The students' written output must show that they possess the grammatical insight and critical thinking skills which may reasonably be expected of college students.

* The reading tasks and the writing from graphs and charts have been designed to help students prepare for IELTS.

Syllabus

WEEK	WHAT	READER
1 April 26 - 30	Unit 1: Had it not been for engineers CONDITIONALS	Pages 4-20
2 May 3 - 7	Unit 2: The production process is... RELATIVE PRON. + DEFINITIONS	Pages 20-39
3 May 10 - 14 GRADED ASSIGNMENT 1	Unit 3: How does it work? WORDS TO DESCRIBE DEVICES	Pages 40-48
4 May 17 - 21	Unit 4: The global village's global market WORD FAMILIES & CHARTS	TBA
5 May 24 - 28	Unit 4: The global village's global market WORD FAMILIES & CHARTS	
6 May 31 - June 4	Mock & MIDTERM EXAM	
7 June 7 - 11	Unit 5: Oil - A double-edged sword PASSIVE & WORK REPORTS	
8 June 14 - 18	Unit 5: Oil - A double-edged sword PASSIVE & WORK REPORTS	
9 June 21 - 25	Unit 6: College reports PARAPHRASING, REFERENCING, & REPORTING	
10 June 28 - July 2 GRADED ASSIGNMENT 2	Unit 6: College reports PARAPHRASING, REFERENCING, & REPORTING	
11 July 5 - 9	FINAL EXAM	

Distribution of marks

In-class graded assignments	15%
First assignment	7.5%
Second assignment	7.5%
Class participation	5%
Midterm Exam	30%
Final Exam	50%
Pass mark	55

Technical Writing I (TWI)-2: Table of Contents

UNIT 4: The global village's global market	48
Reading: <i>The commercial web</i>	51
Language: Word Families	57
Writing: Texts based on charts or graphs	61
Vocabulary Log: General ESP vocabulary	75
UNIT 5: Oil: A double-edged sword	77
Reading: Oil: We can't live without it, but we might kill the planet because of it	79
Language: Passive Verbs	86
Writing: Field daily reports	86
Vocabulary Log: General ESP vocabulary (2)	91
Language: Passive verbs (II) : advice and recommendations	92
Writing: Incident reports	98
Vocabulary Log: General ESP vocabulary (3)	106

Syllabus

WEEK	WHAT	READER
1 April 26 - 30	Unit 1: Had it not been for engineers	CONDITIONALS Pages 3—17
2 May 3 - 7	Unit 2: The production process is...	RELATIVE PRON. + DEFINITIONS Pages 18—35
3 May 10 - 14 GRADED ASSIGNMENT 1	Unit 3: How does it work?	WORDS TO DESCRIBE DEVICES Pages 37—44
4 May 17 - 21	Unit 4: The global village's global market	WORD FAMILIES & CHARTS Pages 45—74
5 May 24 - 28	Unit 4: The global village's global market	WORD FAMILIES & CHARTS Pages 45—74
6 May 31 - June 4	Mock & MIDTERM EXAM	
7 June 7 - 11	Unit 5: Oil - A double-edged sword	PASSIVE & WORK REPORTS Pages 75—103
8 June 14 - 18	Unit 5: Oil - A double-edged sword	PASSIVE & WORK REPORTS Pages 75—103
9 June 21 - 25	Unit 6: College reports	PARAPHRASING, REFERENCING, & REPORTING Pages 104—138
10 June 28 - July 2 GRADED ASSIGNMENT 2	Unit 6: College reports	PARAPHRASING, REFERENCING, & REPORTING Pages 104—138
11 July 5 - 9	FINAL EXAM	

Distribution of marks

In-class graded assignments	15%
First assignment	7.5%
Second assignment	7.5%
Class participation	5%
Midterm Exam	30%
Final Exam	50%
Pass mark	55

Technical Writing II (TWII)-2: Table of Contents

Technical Writing 1

Al-Musana College of Technology



Course Objectives

To pass this course, students must show that they can:

- learn the vocabulary presented in the units and use it in their writing
- write instructions
- write emails of 150-300 words, in particular the business types dealt with in class
- write memos of 150-300 words, especially the types learned in class
- read and understand newspaper articles and texts posted on websites, as well as discuss their main ideas and supporting elements, and reflect on their possible implications for their own future career and the social, economic, and technological development of Oman

The students' written output must show that the students possess the grammatical insight and critical thinking skills which may reasonably be expected of college students.

Syllabus

WEEK	WHAT	READER
1 April 26 - 30	Instructions	
2 May 3 - 7	Emails: Inquiry	
3 May 10 - 14	Emails: Response GRADED ASSIGNMENT 1	
4 May 17 - 21	Emails: Complaint	
5 May 24 - 28	Emails: Apology	
6 May 31 – June 4	Midterm Exam: 2 emails END OF MID-TERM EXAMINATION (June 4, 2015)	
7 June 7 - 11	Memos: Announcement	
8 June 14 - 18	(Continued) GRADED ASSIGNMENT 2	
9 June 21 - 25	Memos: Research Findings	
10 June 28 - July 2	(Continued)	
11 July 5 - 9	FINAL EXAM	

Distribution of marks

In-class graded assignments	15%
First assignment	7.5%
Second assignment	7.5%
Class participation	5%
Midterm Exam	30%
Final Exam	50%

Technical Writing II (WTII)-2: Tables of Content

Technical Writing 1

Al-Musana College of Technology

Course Objectives

To pass this course, students must show that they can:

- learn the vocabulary presented in the units and use it in their writing
- write instructions
- write emails of 150-300 words, in particular the business types dealt with in class
- write memos of 150-300 words, especially the types learned in class
- read and understand newspaper articles and texts posted on websites, as well as discuss their main ideas and supporting elements, and reflect on their possible implications for their own future career and the social, economic, and technological development of Oman

The students' written output must show that the students possess the grammatical insight and critical thinking skills which may reasonably be expected of college students.

Syllabus

WEEK	WHAT	READER
1 April 26 - 30	Instructions	
2 May 3 - 7	Emails: Inquiry	
3 May 10 - 14	Emails: Response <small>GRADED ASSIGNMENT 1</small>	
4 May 17 - 21	Emails: Complaint	
5 May 24 - 28	Emails: Apology	
6 May 31 - June 4	Midterm Exam: 2 emails END OF MID-TERM EXAMINATION (June 4, 2015)	
7 June 7 - 11	Memos: Announcement	
8 June 14 - 18	(Continued) <small>GRADED ASSIGNMENT 2</small>	
9 June 21 - 25	Memos: Research Findings	
10 June 28 - July 2	(Continued)	
11 July 5 - 9	FINAL EXAM	

Distribution of marks

In-class graded assignments	15%
First assignment	7.5%
Second assignment	7.5%
Class participation	5%
Midterm Exam	30%
Final Exam	50%

1

Appendix 6

Engineering students' interview questions

Title: Omani Engineering Students' Experiences of Learning through the Medium of English

Engineering Students' Interview

The following questions are based on the main research questions of my doctoral research project. Several probes, prompts and follow-up questions will be asked to fill any gaps, and to clarify any doubt or ambiguity which may have emerged during the interview. This will be done in order to help to more adequately answer all the questions.

- **Background questions: Let us start off with some background questions**
 1. Can you please introduce yourself in a few words?
 2. What is your area of specialty in engineering and engineering-related disciplines?
 3. How long have you been studying engineering through the medium of English?
- **Views about the policy of learning through the medium of English**
 1. What is your view of the policy of learning through the medium of English?
 2. What has been your personal experience with the use of EMI in your engineering programmes?
 3. What do you think of the use of English as a medium of instruction in you engineering programmes?
 4. To What extent do you see engineering as an English-based discipline?
 5. To what extent do you feel that learning engineering through English is empowering and disempowering?
 6. What impact has EMI had so far on your capacity to develop as a future engineer?
 7. How do you think EMI impacts on the development of your academic learning networks?
 8. How do you think EMI will impact on the development of your professional learning networks?
 9. Has EMI impacted your interactions with your tutors?
 10. How has EMI impacted on your interactions with fellow students till now?
 11. How could your experience as an engineering student be improved?
- **Challenges and problems of using English as a medium of instruction in teaching engineering programmes**
 1. What challenges and problems have you experienced so far in the course of your engineering degree programme?
 2. What linguistic challenges have you confronted so far?
 3. Which of the skills required of you as you study in English has been the most challenging for you, and why?
 4. What other non-linguistic challenges have you faced in college?

5. Can you tell me some of your specific experiences of these challenges?
 6. How did you respond to those challenges?
 7. Has your mother tongue helped you to overcome these challenges? If yes, how?
- **Suggestions for overcoming EMI challenges**
 1. What suggestions do you have to overcome these challenges?
 - **Skills / attributes important for you in succeeding English medium engineering programmes**
 1. What kind of skills / attributes do you think are important for you to succeed in your engineering programmes taught through the medium of English?
 2. Can you tell me about specific skills important for you to succeed in engineering programmes?
 3. Do you have any comments or suggestions would you like to add?

Reserve of Follow-up Questions

1. What do you think of your having to study in English?
2. To what extent do you think that you having studied in English will turn out to be useful for your future employability?
3. What would you say if there was an option to study engineering in Arabic? Would you encourage it? Would you yourself opt for it?
4. What are some of the linguistic challenges that you have experienced with your assignments and in-class writing?
5. What are the linguistic challenges that you have experienced with in-class discussions and interactions with your instructors?
6. What are the skills that you still need to develop so that you can complete your English-medium engineering programme successfully?
7. Did you encounter any problems while you were writing your engineering assignments in English?
8. Did you have any problem answering in-class questions in English?
9. If you had problems, what do you think caused them?
10. How did you respond to the challenges posed to you by your assignments?
11. How did you cope with your in-class writing challenges?
12. How did you deal with challenges related to your study skills?
13. Do you think your EAP/ESP courses have helped you to write your engineering assignments successfully?
14. Did you encounter any problem when you gave in-class presentations?
15. How did you respond to your difficulties with comprehending engineering lectures delivered in English?
16. How did you cope with the speed of your engineering teachers' language while delivering lectures in English?
17. How did you deal with your difficulties in understanding engineering lectures in English?

- 18.** How did you cope with your difficulties in giving presentations and expressing yourself in English?
- 19.** To what extent do you think your EAP/ESP courses have helped you to deal with all the challenges which you have had to face because you study in English?
- 20.** What would you suggest that it should be done to overcome these challenges?

Appendix 7

Engineering teachers' interview questions

Title: Omani Engineering Students' Experiences of Learning through the Medium of English

Engineering Teachers' Interview

The following questions are based on my doctorate study research questions. Several probes, prompts and follow-up questions will be asked to fill any gaps and to clarify any doubts or ambiguity which may have arisen during the interview. This will be done to ensure that all the questions are answered as adequately as possible.

- **Background questions: Let us start off with some background questions**

1. Can you please introduce yourself in a few words?
2. What is your area of specialty in engineering or any other engineering-related discipline?
3. How long have you been teaching engineering through English?

- **Challenges and problems of using English as a medium of instruction in teaching engineering programmes**

8. What challenges and problems do your students usually experience during the delivery of your course?
9. Can you tell me about any particular linguistic challenge which your students usually face?
10. Can you tell me about other non-linguistic challenges?
11. Can you outline some examples of these challenges?
12. How did you and your students respond to those challenges?
 4. How do these challenges usually impact on the students?
 5. What do you think causes these challenges?
5. What role does your students' L1 usually play as you and they try to overcome these challenges?

- **Suggestions for overcoming EMI challenges**

2. What suggestions would you like to make to help your students overcome their English-related challenges?

- **Skills/attributes important in succeeding English medium engineering programmes**

1. What kind of skills/attributes do your students see as important to succeed in engineering programmes taught through the medium of English?
3. Do you have any comments or further suggestions which you would like to add?

- **Bank of Follow-Up Questions**

1. What do you think of your having to teach your subject in English to student whose mother tongue is not this language? Do the advantages of studying in English justify the effort that must be put into learning and using the language? Do you think that engineering talent is being lost because of a language (in a program that is not about language)?
2. To what extent do you think your teaching in English in Oman is useful for you and your future employability?

3. What would you say if Omanis could become engineers by studying in Arabic?
4. What are the linguistic challenges that your students usually experience with their assignment and in-class writing? Are they only related to English or are there other causes for their difficulties?
5. Could you please mention a few linguistic challenges which your students have often experienced with in-class discussion?
6. Why do you think your students have difficulties in communication in English?
7. Do you have any specific linguistic or non-linguistic expectations that your engineering students should meet?
8. What are the skills that your students need to develop so that they can complete their engineering successfully in English?
9. What kind of language problems do your students usually face in the engineering courses?
10. How did your students respond to the challenges inherent in writing?
11. How did your students cope with the usual challenges of having to write in English both in class and for assignments?
12. How important are these assignments for your engineering course?
13. How did you respond to your students' challenges in the area of study skills?
14. How did you respond to your students' difficulties in comprehending their engineering lectures in English?
15. How did your students cope with the speed of your delivery during engineering lectures in English?
16. Did your students face any problem in answering in-class questions or giving presentations?
17. How did your students deal with engineering terminologies in English?
18. How did your students cope with giving presentations and expressing themselves in English?
19. How did you respond to your students' difficulties during classroom discussions and interactions in English?
20. To what extent do you think that the post foundation EAP/ESP courses have helped your engineering students in dealing with EMI challenges?
21. Do ESP/EAP teachers and engineering teachers ever coordinate your instruction, in general, or the language component of your courses, in particular?
22. What problem do you think usually prevent the kind of cooperation meant in the previous question?
23. Do you have any suggestions about how students could overcome their difficulties?

Appendix 8

EAP teachers' interview questions

Title: Omani Engineering Students' Experiences of Learning through the Medium of English

EAP/ ESP Teachers' Interview

The following questions are based on my doctorate study research questions. Several probes, prompts and follow-up questions will be asked to fill any gaps and to clarify any doubts or ambiguity which may have arisen during the interview. This will be done to ensure that all the questions are answered as adequately as possible.

- **Background questions: Let us start off with some background questions**
 6. Can you please introduce yourself in a few words?
 7. What is your area of specialty?
 8. How long have you been teaching EAP/ESP?
- **Challenges and problems of using English as a medium of instruction in teaching engineering programmes**
 13. What challenges and problems do your students usually experience during the delivery of your course?
 14. Can you tell me about any particular linguistic challenge which your students usually face?
 15. Can you tell me about other non-linguistic challenges?
 16. Can you outline some examples of these challenges?
 17. How did you and your students respond to those challenges?
 9. How do these challenges usually impact on the students?
 10. What do you think causes these challenges?
- 5. What role does your students' L1 usually play as you and they try to overcome these challenges?
- **Suggestions for overcoming EMI challenges**
 4. What suggestions do you have to help your students overcome these challenges?
- **Skills/attributes important in succeeding English medium engineering programmes**
 1. What kind of skills / attributes do you see as important to succeed in engineering programmes taught through the medium of English?
 2. Do you have any comments or further suggestions which you would like to add?

Bank Follow- Up Questions:

1. What do you think of teaching engineering through English medium?
2. To what extent do you think your EAP/ ESP courses are useful for the engineering students?
3. What is your view about the policy of studying engineering through English?
4. What are the linguistic challenges that your students experienced with their ESP/EAP courses?

5. What are the linguistic challenges that your EAP/ESP students had with in-class discussions and interactions?
6. What skills do your students need to complete their English-medium engineering degree successfully?
7. Did your engineering students' complain about any language problem which they were facing in their core subject courses?
8. How did you respond to your students' in-class linguistic challenges?
9. How did you cope with your students' challenged with assignments and in-class writing tasks?
10. How did you respond to your students' challenges in the area of study skills?
11. How did you respond to your students' difficulties comprehending EAP/ESP in English?
12. How did you cope with your students difficulties coping with the speed of your delivery of EAP/ESP courses?
13. How did you deal with your students' difficulties with engineering and science-related terminologies in English?
14. How did you cope with your students' difficulties in giving presentations and expressing their ideas in English?
15. How did you respond to your students' problems with classroom discussions and interactions in English? To what extent do you think your EAP/ESP courses have helped them in dealing with their linguistic challenges?
16. What would you suggest to overcome these challenges?
17. What are the objectives of your EAP/ESP course(s)?
18. How did you choose the EAP/ESP materials?
19. Do ESP/EAP teachers and engineering teachers coordinate what you will be doing, especially in light of the students' linguistic problems?
20. What prevented cooperation between you & EAP/ ESP teachers?
21. What prevented your EAP/ESP courses from being really effective?
22. Why do you think your students have problems in communication and language skills in genera

Appendix 9

An example of a full interview with an engineering student Engineering Student Interview (note: these interviews were conducted in Arabic and subsequently translated).

- Interviewer: Thank you ... for coming. My name is Mr Holi Ibrahim, and I'm conducting doctoral research into the experiences of Omani engineering students with English as a medium instruction. Let's start off with some background questions. Can you please tell me something about yourself, in brief?
- S: My name is ... I am studying electric engineering and I am now in my third year.
- Interviewer: Thanks... tell me in brief about your experiences with the English language?
- S: My experience with English started since I was in grade 4 and it was a new challenge for me to study a foreign language at an age where I couldn't speak and write my first language which is Arabic. My teacher was an Egyptian teacher and he used to punish us when we miss deadlines or not able to pronounce words correctly. After joining the preparatory school, our English was getting improved but we still had problems with writing, notably spelling and speaking as well. Our teacher used to give us spelling test every Sunday and our spelling skills were improved. My father has a garage and there were many labours from Indian and other countries and I used to go and speak with them in English. At the beginning they started making fun of my English because I was English mixed with some Arabic words and phrases but they managed to understand me and they kept correct my errors and they were telling me to say it in the correct form. When I reached grade 12 third secondary my spoken English was fine and my teachers were happy with it, but writing is still problematic and full of mistakes. I got 85% in my final English exam and I joined colleges of technology. I sat for a placement test and they placed me in level three. I studied for two semesters and then joined my speciality. My spoken English had become even better but I still had problems with writing and understanding engineering textbooks and materials written in English. My teachers were telling me that your spoken English is fine but you need to work hard on your writing and reading skills. I am working hard now to improve my writing and reading skills but I still seek opportunities to communicate in English with other.
- Interviewer: What do you think of using English as a medium of instruction in your engineering education?
- S: The use of English is a great idea because without English I can't find a good job or improve my skills. The Use of English has good values for us as students and for our future careers and for having further degrees abroad.
- Interviewer: Fair enough. Tell me about the language-related difficulties that you have encountered so far because of the medium of English?
- S: Right now, I do not have problems in my speaking skills but as I said earlier, I have major problems with my writing and spelling in particular. I have problems in understanding technical texts when I read them. It is good for teachers they can do research and they improve their English and their experiences and they can work in over world if they are capable of delivering engineering through English effectively. The use of English as medium of instruction is good for me and for my college and for Oman as well. It helps me to improve my speaking and it can help the college to be

known internationally and students can come from different countries to study in Oman and know our culture and traditions. This will improve our economy and develop our country.

Interviewer: Okay. How did you respond to such difficulties?

S: I used many techniques to help to overcome my writing difficulties such as translation, coping from my friends and asking my sister who an English teacher to help with my essay. For reading, I kept asking the Indian labours of my father's garage to help with the meaning of the technical words and machines names. They sometimes show me the machines and that had helped me a lot with my reading skills.

Interviewer: What role does your mother tongue play in your engineering studies?

S: Arabic which is my mother tongue doesn't have a big role in my studies as all the subjects were taught in English. However, when sometimes we had group discussion or reading we use Arabic to exchange information and aid understanding and comprehension. Some concepts were really difficult to be understood in English, therefore, my friends explained them in Arabic and we were able to understand them quickly and in a better way. Arabic translation was useful in assignment writing and for practicing for exams.

Interviewer: Right... What are the skills that you feel you need to be a successful engineer in today's labour market?

S: I think I need to a good communicator in order to do business and to be a successful engineer. I need to be articulate and good thinking skills in order to solve technical and non-technical problems. I need to have leadership and team work skills. I need to be multitasker and can work under pressure and with different nationalities and people coming from different backgrounds.

Interviewer: To what extent has your post foundation programme helped you to cope with your engineering degree?

S: I think both the foundation and post foundation were useful in terms of skills and giving us the confidence to use the language. It was difficult for me to study my foundation and post foundation in mixed classes (boys and girls) as this was the first time in my life to study with girls in a class. My friends were shy to participate in class and to make silly mistakes in front of girls. The post foundation courses such as public speaking, technical writing and technical communication were useful. Although the courses were general and did not cater for engineering students only but I found them useful particularly public speaking classes. The topics for public speaking were wonderful and our teacher was just great in making the classes interactive and enabled us to speak freely. However, the content of technical writing was similar to the one that we had during our foundation year. I hope they can change them and make them different. I hope to have more public speaking classes throughout my study in this college.

Interviewer: Do you have any problems with lecture comprehension when English is used in teaching?

S : Yes, sometimes I had problems with following up the lecturers when delivering their lectures. Some of them speak very fast and their pronunciations were not clear enough. I sometimes had difficulties in taking notes. I had difficulties in understanding some new technical vocabulary. I had my own diary for the new technical words and take

this dairy with me wherever I go and I keep repeating the pronunciations and meanings of these words until I understand and memorize them.

Interviewer: How did you cope with these difficulties?

S: I often asked teachers to repeat the taught points and concepts several times and to simplify the content and materials. Moreover, I seek help from my father's electricians and mechanics. They explain thing practically for me. In lab sessions I sometimes ask my friends to explain thing for me in Arabic. For my writing my sister was a great help of help. She sometimes helps me with my reading tasks by explaining the main ideas of texts. I used the internet and online dictionaries to know the meaning of technical terms and I sometimes ask friends to help me with meaning of unknown technical words.

Interviewer: What would you suggest for improving the use of English in teaching and in engineering education in general?

S: I think the government need to do the following: first, increase the number of contact hours for teaching English in schools. Second, all science subjects should be delivered in English in schools particularly for science stream students. Third foundation courses should be linked with school subjects. Forth, post foundation courses should be taught up to the final year from year one up to the fifth year. The foundation courses should be oriented towards the degree, i.e. some technical terms related to engineering should be introduced in the foundation and post foundation year. Fifth, they need to bring good English language and engineering teachers from all over the world not only from two or three countries. Finally, teachers should encourage students to speak English on campus and outside the colleges. They can establish English clubs and forums for students to use English only. Students should be allowed to communicate in Arabic while they are on campus as this will not help them to develop their confidence and improve their speaking and communication skills. Students should be trained to give presentation in English since their schooling as this will help them to develop their speaking and communication skills. Teachers should encourage students who are good in English by giving them gifts.

Interviewer: Fair enough... So, do you have any other question or comment or something else you'd like to add?

S: No Thanks.

Interviewer: Thanks a lot.

Appendix 10

An example of a full interview with an engineering teacher

Engineering Instructors' Interview

- Interviewer: Okay, thank you very much Dr... for agreeing to take part in this interview.
- EngT: EngT.
- Interviewer: Thank you for coming. I really appreciate your cooperation.
- EngT: That's okay.
- Interviewer: Er, your time. So my name is Mr Holi Ibrahim, and I'm conducting a PhD on, er, Oman engineering students' experiences with English as a medium instruction. So let us start off with some background questions. Can you tell me something about yourself in, in brief?
- EngT: Yeah. Er, I can do, since we are working in Oman, so I am basically from India, okay? Er, my name is Sanderson having 12 years of experience in academic teaching, and particularly 7 years in Oman.
- Interviewer: Okay, great.
- EngT: My, er, graduation is Master of Engineering and Mechanical, and specialisation will be energy engineering.
- Interviewer: Okay, great.
- EngT: Yeah, and currently, currently doing this, er, engineering registrar, no?
- Interviewer: Uh-huh.
- EngT: I am a lecturer now
- Interviewer: Okay, fine. Right, great. So, so you spent seven years here in Oman?
- EngT: Yeah.
- Interviewer: In this college, or other courses?
- EngT: In this college, same college, yeah.
- Interviewer: Okay, let us start with the main core issues here, the challenge and problems of using English as a medium instruction in teaching engineering programmes. What challenge and problems do you experience during your teaching here in this college?

EngT: Particularly, er, the main, er, issue will be when you explain something in engineering field, some terms, like engineering words, they won't like us... You explain, they won't understand. If you say the same word in Arabic, or something, their, er, mother tongue, it will be very easy for them, yeah. And, er, secondly, er, they are very poor in writing. If you ask, if you ask a student to write his name five times, so five times will be with different spellings.

Interviewer: Yes. I hear that from other teachers.

EngT: They are good in speaking, but if you ask them to write, they are not good in writing.

Interviewer: Right, okay. So the first problem you said is technical terminology.

EngT: Yeah.

Interviewer: And second one is writing. What else's?

EngT: That's it. This is the common issue I find with them.

Interviewer: Okay, right. So, could you elaborate more?

EngT: Generally what I would use in the class I would take to 25 students or 30 students. If I could make one student to understand what I really explained, so if others they do not understand what is... The technical word, they could explain in Arabic as well. That would help you.

Interviewer: Okay, yes. When does that usually happen?

EngT: Explain something, yes.

Interviewer: Right, so what kind of other challenge, rather than, er, rather than, er, language-related challenges?

EngT: Other than the languages, in particularly the engineering field, er, these students, they prefer more, er, like, er, interactive learning, like if you say something, if you are explaining something, you have to show how it works. Say for example if you explain some mechanics, show it in a video. Or ask them to do it practically. So just teaching through PowerPoint, they prefer more in doing particularly.

Interviewer: Do they like learning by doing?

EngT: By doing, or by visualising something, what happens exactly?

Interviewer: Okay. When you demonstrate so do they understand in a better way?

EngT: Yes.

Interviewer: Right, great. Er, er, what other difficulties that you face as an instructor here, seven years in teaching engineering? So what kind of other problems? So you talked about language problems. What are the other non-language problems? What about their assignments? What about when they need to ask you questions inside the classroom? What about their understanding?

EngT: They are, they are... I mean they are very good in, I mean, asking about doubts. If you just... They have a doubt, they don't hesitate. They want to stop. They want to think on their own. They won't hesitate. They will ask immediately the questions. Maybe it might irritate you, even though they are repeating the questions a number of times, it is not because of irritation, they... Basically they do not understand. This is how we deal with it and we should keep on explaining. That's it. This is what they want also.

Interviewer: Yeah, a problem with understanding here, do they have problems with the language or difficulty in understanding engineering concepts?

EngT: It is because of language as well as because of, er, I mean, different kinds of, er, accents as well. So until last semester we had one colleague, a fellow colleague. I think two semesters back. He's basically from Germany. His accent will be a bit difficult to understand for them. Rather with the Indian teachers and Omani teachers or other nationalities.

Interviewer: Yeah, because they were not used to such accents.

EngT: Yes. Some teachers they even English. They know English. They couldn't explain it very well. They could speak in Arabic as well. That would help them, those who know Arabic. If they do not know Arabic, so you have to be very slow in explaining that.

Interviewer: Yeah, you mean when you deliver the content?

EngT: Yes.

Interviewer: So it's the speed of delivery. You have to slow down, right?

EngT: You should, you should, you should, er, make, er, sure that your accent is, er, reaching them.

Interviewer: Okay. Yeah. So all this... Having all these challenges in mind, how did your students cope or respond with these challenges?

EngT: This one should be, er, I mean, this problem should be solved as the year goes, as your experience goes up. I, I.. Initially when you join you may not understand what their real problem is and how to explain, how to teach the subject, how to explain what you have brought for today's class or today's lecture. It should be really conveyed to them. So that, er, transmission rate will be slowly increasing as your experiences increases, and you should go to the point where it's, er, really advantageous.

Interviewer: Yeah, you say they have got some problems with writing. How, would you deal with such problems?

EngT: Basically that is not a big deal here. We will just to see if the student understands the concept or not, that's it, irrespective of a spelling mistake or something. We will just adjust. Maybe there will be a number of mistakes in their grammar. They will not, I mean, complete the sentence also. But we have to see the key words, whether they understand, just give them more. And we keep on... Insist them, 'You should write like this.'

Interviewer: Ah, okay. Great. Right. So... And how do these students cope with such difficulty?

EngT: Sorry?

Interviewer: How do they cope with these difficulties?

EngT: Er, they have to improve, they have to improve on, unless they improve from their theory it cannot complete. Yeah. I see, I see teacher, I mean, from the engineering, we cannot teach them English, but since they are studying English as a part of the curriculum in the first year, they are studying three or four semesters in foundation English. And I believe that they are good in... I mean in speaking rather than writing.

Interviewer: Yeah, this is again on speaking. This is a general observation here, right.

EngT: You ask him to speak for 30 minutes, he'll speak. Ask him to write a sentence for 10 minutes, he won't write.

Interviewer: Okay. Er, so what about the problems related once they give out presentations? Do you ask them to give presentations?

EngT: Yeah, of course, of course. They are, they are, they are... I mean, they are good in, er, doing that.

Interviewer: Okay. Do they encounter any other challenges?

EngT: But we should, we should guide them and we should, er, prepare them for the presentation. So say you are giving a topic but they will come to you, of course, and they will ask you how to prepare this, how to present, just tell them that, "This is the way you want it." Just tell them, they will prepare it.

Interviewer: So do they, do they encounter any difficulties in giving out presentations?

EngT: No, no, not really. Not really, not really. Maybe one or two in a group will be having some problem, but most of the students they would be delivering the presentation.

Interviewer: Right, so what about assignments..?

EngT: Before that they will come to you and they will ask you, "What is the structure of your presentation?" Yeah.

Interviewer: Hmm, right, so what about, erm, assignment writing, or projects writing?

EngT: Nowadays assignment, assignment writing is stopped. Now we are not giving any assignments, so we prefer doing it in a tutorial or something in the classroom only. What is the other one you said?

Interviewer: Er, projects.

EngT: Projects. Here they are doing some mini projects during your coursework. They are doing, er, yeah, project work in the level also. So here we have three levels. They will be doing a project in each level. That is, er-

Interviewer: You have three types of projects? Right.

EngT: Yes.

Interviewer: So what other challenges do they face in these projects?

EngT: During projects, I-

Interviewer: Is there any problem noticed?

EngT: I am very sorry to say that here the teachers put more initiative in doing the project, unless you tell them, "You do this." How to do this, how to prepare all the designs.

Interviewer: Spoon feeding?

EngT: Yes. Just tell them to do it, and then do... They will do it. How to give everything, like, as you said, spoon-feeding.

Interviewer: No, I mean the challenges that they face when you ask them to do a project. So what kind of challenge?

EngT: They are very poor in designing.

Interviewer: Design? What do you mean by design?

EngT: Yeah, designing, because when you design, when you do any project you have to do the proper design. You should, er, do some elementary work. They are not good in that. All the teachers, all the project supervisors, they are doing by themselves. Maybe we are, er, misleading them as well, but somehow our particular [experience 0:09:33], all the teachers or the project supervisors, they are involving themselves. You could ask all the teachers. They will tell you the same.

Interviewer: Okay. Okay, so what about, er, their reading?

EngT: They are good in reading. They are good in reading, and receiving the ideas is also okay. Yeah.

Interviewer: Okay. Alright, so let us go to suggestions, so because you know that these students, they have their schooling in Arabic.

EngT: Yeah.

Interviewer: And they shift to English medium-programmes.

EngT: yeah.

Interviewer: Right. So what are the suggestions that do you have to help the students overcome these challenges? Do you have any suggestions for the teachers, for English language teachers, for the engineering teachers, or schools? What kind of suggestions would like to say?

EngT: See, this one... I mean this challenge or this... I mean, problems can be rectified, unless they come forward, and, er, I mean, er, even in Oman schooling also, English should be taught from the elementary level. Right from the kindergarten they should start learning in English.

Interviewer: Yeah, yeah.

EngT: Unless they do not do this, they will face this problem once they have the big shift from an Oman school to colleges, where medium of English is used.

Interviewer: Yeah. I think the, the, the... They start teaching English from grade 1 in schools.

EngT: 1, but I think it is not really helping them out. It is not.

Interviewer: Okay. Yeah.

EngT: Because they study English as the subject, that's it, but what about the other subjects like science, or whatever may be the subjects? It is taught in Arabic. It shouldn't be in Arabic. It should be also in English.

Interviewer: Yeah, that sounds good. You mean that science, math, and physics.

EngT: All the courses, medium of instruction should be taught in English, yeah, except Arabic. Arabic should be in Arabic. Other than that it should be in English.

Interviewer: Uh-huh. Do you think that would help?

EngT: Yeah, for sure. Even in India, in my places, there are two medium of instruction, one is your mother tongue, our other is English. If you are studying in your mother tongue, all the subjects will be in the mother tongue. If you are studying in the medium of English all the courses, except the mother tongue, will be in English. This is how we, how we they should think.

Interviewer: Okay. Okay, this is one of your suggestions. What about other suggestions? Is this for schooling?

EngT: Yeah.

Interviewer: Uh-huh. What about other suggestions?

EngT: Other... I mean, from our... You mean out of the schooling?

Interviewer: Hmm-hmm.

EngT: Erm, if this could start... I mean particularly if you say one student studying with this capability, you can slowly transform the society where you can see... Wherever you can see people who talks English. That would really help. Society should change, unless, er, this is not done, I mean from the schooling, this is not done, you cannot change... You cannot transform this society.

Interviewer: Yeah, right. That's it.

EngT: I usually see... When you see Omanis, no, who speak good English in this place; it's very far from the capital. So you will see... You will find very hardly few people who speak, yeah, moderate spoken English. If you go towards Muscat, no? You will see a lot of Omanis who are speaking very good English.

Interviewer: Yeah. Urban areas.

EngT: Yeah. So that English should be spread all over the country.

Interviewer: Yeah. That, that, that would help also. So what about foundation, or post-foundation? What are your suggestions?

EngT: Here, er, here, we have foundation, and the post-foundation. So they are studying English in foundation. I don't know about what they are studying. They have four levels, it seems.

Interviewer: Yeah. Does that really help?

EngT: I felt practically they are good in speaking rather than writing or reading as well.

Interviewer: Okay. Do you have any suggestions for foundation and post foundation teachers?

EngT: They should improve on writing as well, also. They should teach them grammar, and they should know how to write English. They are doing; of course, I do not know what really they are teaching. I'm not sure about that, but it can be a bit improved.

Interviewer: Right, do you have any collaboration between them, between English language teachers and engineering teachers?

EngT: Yeah, we have some courses which are still taught in post-foundation as well. Out of... There are four levels in foundation. They are studying, er-

Interviewer: Technical writing?

EngT: Writing 1, writing 2, technique, communication, public speaking, so there are four courses of engineering in each level, four levels.

Interviewer: Okay, do you talk to each other... Do you give them feedback on their writings?

EngT: There is not something like... I mean any bridging between the teachers of engineering or with English teachers.

Interviewer: There is no collaboration?

EngT: No, there is no-

Interviewer: Collaboration?

EngT: No, there is no collaboration.

Interviewer: They just provide you with students?

EngT: Yes, they just provide us with the students and we will teach them engineering or IT or business.

Interviewer: You never give them feedback on their writing.

EngT: It is not asked so before. Yeah.

Interviewer: Okay. There's no official request?

EngT: There is no official feedback.

Interviewer: Okay. Right, right, I see.

EngT: It should be a major change unless it comes from you.

Interviewer: Okay. In your experience, what kind of skills and attributes that is important for succeeding in engineering programmes now, for a person or a student to so as to be an engineer?

Dr Sanderson: Yes.

Interviewer: What are the skills? Was that language or non-language skills?

EngT: Language-

Interviewer: Which are important for, for engineering?

EngT: Language, just because, because we are teaching them in English, that is the, the first one, because all the teachers are from, erm, non-nationals. A few are there, and of course we'll be teaching them in English. This is the first challenge. Unless they are good in English, they cannot understand completely what the... Really what the teacher is teaching, and secondly it is good, it is good that the student expects everything in the form of a practical, er, path. Er,

if they do something on their own, so it is very easy to understand, very easy to come up. So that will help them really.

Interviewer: Alright. No, I mean what are the skills that engineers need to have in order to complete their degrees?

EngT: They should have, er, good communication skills.

Interviewer: Communication skills. Good. What else's?

EngT: And of course these students are having soft skills. They are good in soft skills.

Interviewer: Soft skills, what do you mean by soft skills?

EngT: Like using the computer, using the software. They are good in, er, using the software.

Interviewer: What about their analytical skills?

EngT: Analytical skills they are very poor. They are very poor.

Interviewer: They need that within an engineering course?

Dr Sanderson: Yes, of course. Yeah, of course.

Interviewer: What else?

EngT: That's it, I think. Interpersonal skills it is good, but, but they could communicate in Arabic. If it comes in English, I think most of the students they are even in the class they are talking in Arabic only.

Interviewer: Okay, what about their numeracy skills?

EngT: Numerical skills, I mean, I cannot say all good, very few are good in, erm, analytical, but very... I mean majority of the students they are not good in analytical also.

Interviewer: Okay. Right. So...Can you give an example?

EngT: Say for example if you teach the analytical course, if you give the same problem in the form of objective questions, somehow they will bring the answer, they will choose the answer. If you ask them to solve it, give them blank space or fill in the blanks, if you ask them to give the answer they won't do it.

Interviewer: Right. So do you ask them to write reports, lab reports?

EngT: Yeah, of course. Yeah. We are doing that.

Interviewer: So do they face any challenges with lab reports.

EngT: As you know they are not good at writing. If you see their, er, you know, reports, like we'll be teaching them before starting the experiment, okay, and we'll be explaining them what is the objective of the experiment, what you are going to do, what are the, er, details of this mission, okay? And everything they will listen and there is a part in the report that they write by their own words and procedure. Everyone will write their own English. It is okay but many students they will just copy. They are lazy in thinking and writing.

Interviewer: What about lab reports?

EngT: And they don't have their personal initiative to write their own reports.

Interviewer: What about their note-taking skills?

EngT: If you write on the board, they will write. If you teach them in by using PowerPoint, nobody will write, except a few.

Interviewer: They never take notes?

EngT: Yes. If you just put the pen on the board, put a dot, they will also put a dot. You understand, yes?

Interviewer: Yeah. I get it.

EngT: If you want them to study, just say everything you write on the board. They will write in the notebook and they will study.

Interviewer: Right. So, er, what about asking questions inside the classroom? Can they easily interact with you?

EngT: They are... I mean, I mean this last two years we are promoting that also, like a group discussion, group activity, students [enter 0:18:24] learning. So we are promoting this. So we changed our assessment scheme also towards this. Say before we used to give surprise tests out with something in the classroom, maybe three or four, now we stop giving surprise, maybe two will be there, other two we have considered in the group activity. So what we will do, we will ask them to sit in a group and we'll ask them to solve a problem.

Each group will be given some problem and they have to combine together, they have to share their work, and they have to solve the problem.

Interviewer: Okay.

EngT: So we are doing that.

Interviewer: Yeah. That right...Are they good at doing that?

EngT: Yeah, they are doing... We are doing. So our administration has to make more focus on the students.

Interviewer: Did you encounter any challenge when you, when you shift to this approach of teaching?

EngT: To?

Interviewer: When you shift from the previous mode of teaching to this kind?

EngT: They, they prefer this one. They want like this.

Interviewer: Yeah. They like it?

EngT: Yes. They like this. When it comes to group activity, they know that it is a group activity and everyone can share their work and they are doing it, and of course it is not as difficult as the surprise test or something. Yeah.

Interviewer: Did you notice any difference between female and male students in terms of their performance?

EngT: Of course. So here, here if you say students who... I mean, are good in studies, will be obviously female.

Interviewer: Yeah. Here that's right.

EngT: Yes. On average if you see female students are very, very, very good than boys, because my... I personally believe that boys are having more distraction from studying, but girls they don't have that. They go home, they will simply study. That's it. But boys they don't like that, they have many distractions. They have to take care of their family. They have to take care of their father's business or they have to take care of their personal farms or something. And they won't be having enough time to study, as her. But girls, they are not facing this problem.

Interviewer: Right. Do you have any specific expectations about your students before they come from their foundation?

EngT: We expect a lot but that cannot be fulfilled, no?

Interviewer: I know. What do you expect from them?

EngT: Obviously when you start any course you, you believe that you will deliver 200%, or at least 100%, and finally at the end of the course I believe that I have completed at least 80 or 75 hours so the learning outcomes should have been achieved.

Interviewer: Okay, so what kinds of expectation do you hold about your students?

EngT: So as the teacher we want to... Whatever lecture you deliver, no, it should be completely, er, [sent 0:21:02] to them. If you-

Interviewer: Understood?

EngT: Yeah, understood. If they are not... If you cannot understand very easily by seeing the faces of the students. So you have to repeat, obviously, you have to repeat a number of times to make them understand. If they are not still convinced, you have to-

Interviewer: You have to explain for them again and again, right?

EngT: Yes. Unless they are convinced.

Interviewer: Okay. So what, what kind of writing task is required for your engineering students here?

EngT: So, as I told, no, so if you start writing on the board, they will write, because they are, they are good in seeing the things and they will write. If you dictate them, they can hear but they cannot write. This is the basic problem. If that could be solved, I think they'd be good in English. The basic problem is understanding content in English, yeah?

Interviewer: Yeah. Exactly. English is important for them, for their employability?

EngT: Since the government and the ministry is... I mean, involving English as a medium instruction, so it is important.

Interviewer: Important for in future.

EngT: Like in China or Japan. They are studying in their own mother tongue. If it comes like that, they will be good in Arabic.

Interviewer: Ah, okay. So what about, their other skills, critical thinking? What do you think of them?

EngT: Yeah, if you say out of 30 I can say maybe 5-10% of students will be having the critical thinking, analytical thinking, and critical thinking out of the box, will not be the same for all the students.

Interviewer: Yeah. This is one of the challenges maybe.

EngT: Yes. Yeah.

Interviewer: Right.

EngT: Basically we need to make them to think... Some of the students are very lazy to think also. They need how to... To know to solve this particular problem. If you give the problems directly, they will do it, because it is the same like as you have taught in the classroom. If something is given indirectly, they'll be calling you a number of times, "This is not given. Explain me very clearly." All goes towards the answer.

Interviewer: Okay, and do you have any suggestion in mind about this thinking, critical thinking?

EngT: Er, regarding critical thinking? Yeah, of course, it should be taught in the school level. That should be taught in the school level, like analytical skills or something. It should be taught from the school and not from here.

Interviewer: From the scratch, right?

EngT: Yeah. From the... Err, in the college level they can do, unless they are coming forward. There are a lot of books for improving your critical thinking, analytical, er, skills. There are a lot of books. You can improve. If you are having your personal interest, take every chapter and read it for yourself.

Interviewer: What about, er... Do you think that using Arabic would benefit them in engineering?

Dr Sanderson: Yeah, of course, in China and Japan I told, no? They have good areas. It is possible, but, er, they cannot communicate with the other parts of the world.

Interviewer: Yeah, because if will not compete in the international job market.

EngT: Yes. Yes. Yeah, because if you see the other Arab countries, they are good in coming up with English, and they should come up also.

Interviewer: What kind of other problems or difficulties that your students face with mechanical engineering in general?

EngT: Yeah, generally?

Interviewer: Yes.

EngT: Erm, in mechanical engineering we have three different types of courses, on, say, a purely theoretical like manufacturing processes and production processes, which you will see all in theoretical, er, presentations. And secondly there are some courses with analytical, er, capability, like all the courses will be having only problem-solving matters. And the third one will be purely design, design courses. If you see the students, there are three types of courses, students, they want more, I mean, from the students' point of view they want more demonstration in the theory part, okay?

If you say, "Analytical," they will say, "We want a little bit theory to understand the basic fundamentals before you start solving the analytical." And when it comes, er, to design, so they need both. And here we have a courses which is having, I mean, a number of outcomes, more, which is with the learning outcomes, which cannot be delivered in one semester, and your results are your constraint, because they are, er, good in understanding but everything goes slowly. It cannot be as... You can run up with things, it cannot be done.

You will think that you will be completing this chapter in this week, but it cannot be done. It will be delayed. Time is also a problem like that. If they could increase the number of days in a semester. So here we have three semesters. If it can be in two semesters and reduce the number of courses, it will be far, far better for us.

Interviewer: Okay, right. So you start teaching the theories first, and then you give them analytical courses?

EngT: Analytical, and the design is also there.

Interviewer: And then the design?

EngT: Yes.

Interviewer: You start like this?

EngT: No. It is... Our curriculum is a mix of all these courses. There are courses with purely theoretical. There are courses with analytical also. There are courses with, er, fundamentals of theory and analytical so that you can make design.

Interviewer: Yeah, which one do you teach first?

EngT: It should be... I mean, er-

Interviewer: Concurrently?

EngT: If you, if you see the students who are coming to mechanical, they... In a semester they'll be having all these three types of courses.

Interviewer: And which one is the most challenging, analytical, or theoretical?

EngT: Most challenging will be theoretical courses, because...

Interviewer: Why do you think so?

EngT: Because the teacher who is teaching theoretical course, all the answers should be in the complete English, yes? And these students, they will not be completing anything, they will just write key words here and there.

Interviewer: Do they have problems with writing?

EngT: understanding it and how to give the mark. That is a real challenging one, for the teacher who is teaching theoretical. Yeah.

Interviewer: They need to read also, right?

EngT: Yes, because you will say to them, "Sentences will be the answer," and they will write one or two sentences the answer, and they will touch here on the key words.

Interviewer: Right, so for problems with comprehension, understanding the lecture when they have the problem. So what did you do?

Dr Sanderson: So basically if it is a theory, how to say you are explaining the mission, it will be basically if you are explaining a mission, how to explain, probably, and how to understand... To make them understand, show them a demonstration.

Interviewer: Sometimes you need to repeat, right?

EngT: Yes. Sometimes you need to repeat.

Interviewer: Okay. Right, great. Er, so would you have any suggestions? Do you have any suggestions or comments?

EngT: Regarding?

Interviewer: With regard to the whole improvement of the use of English as a medium instruction here.

EngT: If, if, if English is treated as the medium instruction, they should start English from the kindergarten level, and all the courses should be taught in English, except Arabic.

Interviewer: Except Arabic. Okay, fine.

EngT: Yeah, and during their schooling they can, as you told, like you can enrol them in critical thinking as well as analytical sounding capabilities and so on. It can be done from the schooling level. Of course many countries they are developing these skills during the, er, childhood days, in school, school days, and they can improve it in the college. That can be done. If this could be done automatically whatever we face, the problems in the college, it can be automatically solved.

Interviewer: Alright. Right. So it means the solution could be start from schooling?

EngT: From schools. Yes, of course. Of course.

Interviewer: Yeah. I think that's really important.

EngT: Yes.

Interviewer: Okay. That's very important. So do you have any suggestions for post-foundation teachers?

EngT: Right now? Right now?

Interviewer: Yeah.

EngT: So we are teaching now. We are the post-foundation teachers. Foundation teachers, here we have foundation and post-foundation.

Interviewer: No, teachers who are teaching English at post-foundation.

EngT: They are doing, they are doing... How far it is helping the students we do not really know. Yeah.

Interviewer: Do you have any other suggestions?

EngT: They should improve skills in, er, reading, as well as in writing. Speaking is okay. They are good in speaking. They are good in giving presentations.

Interviewer: They don't have problems in speaking, right?

EngT: Yes. Basically writing and then reading.

Interviewer: That's for... For speaking they don't have any problem?

EngT: They don't have any problem. Somehow they will convey the message.

Interviewer: Most of them... I would say.

EngT: Yeah, most of them, and particularly girls. If you see girls, they are good in... Very good in... Very good in speaking. Boys of course, but when it comes to reading and writing it make a real difference.

Interviewer: Okay. Right, do you have any other suggestions?

EngT: Yeah, that's it.

Interviewer: Thank you very much, Dr Sanderson.

EngT: You're welcome.

Appendix 11

An example of a full interview with an EAP teacher

EAP Teachers' Interview

- Interviewer: Thank you for coming Mr Joy... Tell us about your experience in teaching English as a foreign language.
- EAPT: I actually started teaching way back in 2000 in India, 2000, so it's my 15th year.
- Interviewer: Yeah, you started teaching in 2000?
- EAPT: Yes, 2000
- Interviewer: Have you been teaching general English or ESP and EAP?
- EAPT: We are teaching general English, it's not ASA. Our system in India is slightly different. It is, it is, it is general English for us.
- Interviewer: Okay, right. So, erm, that's great. So let us move on to the problems and challenge that students face with English as medium of instruction in their engineering pro-programmes. I know that you are teaching students from different specialties such as business, engineering and IT, but here my focus is on engineering students. So what do you think of the challenges and difficulties that your students might encounter when they are coping with their speciality, can you anticipate any challenges?
- EAPT: You're talking about the post foundation students or foundation?
- Interviewer: Yes, post foundation students.
- EAPT: Post foundation students?
- Interviewer: Yeah.
- Joy: Yes, erm, there are two major areas.
- Interviewer: Hmmhmm.
- EAPT: Number one, they actually don't acquire, they don't acquire the required minimum level of language...
- Interviewer: Okay.
- EAPT: ...before they actually go to the, their specialisation.

Interviewer: Okay.

EAPT: It is the reality.

Interviewer: Yeah.

EAPT: But having said that it is not a broad generalisation. There is a good number of students who happen to be in the specialisation...

Interviewer: Hmmhmm.

EAPT: ...but, er, they meet the assessment criteria.

Interviewer: Hmm.

EAPT: So they get the pass and once they, once they meet the criteria, okay, but in the real, er, life...

Interviewer: Situation.

EAPT: Yeah, the real situation the reality is slightly different...

Interviewer: Yeah.

EAPT: ...but...

Interviewer: I could notice that.

EAPT: That is there, so at the same time there are students who are actually up to the level.

Interviewer: Standard.

EAPT: Up to the level. So this mixed set level is there.

Interviewer: Yeah.

EAPT: One, and number two, the, in the motivation of the student, the learner itself...

Interviewer: Okay.

EAPT: ...there is a huge difference between students who are actually motivated that they are here for a purpose. They know what they are here for and they know why they are here for. Such number of students is very, very far and few between.

Interviewer: Hmmhmm.

EAPT: And they do well, they do well.

Interviewer: Okay.

EAPT: This is also there. And you might find, er, a third group of students who will tell you, “Well I wanted to go to IT but the college didn’t give me. I got this.”

Interviewer: Hmm.

EAPT: Because here they have, they don’t have the, the, the choice. The choice is made up on their, their performance in their previous assessments.

Interviewer: Hmm.

EAPT: So the college allots them the...

Interviewer: Mmm. I see.

EAPT: This is how it, it happens. This is how it happens. So they, you will, you will find students saying, “Well I want to go to business, but sir I got engineering.”

Interviewer: Hmm, yeah.

EAPT: “I want to go to IT I got business.”

Interviewer: Okay, may be the criteria of the system in place is bit relaxed or, er, because sometimes you find the students who have passed the foundation and joined their speciality but their English is not that good.

EAPT: The reas- the reason is, er, as I told you before, in Bahrain what we follow, there is a sort of benchmark, our exams are actually benchmarked.

Interviewer: Hmm.

EAPT: Though it is under- though it is underdeveloped but it is directly I-linked a bit at Cambridge ESOL.

Interviewer: Hmm.

EAPT: Er, our business studies exams are related to, is similar to BEC, but it is customised.

Interviewer: Hmm.

EAPT: It is customised, but the assessment criteria, the scale is the same.

Interviewer: Hmm.

EAPT: Here, er, well this is my first year.

Interviewer: Yeah.

EAPT: This is my first year, er, I haven't seen something of that sort, though the efforts are on now. In fact we started revising our curriculum....

Interviewer:: Okay.

EAPT: ...er, from, from this academic year in fact. So at the end of, er, day it will be there.

Interviewer: Yeah.

EAPT: So there, they have initiated the process of, er, revising the curriculum, that is there, but I don't know how far, er, they have given a thought to benchmark because I am not, erm, a member of that particular, er...

Interviewer: The committee.

EAPT: ...committee, yeah. So I don't know what their terms of references are.

Interviewer: Hmm.

EAPT: But it is - though I feel it is not benchmark as of now to the, the international systems, let us know English for business.

Interviewer: Or TOFEL

EAPT: Or TOEFL, though you, you hear these words very often in the corridors, but in the system you will not find it.

Interviewer: Okay.

EAPT: It is not there.

Interviewer: Right, yes, great. Can you tell me any particular challenges, language challenges that your students face in your classroom?

EAPT: Two things, one, they lack what is called retention.

Interviewer: Hmmhmm, okay.

EAPT: And...

Interviewer: You mean calling back how to...

EAPT: Exactly. This is due to its counterpart, what we call it in words recycling.

Interviewer: Okay, lack of practice maybe.

EAPT: Practice. These are the two major issues with the students.

Interviewer: Lack of retention and...

EAPT: And recycling.

Interviewer: ...recycling words you mean?

EAPT: They don't practice out of the class. In the class, yes, because there is the presence of the teacher.

Interviewer: Yeah.

EAPT: And maybe inside the campus a little bit.

Interviewer: Hmmhmm.

EAPT: Once they are out of the campus but they are into their own natural setting where they have very little opportunity to practice...

Interviewer: Yeah, it's hard.

EAPT: ...to practice.

Interviewer: Yeah.

EAPT: So unless the learner makes a conscious effort at least in thinking in English. What happens here is they translate. They think in Arabic but translate until they write. So they can easily identify a very powerful influence of L1 in their writing and in their speaking.

Interviewer: Okay, yeah.

EAPT: Where they misplace the adjective and noun, it's very common.

Interviewer: Yes, it is.

EAPT: They will not say a good boy, they will say boy well.

Interviewer: Hmm yeah.

EAPT: Because in Arabic that is a position, the syntax is like that.

Interviewer: Yes, there is, syntax is slightly different, yeah.

EAPT: So it is their major challenge, retention and recycling.

Interviewer: Recycling.

EAPT: And recycling takes place to the, its maximum within the classroom.

Interviewer: Hmm.

EAPT: Where the teachers, they help them r-repeat or remember what they learned in the previous class.

Interviewer: Yeah.

EAPT: Especially our programme here, this post foundation here is in fact a culmination of whatever they, they learned in the foundation.

Interviewer: Hmm.

EAPT: They here apply all the language elements.

Interviewer: Hmm.

EAPT: Where we just happen to refer to well use this here, use this. Now I was teaching them, erm, writing accident report, but tense is past, use past simple. So the student who does not know an idea, clear idea about the form, the form...

Interviewer: They will struggle, right?

EAPT: ...especially when it comes to regular...

Interviewer: Verbs.

EAPT: ...verbs. This is an issue.

Interviewer: Right, actually I like the way, I really appreciate that, I like the way you handle the class because you gave them the input and then you, then you ask them to write so that, that's was really good.

EAPT: The method I followed is actually process writing, we call this is process writing.

Interviewer: Process, yeah, in writing.

EAPT: Just give them the same thing.

Interviewer: You give them the...

EAPT: Then they do the task.

Interviewer: Then you ask them, yeah. Challenging the, but the way, the way they structure the sentence, or the way to start is, maybe is difficult for them.

EAPT: Yeah.

Interviewer: Okay, what do you think causes based on your experience? I mean the causes behind these challenges? Lack of Recycling and of retention.

EAPT: Er, and also the material, the material.

Interviewer: Yeah.

EAPT: And this is, I'm coming to that, this is big process, a real, I would say it's a threat, not a challenge.

Interviewer: Hmmhmm.

EAPT: Why threat? Because if I use that slight analysis, that format I would say this is a threat actually because, er, this particular material I was told, er, it came from x city...

Interviewer: Yes.

EAPT: ...x or y made it, it is distributed amongst Oman.

Interviewer: Yeah, cities.

EAPT: And I'm sorry to say it is nothing more than, er, a heap of papers.

Interviewer: Yeah. Yeah, those are here.

EAPT: It's got nothing to do with their real life. You learn the language for your real life.

Interviewer: Yeah.

EAPT: And, for example, if you find our technical writing tool where they have to write a CV and they have to prepare letter of application, and they have to fill in a job application form. Nowhere in the world you will come across a job application form that is printed in this book except in this book.

Interviewer: Hmm, really, yeah.

EAPT: Because, er, then I actually I, I, I actually had a discussion, er, a casual chat with our, my coordinator, Mr, er, Dr Sergio, I told him see if you go to online you'll come across real job applications that are used today.

Interviewer: Hmm.

EAPT: Courtesy of Subway, KFC or National Bank of Oman, Bank Muscat, you can download it, show this, this is the form or name their company, say for Rito or Gumfair, and say Oman Air, or whatever it is. You can get their real application. This is what the students have to actually fill in and here you are giving them a table with name, date of birth, blah, blah, blah. Nobody cares about this and the student we are actually giving him an unreal thing which he doesn't want. It is demotivating. That's why I said this material is, is a threat for them.

Interviewer: Yeah, okay.

EAPT: It is meant; it is threat because of...

Interviewer: It has nothing to do with real life.

EAPT: They teach them to write a CV, well, erm, there are no hard and fast rules, of course, but we have some good examples.

Interviewer: Of CVs, yeah?

EAPT: Yeah, some classical examples in authentic materials such as the Oxford Advanced Learners Dictionary. It has a reference section right in the middle of the dictionary with blue shaded pages where you will come across standard international CV format. At least it is in the dictionary, the Oxford dictionary of course.

Interviewer: Yeah.

EAPT: Nobody has to question its authenticity.

Interviewer: Yeah, yeah.

EAPT: Where they give you British format, where they give you America format, what we did in Bahrain we made a combination of both, because there are some good elements in American CV which is different from British CV format.

Interviewer: Yeah, and then you ask them pull CVs together, right?

EAPT: We pulled them together. This is one and what we did in Oman, in, in Bahrain, we always tell them, "Well you look at the company, it's the roots, is it UK based or Europe based, American based and draft your CV accordingly because it is basically what you present yourself."

Interviewer: Yeah, this is functional CV.

EAPT: Functional CV, we say, and this is a CV here. And letter of application the same dictionary in the reference page you have a beautiful letter of application. The letter of application that is printed in this book it runs a whole A4 sized paper.

Interviewer: Hmmhmm.

EAPT: Well if you are an HR manager will you even bother to read the whole story there.

Interviewer: Yeah.

EAPT: It's a real question, and I ask them nobody bothers. Then tell the issue. Well you saw the advertisement and this is your qualification, this is your experience in one or two sentences and expresses your interest of availability for the interview. That's what Oxford dictionary says. So the material, the material is I would say substandard.

Interviewer: Yeah.

EAPT: Now coming on to this material that I am teaching...

Interviewer: Yeah, is technical writing.

EAPT: ...technical writing, one. Er, the form that I actually introduced today it was taken from this book. I showed to my student why I, I followed this?

Interviewer: 'Because of the exam, right?

EAPT: Because of the exam.

Interviewer: Yeah.

EAPT: This is what is going to be tested.

Interviewer: Yeah.

EAPT: Because I don't want to shock them for the exam.

Interviewer: Yeah, it's very important, they have to...

EAPT: So I, the best thing about this form is it is very simple but I would say it is not the one that is used in the industry.

Interviewer: Hmm.

EAPT: It is not.

Interviewer: Yeah.

EAPT: Best thing is go to the companies.

Interviewer: Hmm.

EAPT: Get the forms, how do they do it, different companies use different forms.

Interviewer: I see the difference and similarities and then you can make your own forms.

EAPT: Yeah.

Interviewer: Yeah, that's...

EAPT: That is one thing and actually what the, the material that I developed from is actually from OSHA, the Occupational Safety and Health Administration. It is the, er, federal agent department in America and also I have another one from the sports council. These are, we have some, some international standards.

Interviewer: Standards, yeah.

EAPT: ...which, which is actually commonly followed elsewhere.

Interviewer: Yeah.

EAPT: I don't say we blindly follow it but take it. The vocabulary actually I've taken from OSHA.

Interviewer: Yeah, that's very good, yeah.

EAPT: This is what actually they need to know. If you look at the book here, you don't find, they have, and they are given some information there. It is actually, you'll find the vocabulary, do you have the book with you, I, I don't have it here with me.

Interviewer: Sorry, I don't have the book.

EAPT: Well it, they are given a vocabulary, they say causes and injuries.

Interviewer: Yeah, I saw it in their textbooks during the observation sessions.

EAPT: In the injury section you will also find cause.

Interviewer: Causes of accident you mean hmmhmm.

EAPT: They say causes in one column and there are injuries and in injury column you'll also find causes mentioned there. They are not clearly- fall, well that's a course.

Interviewer: Hmm, yeah, you're right.

EAPT: Slip, slip is a cause. Sprain is an injury. In one column you'll find, er, slip and sprain.

Interviewer: Hmm.

EAPT: Well one is a cause, the other one is an injury.

Interviewer: Yeah.

EAPT: So we are confusing the students. So that's why I said this material is in fact demotivating for the students. What I do is, I don't follow this document but I take the outcome. We have an outcome to achieve. Today's outcome was well they should know the form of, er, they should be filled in with accident report, they should know the form and they should be able to fill the form. These are the outcomes.

Interviewer: Yeah, yeah, outcomes.

EAPT: So I take the outcome but I don't take the material.

Interviewer: Hmm, yeah, that's really good, yes.

EAPT: This is what I do, I get the data.

Interviewer: Yeah, you achieve your objectives, that, that's the main goal, yeah. So h-how do you deal with students language- your students' language challenge inside the classroom as a teacher?

EAPT: As far as the post foundation students are concerned, er, our minimum communication takes place; I don't have a problem with my two groups. Er, there are, I would say in this particular group there is only one student, the one who walked in...

Interviewer: Came late.

EAPT: Er, came late, he's Hamid Rashid.

Interviewer: Hmmhmm.

EAPT: Er, so he simply cannot, simply cannot understand even some basic...

Interviewer: Yeah.

EAPT: ...classroom language, what you call in here to this classroom language.

Interviewer: Yeah.

Joy: Like, erm, why are you late, are you alright?

Interviewer: Ahuh.

EAPT: And he said motor, my motor punctured, he said motor punctured. He used two words.

Interviewer: You may need to understand that.

EAPT: Motor punctured, but, er, I would say he communicates, that's a different story. This is not the language we expect from a post foundation student.

Interviewer: Yeah, you're right.

EAPT: So this is an example where, of what I told before where you find some differences are there and he has no idea what's, why he's here for one and I have no idea how he happened to be here (laughter).

Interviewer: Yeah, right.

EAPT: But what I do with such students, but I accept my student as he is.

Interviewer: Yeah.

EAPT: Well he is there, so I accept him, I respect him. I always put him with some other students, for example, to...

Interviewer: To make him happy.

EAPT: ...with Yusuf. So they help him, it's a kind of pair collaborative learning. This is how I manage with these kinds of students and also it comes to dealing with explaining say some vocabulary.

Interviewer: Hmm.

EAPT: I, er, ask them to find it out from the dictionary. Using dictionary is one of our college policies here. I don't know how it is in the other college, here it is, and it's a must. Our foundation students they will carry a dictionary with them, the Oxford Word Power. Foundation students, post foundation students very, very few of them, but I sometimes make use of their mobile phone.

Interviewer: Year.

EAPT: As I did today, so they do it very quickly and...

Interviewer: Using mobiles.

EAPT: Yeah, so they just get it and the only thing that I have to help them with is the pronunciation and difficult words I, er, for them and they repeat actually.

Interviewer: You help them.

EAPT: And then what, what happens is I put them together, pair them in groups of two or three, that's the way I do it.

Interviewer: Mmm. I see.

EAPT: ...have a sort of comfort zone of their own and they feel less pressure because it's a kind of peer learning, this is how I manage the class.

Interviewer: Yeah, yeah, you're right.

EAPT: ...within the class, but there is a difficulty.

Interviewer: Yeah, that's really interesting. So what role does your students' first language play to overcome these challenges?

EAPT: Er, I mean between them, among them or...

Interviewer: Yeah among them.

EAPT: I encourage them to talk in English all the time.

Interviewer: Yeah.

EAPT: Always.

Interviewer: But does mother tongue play any specific role inside the classroom?

EAPT: Very much, it is, it is, it is very much there, which, something which they cannot escape...

Interviewer: Yeah.

EAPT: ...from. So it is, that's the reality, that's the reality.

Interviewer: Yeah, it's a fact, yeah.

EAPT: Er, and sometimes I make use of their mother tongue in a very limited way. For example, if there is very difficult word and instead of wasting my time and explain the whole story in English, I ask them what do you say in Arabic for this and they give you that word, that's the end of the story. Well, they get it.

Interviewer: Yeah.

EAPT: They get the concept and then I put them in a sentence, I put them in – in today's case well they will actually trying to figure it out in the sentence they were actually writing it up.

Interviewer: Yeah, I realise that from my observation sometimes they just talk to each other in Arabic to provide help to each other, right?

EAPT Joy: At that particular point of time I always am on my, er, er, guard.

Interviewer: Hmmhmm.

EAPT: Making sure that it doesn't get prolonged, that Arabic conversation.

Interviewer: Okay.

EAPT: So I just, er, intervene, I just tell them well, that is the end of the story. So that is one way of actually, er, helping the students, er, overcome their difficulty in L1, er, this thing. It is there, er, but still it is too much. As I told you the environment is not conducive for them.

Interviewer: Yeah.

EAPT: Once they are out of the college gate they are into their own world.

Interviewer: Yeah.

EAPT: And then they think of English only when they come to the English department.

Interviewer: Yeah.

EAPT: This is the reality but still there are students who are actually making a lot of positive changes.

Interviewer: Yes, that's – so, to what extent do you think this ESP/ EAP courses that you are offering in technical writing I, technical writing II , technical communication and public speaking have helped engineering students to cope with their speciality?

EAPT: Yeah, let us take the example today that happened in my class.

Interviewer: Yeah.

EAPT: For the engineering students, they have to prepare this daily report when they go to the lab.

Interviewer: Okay, yeah.

EAPT: So they need to know and the teachers there, they always tell us, “Please teach your students to prepare, how to do this, they need the vocabulary. They need the language and they...” so we, what I was trying to do was to give them the chunk of language. That is why in the, in the part two of my, my worksheet it was a condition and action. It was, I was trying to give them this particular thing and so, so this is one thing. They needed in there, in there, er, their mother department one, be it engineering or be it IT, or be it business studies. Because they, they teach them occupational, er, safety and health.

Interviewer: Hmmhmm.

EAPT: So it is part of our curriculum, that’s where this is included here.

Interviewer: Okay.

EAPT: I think it is also part of national policy that this particular item should be introduced in, in every, er, er, college I think.

Interviewer: Yeah.

EAPT: So it is part of their, their national, er, framework.

Interviewer: Hmm, hmm, hmm. Right, so, erm, what’s your view about the policy of studying engineering through the medium of English?

EAPT: You mean teaching English?

Interviewer: I mean teaching engineering through English?

EAPT: Teaching engineering through English?

Interviewer: Yeah.

Joy: Well, er, that is the language of engineering.

Interviewer: Yeah, okay. And if you...

EAPT: There is no other option.

Interviewer: No other option, yeah.

EAPT: That is the language of technology, that's the language of engineering, one. Now what needs to be done is this language needs to be adapted to suit that particular requirement.

Interviewer: Yeah, yeah.

EAPT: Erm, what I'm reminded of is, er, in Bahrain we use English for IT.

Interviewer: Hmm.

EAPT: It is in fact ESP, English for IT.

Interviewer: Hmmhmm.

EAPT: We have engineering English for mechanical engineer.

Interviewer: Okay.

EAPT: And we have English for the electrical and electronic engineering.

Interviewer: Hmm. I see.

EAPT: And we have English for tourism because we have IATA course there.

Interviewer: Okay.

EAPT: And we have English for, er, communication.

Interviewer: Different courses.

EAPT: Different courses.

Interviewer: Hmmhmm.

EAPT: Different courses.

Interviewer: That's really interesting.

EAPT: But at the same time the teacher is not taxed, but here what happens is for IT students, engineering students, mechanical engineering and civil engineering they all study what is called engineering, it is quite common.

Interviewer: Hmm.

EAPT: And in a post foundation class we have a mixture of all these specialisations. We have students from business studies, we have students from IT, technical communication- mechanical and electrical and electronic engineering.

Interviewer: Yeah. Fair enough.

EAPT: So this, I don't think is of, er, a realistic structure of a class I would say. At least they should divide them into three different streams, business, because business English is totally different, different from engineering and technical English.

Interviewer: Yeah, right.

EAPT: So business English should be different, business students should be separated and engineering should be separated. Well I don't mind that if IT and, and engineering is put together.

Interviewer: Because engineering and business have so many things in common, yeah.

EAPT: At least there should be two different, er, demarcations as of now. Otherwise the, the business studies students, because the vocabulary when you teach is totally different for them.

Interviewer: Okay, right, good. So what are the skills that you think your engineering students need in order to complete their engineering degree successfully? What are the skills, whether language-related skills or non- language skills according to your experience?

EAPT: They need, they need both language skills and soft skills.

Interviewer: Yeah. Can you elaborate more?

EAPT: Language skills of course they need to, er, develop all the four skills.

Interviewer: Yeah.

EAPT: There are many.

Interviewer: You feel that writing is the most important for them?

EAPT: I will not say one is, er, more important than the other.

Interviewer: Yeah, all of them.

EAPT: But I, this is my personal opinion.

Interviewer: Yeah I know.

EAPT: There are teachers who say, "No, writing is more important, that is more important, no." I would say it is a blended, that it should be blended, because in, in real life, in our real life, we cannot take what I do today. Maybe I will do

zero writing today and tomorrow I'll be the whole day will be writing, in my in my real, er, say in my job or in my, in my company or in my, in my class.

Interviewer: Yeah.

EAPT: Tom- maybe I'll be doing just listening and I'll be just like to, to figure out the thing. So all the four language skills must be there. They should practice, they should develop to the perfection, one. And number two, soft skills, they do need the skills of presentations.

Interviewer: Yeah.

EAPT: Because they have to present their ideas, using PowerPoint, that's why we have here public speaking. Public speaking is actually although the word is, I don't know, it's, it's a misnomer I would say.

Interviewer: Yeah.

EAPT: Er, it's actually a misnomer; it should be as the presentation skills. This is what I used to; we used to do there in my previous college.

Interviewer: Hmmhmm.

EAPT: We, they had presentation skills; there they present their, their, their assignment actually.

Interviewer: Hmmhmm.

EAPT: They are given an assignment, er, as part of their course and they prepare it, they present it and after that they have to defend their assignments through a PowerPoint presentation just to make sure that is done by them not somebody else did it for them.

Interviewer: Hmm.

EAPT: So soft skills are important and but the third important thing is they should develop critical thinking in language classes.

Interviewer: Yeah.

EAPT: It is not just for sake of saying they should develop critical thinking, they should develop critical thinking. It should be done in, in one reading, two reading skills.

Interviewer: Okay.

EAPT: Very simple example is just asking them, “What’s your opinion about this, do you agree with this?”

Interviewer: Yeah.

EAPT: Actually it’s, we are actually triggering his, his thought. Do you agree with, er, to, to that opinion?

Interviewer: Yeah.

EAPT: So critical thinking through reading, while listening, what was the tone of that person, was it the right tone.

Interviewer: Hmm.

EAPT: Do you agree that the way that he said he’s okay, not what he said, the way he said. So critical thinking is another important thing for, er, er, our engineering students and of course all these things they should be guided by clear logic, clear logic. They should know the, the step by step thinking process.

Interviewer: Hmm.

EAPT: The logical reasoning. It is there, because engineering is all about logic. They need logic there.

Interviewer: Yeah, problem solving...

EAPT: It is there.

Interviewer: ...analytical skills, you mean?

EAPT: That skill must be embedded I would say in, in cla- language classrooms. It should not be English for the sake of teaching English.

Interviewer: Yeah.

EAPT: They should not feel, er, that they are learning English, they should feel actually they are developing themselves for the engineering speciality.

Interviewer: Yeah. But who is responsible for developing this critical thinking, is it the teacher or the students?

EAPT: Erm...

Interviewer: Because I feel that and believe that only critical teachers can make critical learners, right? If a teacher lacks critical thinking, I don’t think his the students

will be critical? You asked very a very important question in your class, “What do you think of that?” Here in this case you, you encouraged critical thinking, so do you think it is shared responsibilities?

EAPT: It is the responsibility; it is a collective responsibility of both the parties...

Interviewer: Yeah.

EAPT: ...stakeholders, the teacher and the student

Interviewer: And even families also I believe.

EAPT: Of course, that is the environment. Learning is not only, er, the learning that takes place within the classroom.

Interviewer: Yeah.

EAPT: Er, in, in my culture, in the Indian culture, er, learning takes place; more learning takes place at home.

Interviewer: Yeah.

EAPT: Because a student, be it a KG student or be it a university student he spends, er, let us say if he's not, not, not a say the university student, if he's a regular, he spends maximum six hours of his life in the college campus, maximum six hours out of 24 hours.

Interviewer: Yes.

EAPT: The remaining hours he is with himself and the family.

Interviewer: Yeah.

EAPT: So learning takes place everywhere.

Interviewer: Yeah. So...

EAPT: So it is the responsibility, collective responsibility of the parties, the students and the teacher. Of course the teacher should play a proactive role, more than, they say facilitator, it is of course more, I would say more than a facilitator.

Interviewer: Hmm.

EAPT: He should play a sort of proactive role because especially in this part of the world, say in Oman. They have, Omanis or let us say the students; they have their own cultural mind set.

Interviewer: Yeah.

EAPT: Environmental mind set, which for us it might seem it is a little bit lethargic, it means I don't want to do this much, why should I do this. This attitude it is not, er, something wrong, I would say. It is a result of what they have, or how they have been brought up.

Interviewer: Yeah.

EAPT: So what is important is the teacher should realise this, and we should tell them, we should actually motivate them, well just do this, it is for you, they have better, better job, better life, better family.

Interviewer: Yeah. They need to be informed, right?

EAPT: This is where actually we have I would say the teacher has to play this role. Once he plays well the student is motivated and we can build up the rapport and the learning will take place.

Interviewer: Yeah.

EAPT: He should feel the need, it is the duty of the teacher, er, to make the students, the student realise that this need.

Interviewer: As something important.

EAPT: Of course the parents, of course the parents.

Interviewer: Yeah, you're right. Yeah, how do you respond to in-class language problems? Sometimes the students, they find it difficult to ask question or maybe they don't want to risk themselves or to make a mistake in front of their friends, how, how do you deal with this kind of issues?

EAPT: Er, my students and I are very informal in the class.

Interviewer: Hmmhmm, yeah, I see.

EAPT: Very informal.

Interviewer: Okay.

EAPT: From day - it takes about two to three days to, to take my students to that level.

Interviewer: Hmmhmm.

EAPT: It is very informal.

Interviewer: Yeah.

EAPT: So this does away with all the inhibitions and they, they're making mistakes.

Interviewer: Hmm.

EAPT: They're free to make mistakes, and I never, I never highlight their mistake in the class. Er, for example, today, Samira, one of my students, while we were talking about the injuries or causes of injuries, she said the word, er, erm, pathology or something like that.

Interviewer: Hmmhmm.

EAPT: What she meant was psychology. And I said, "You mean psychology?"

Interviewer: Hmm, yeah, that's really helpful.

EAPT: Well so once they feel the teacher is there they feel confident to make mistakes.

Interviewer: Yeah, yeah. It's the way you handle them.

EAPT: This is how my students and I deal with my – so they feel free to talk and I never try to, unless it is required, unless it is required, it is like this, it is like this. I just tell them for the whole class, not for, never target the person who said it. I take this as an opportunity. I thank them, thank you for this word, this is the word everybody, that's one.

Interviewer: Yes.

EAPT: And number two, when they find it very difficult to, to, to communicate, which I have not come across so far because it is post foundation students. And they can, they can accept, I say one or two, this is my particular student, the rest they are okay, they can, they can communicate and they do communicate.

Interviewer: Hmmhmm.

Joy: They do that because it's post foundation. They don't have, er, that kind of a difficulty.

Interviewer: Okay, alright.

EAPT: Then of course I told you a couple of students.

Interviewer: Yeah, do you notice any differences between female and male students in terms of performance and academic achievement?

EAPT: Er, you mean in the language or what?

Interviewer: Language, yeah.

EAPT: Female students, erm, I would say 1%, just 1% advantage for the female students when it comes to, er, language.

Interviewer: Skills.

EAPT: Skills, they are, just 1% above.

Interviewer: Okay, I see.

EAPT: But when it comes to the, the, the boys, er, well they do have, there, there are several, er, students, when it comes to ideas, thoughts, they give you a little more.

Interviewer: Okay. Because maybe female might be shy or something?

EAPT: I don't know but this, but in terms of language I would say, er, the level you see whose level is better, I'd, and actually I wanted to avoid the comparison. It's just 1% advantage I'll give you to my female students.

Interviewer: Because when I talk to engineering teachers they highlight, highlighted the difference in terms of their performance, communication and other issues. Right, so what do you think about their study skills?

EAPT: Er, female students, they are more serious when it comes, er, their study skills.

Interviewer: Taking notes.

EAPT: Er, taking notes and doing the references.

Interviewer: Hmmhmm.

EAPT: Er, referencing skills, when I ask them will you check the dictionary and do it, they do it. Some boys, well they do it, they do it but, er, they do it, but I don't know whether they actually apply 100% to the task that they're doing.

Interviewer: Hmm.

EAPT: It is there, but, erm, generally, generally they actually do it and especially when I, er, discuss, er, certain language items. Say, for example, in post foundation we teach them sentence [transformations 0:34:20] so active to passive. Er, but I teach them this particular form and function. They do note down. In this group today, er, best student was absent; I have a student called Jasim. He uses

different colours of pens because I use different colours to note down certain things.

Interviewer: Okay, okay.

EAPT: When it comes to discussing the form, and he uses different colours. Normally this habit or this character trait you will notice mostly among girls.

Interviewer: Hmm.

EAPT: Because they bring different colours of pens and labels, but there are students who are actually boys who are doing. So it's a good thing. I actually, erm, er, I don't teach this on the second day of week one and I, I, took his note and I showed it to the class, Jasim is doing like this. It's really good.

Interviewer: That's very encouraging.

EAPT: It is good, because this is the skill that you need.

Interviewer: Yeah. Good study habits.

EAPT: Whatever you write, writes neatly and with a purpose.

Interviewer: Hmm, yeah, so that, it seems that...

EAPT: It is there.

Interviewer: ...it seems that you are happy with their study habit.

EAPT: They, they are, post foundation, when they come to this level of course they have already acquired certain, er, things.

Interviewer: Yeah, so back again to ESP and EAP what do you think of the technical terminologies, because when, when we talk about ESP or EAP we talk about register as we're all expecting the post foundation courses to help the students to understand the engineering register.

EAPT: Exactly.

Interviewer: To have grammar, sentence structure, technical vocab, what do, do you think that your text book address or addresses this kind of vocab?

EAPT: Er, I would say it addresses to a certain level, it addresses to a certain level but not to its realistic sense.

Interviewer: Hmmhmm.

EAPT: That's from the very beginning our, when I speak about this particular material, er, it backs, it backs drastic tradition for degrees.

Interviewer: Yeah, it agrees.

EAPT: So, erm, in terms of register and vocabulary you'll come across for example there is, er, the lesson, er, that speaks about, erm, say satellite communication.

Interviewer: Hmmhmm.

Joy: Where you come across words like a receiver, er, signals, device. Er, you will come across words like orbiting, orbit. And there is another, lesson that is based, that speaks about, erm, er, oil industry, where you come across words like fracking, shale, things like that. Er, but at the same time there are words which these people do not require.

Interviewer: Hmm.

EAPT: You come across a lot of business terms. Why they did it? Because as I told you it is not just an engineering group.

Interviewer: Yeah because you've got business students as well.

EAPT: So I'm afraid, it's my personal observation- I'm afraid whether these, er, engineering students get distracted by this. They don't need, er, vocabulary called, er, say venture capital, no way in their life they are going to come across, an engineering student...

Interviewer: Yeah.

EAPT: ...venture capital, investment. Well maybe when it comes to business they might. So there are things like that, and I felt whether, whether it distracts their focus. Think of a student who is talking about, er, fracking, who, who thinks about, er, say, erm, signal strength or they, er, say, erm, computer assisted drawing.

Interviewer: Hmm.

EAPT: CAD and he come across a vocabulary called venture capital, because to cater to this, so that particular register needs to be more focused, because this book is bi-focused.

Interviewer: Yeah.

EAPT: It is used both by, er, engineering and er, er, I would say, business studies students, in our college. Well they could, they could do this. And one good practice that we did in my previous college, from every department we have mechatronics, mechanic engineering, automobile engineering, you name it, we had it there, civil engineering.

Interviewer: Hmmhmm. I see.

EAPT: We collected; we asked them to send us a list of words, vocabulary that they are going to transact as part of their main course. What they did, they sent us a list.

Interviewer: Hmm.

EAPT: And we included this.

Interviewer: Recycle.

EAPT: We recycled it. We recycled it.

Interviewer: Fine, yeah.

EAPT: And they felt that they are studying their own curriculum here.

Interviewer: Yeah, that's really good.

EAPT: They didn't feel the difference. Well, here it was skill focus, for them it is content focused there. And when they go back to their class they find these words are familiar for that.

Interviewer: Yeah, that's really good.

EAPT: So this is one of the practices that we used to do which I would strongly recommend...

Interviewer: Hmm.

EAPT: ...could be done here.

Interviewer: And did you suggest this for them?

EAPT: No, this is our first year.

Interviewer: This very important point leads me to collaboration between EIB and ESB teachers and core subject teachers.

EAPT: The only, the only thing that I have come across, er, so far, in our departmental meetings is that our students, er, a good majority of them fail to read and understand the instruction in the question. So they do not know what the question is, but if we explain them in Arabic they know the answer.

Interviewer: Yeah.

EAPT: So this is, this was one of the suggestions that were, er, discussed within our department as it, as it believed to be that it had come from the mother department saying that please teach them these words.

Interviewer: Er, even in the exam or just instructions in..?

EAPT: Both in the exam and in the book, in the course book. There are a lot of activities where they have to do this, read and do it; they do not know what this is.

Interviewer: Hmmhmm. Do you have here any collaboration between you and engineering teachers?

EAPT: Yes, there is, there is actually.

Interviewer: Do engineering teachers give you feedback about students' language-related difficulties?

EAPT: Yes, they do, they do.

Interviewer: You teach formal mechanism or just chatting?

EAPT: which I am, erm, I should admit that I have no idea because as I told you it's my...

Interviewer: Yeah, I know.

EAPT: I only complete my, my first year here. It's only 10 months here.

Interviewer: It's very important to do so, I believe.

EAPT: Maybe you'll get a very clear answer from my other colleagues like maybe Mr Jayron in Rosemary's class you might be able to. I am actually the...

Interviewer: Yea, I know may help.

EAPT: It's my first time that I teach the course foundation here.

Interviewer: Yeah, yeah, but, but when I talk to the engineering teachers do you have any formal mechanism for collaboration. It's just sometimes, they just chat occasionally?

EAPT: Sure.

Interviewer: Yeah, the mechanism is when you give that engineering teachers give you the vocab.

EAPT: This is formal, it's a formal thing. They should send it. We used to give them, because I was the coordinator for that, erm, that, that programme and, er, I was responsible, so I had to contact everybody.

Interviewer: Hmmhmm. I see.

EAPT: The message will go directly to the, we have what we call the module leaders, here they're called the coordinator.

Interviewer: Yeah.

EAPT: We call, we have module leaders, so I sent to the module leader this communication with the format, the form and the same will go to his HRE and it will go to the, er, admin, we call the ELC director general academic and it is followed.

Interviewer: Hmm.

EAPT: And they see to it that it is received here. That's it. And they do it, and it helps a lot, it helps a lot. When it comes, of course we didn't have this problem, er, with, er, say, erm, our [air com] and tourism students because we have, erm, benchmark books are there especially from peers and from Oxford.

Interviewer: Okay.

EAPT: We have tourism one, tourism two and so, from, erm, so from peers and we have from Oxford, we have, materials are there.

Interviewer: Hmm.

EAPT: When it comes to engineering we don't have that much, now it is there, it is available.

Interviewer: Okay.

EAPT: I'm talking about 2006, 2007, 2008, only peers and gave little bit of technical writing, one technical writing, technical English one and two and recently I think they published, er, technical writing three and four I think.

Interviewer: Okay.

EAPT: So, erm, we had to come up with the, the material.

Interviewer: Yeah. So moving on to, to most important, I hear that the most important point here in our discussion is about assignment, presentations. These are one of the tools for assessment here, right.

EAPT: Yeah.

Interviewer: So what, what are the challenges that your students face on their assignments?

EAPT: I can talk about the assignments part because presentation I don't deal with, though we have presentations in, in foundation, level three and level four they, they make presentations as part of their oral...

Interviewer: You don't have here technical writing I or presentation, right?

EAPT: You see here they have not writing one and two; it is in technical writing two I think they make presentation. No, no, no, not technical writing two, it is in public speaking. Public speaking they have presentation.

Interviewer: But they used to present their report but I don't know what happened.

EAPT: Er, this is what actually I was telling you, we used to have this in, in my previous college, in Bahrain it was, used to, but here, they just submit the report.

Interviewer: Okay.

EAPT: And that's the end of the story.

Interviewer: Hmm.

EAPT: What they do is we actually give them, er, er, a real report. The task is as far as these particular assignments in technical writing one is concerned, they have to write a report.

Interviewer: Hmmhmm.

EAPT: The process, the process is paraphrasing; this is a process that takes place. So that means we give them, er...

Interviewer: The text.

EAPT: ...a text, an authentic approach from say some agencies. Now here this time we are using, er, report published by World Economic Forum on, on accelerating entrepreneurship in the Arab world.

Interviewer: Hmmhmm, and then you ask them to..?

EAPT: And we ask them to paraphrase it. The size of the report is about 200 to 300 words.

Interviewer: Hmm, I see.

EAPT: And we also guide them through.

Interviewer: Give them guidelines.

EAPT: We give them. Er, the guidelines of course we introduce them, the format of the report which is for the first time that they come in terms with. They do not know how to write a report. So we give them the format.

Interviewer: Hmmhmm.

EAPT: The mechanics, we teach them. And then we tell them, we give them this text. We guide them through. So where they have to read they are given specific tasks and we tell them say task 1 to 2 you will get the introduction. Task 4 to 10 you will get the background.

Interviewer: Hmm.

EAPT: Say level to 20 or 25 you get the body. And then say, say 25 to, you get the recommendation and from this to seeking the conclusion.

So we give, we give them this and we guide them through this. So give them the task, they will read the task and each task is given, is followed by a particular question. There's a specific question. They an- read the question, got the task, they get the idea.

Interviewer: Hmmhmm.

EAPT: That's what they do. And then finally they paraphrase it. Now the challenge here is, er, that's the interesting part of it.

Interviewer: Yeah.

EAPT: Er, till recently, this is the first time that I am doing this year with my students, till recently with my, this information from the senior colleagues, there is x or y in, at home who'll do this job for them.

Interviewer: Okay.

EAPT: It is quite normal, so what they do they just, er, er, give this to someone, somebody and that somebody and that somebody will do this task.

Interviewer: Mmm. Fair enough.

EAPT: So that task, that was actually defeating the, the very purpose of it. So what happened was I thinking from last year onwards what we did, we decided to do it in the class.

Interviewer: Okay.

EAPT: Where the students are grouped into pairs or, or in groups of two or three and we assign the task. We discuss the task in the class and each group answers it in the class. Well of course it is in their own English. For example three, students will be working together, so all the three shouldn't write the same sentence. The idea is the same; at least the sentence should be slightly different.

So we have started doing this assignment in the class, in the class, normally one hour for the regular teaching and the second hour is for the task.

Interviewer: Okay.

EAPT: In today's class I, I wanted to introduce this, er, what you call this accident report because I have to complete this by this week. That is the condition and I, my last class is tomorrow. I teach them Sunday to Wednesday only.

Interviewer: Alright.

EAPT: So to meet the, the time, er...

Interviewer: Scale.

EAPT: ...the schedule I have to introduce this to them. And tomorrow of course I'll be revising this for maybe 20 minutes and then I will be introducing maybe working together. So we actually write the report in the class.

Interviewer: Okay.

EAPT: Teacher just gives them the input.

Interviewer: Okay.

EAPT: This is what we do right now.

Interviewer: This is what...

EAPT: And of course it would have been better whether, I mean if they were able to make a real presentation of their report.

Interviewer: So you think this, this policy has managed to curb down such practices?

EAPT: The best side of the story is that the students stopped depending others, because they know it is of no use. Number two, er, they have to come to the class and they can learn. So they developed a kind of positive, a positive thought with this. There's no point in photo, in copying but they have to come, they have to write in front of the teacher.

Interviewer: Yeah, that's really good.

EAPT: And thereby we actually develop them - what I feel is we; we make them autonomous learners, independent learners.

Interviewer: Yeah, that's really interesting policy. Yeah. And, er, right, so presentation you said you don't have presentation, right?

EAPT: It is, the presentation is there maybe when you talk to, er, our, if you are - I think you are meeting, erm, Mr Idris.

Interviewer: Yeah, I'm meeting him.

EAPT: Yeah, he's the one who is dealing with presentations.

Interviewer: Yeah, so in general h-how do you deal with these challenges in general, or what do you suggest to improve all these practices to help the students? Whether engineering or non- engineering students when they go to the speciality to cope successfully with their courses?

EAPT: The most important thing is the course must be attractive.

Interviewer: Yeah, materials, yes, that's very important.

EAPT: The outcomes, the materials, assessment and the delivery.

Interviewer: Yeah, that's really important.

EAPT: They should fix the course objectives and they should be realistic.

Interviewer: Hmm.

EAPT: How to fix the course objectives, talk to the persons from the industry, because, er, er...

Interviewer: You mean do some kind of needs analysis?

EAPT: Yes. In my previous college 50% of the teaching staff is from the industry.

Interviewer: Hmm.

EAPT: They are from the industry.

Interviewer: Yes, okay.

EAPT: They, they were the foreman or line managers or whatever it is; they come and teach, they deliver the material because it is what they do there.

Interviewer: Yes, that's really interesting.

EAPT: So we have 50% of the staff with the, directly from the industry.

Interviewer: Yeah, your teaching is in formed by industry.

EAPT: And we had a teacher, er, from the Emirates who was teaching travel and tourism in our, er, my previous college.

Interviewer: Hmm.

EAPT: He knows how, how to do the ticketing. There's a course actually, so he has the industrial experience.

Interviewer: Hmm.

EAPT: Talk to these people at least here I would say in Oman, they should talk to people from industry and formulate the course objectives. It is not that we formulate the objectives based on the material available. It should be the other way round.

Interviewer: Hmm. Yeah.

EAPT: It should be the other way round, go to, this is the job, not, we are training these people for this market.

Interviewer: Yeah.

EAPT: So go to the market and learn what they need, get your objectives from them.

Interviewer: Yeah.

EAPT: And decide the outcomes and then go for the course material content.

Interviewer: Hmm.

EAPT: This is what I would suggest as a practical thing, one. Number two, when it comes to the delivery part...

Interviewer: Hmm.

EAPT: ...well if the outcomes, the course objectives are realistic, the teaching will become meaningful.

Interviewer: Yeah.

EAPT: Here the teacher has to deliver a topic which has no connection whatsoever with their real life.

Interviewer: Their real life.

EAPT: Then it is meaningless because the context is important.

Interviewer: Yeah, it is.

EAPT: The context is important.

Interviewer: I do agree with you.

EAPT: Today when I was starting the class I asked my students why you have to write this.

Interviewer: Yeah.

EAPT: That's my first question, I always ask.

Interviewer: that is a very important question.

EAPT: Why should they, why should they study this.

Interviewer: It triggered their selves to think about.

EAPT: They, now, then they realise this is very simple critical thinking.

Interviewer: Yeah.

EAPT: This is for my career, for my future, yes, everywhere you need you have to write this. They should be made, er, aware of the need here. So the teacher will realise well this is meaningful. Delivery will become meaningful and

assessment will become realistic because we have objectives from the markets...

Interviewer: Yes.

EAPT: ...from the industry, and it would give them a realistic feedback. This is what I would say for the engineering, the students, not only for the engineering, for any students.

Interviewer: All of them, yes, any programme.

EAPT: Yes, any programme, and the material of course I told you, all, we have to pick it from the market, the, the starting point I would say is from the markets. Here we sit in this academic room, and we select the material from x or y...

Interviewer: Which is isolated or completely isolated from that?

EAPT: No way.

Interviewer: Yeah, but the problem here is that Joy, the problem, sometimes even the needs of the industry and dynamic they're not static, right?

EAPT: Always dynamic of course.

Interviewer: Yeah, say sometimes also you, as practitioners here you find it difficult to cope with the dynamism of that labour market, how would we solve this problem?

EAPT: This is where actually teachers, er, are called, they are reflective practitioners, and the teacher is. I remember reading this somewhere and I think it is Gerard Dixy, the famous teacher trainer. He said, "Teachers are reflective practitioners, like a doctor, he doesn't stop learning, er, the day that he wrote the exam and he got the result." Come on after that some many came out the world and so many medicines came out the world. Similarly we should be in touch in constant touch with the markets.

Interviewer: Hmm.

EAPT: What is taking place in the market, are we in tune with the requirements there? Well, let us say this device it requires let us say, er, er, some technical skill. Do we have this in our service or are we still with our old, er, er computers or with old, let us say, the technology is being taught in the book. Students are well informed by the way.

Interviewer: Hmm.

EAPT: They know if something is in the market they will submit, they are using this. So Shell is using this, Aramano is using this or let's Oman Air is using this particular technology.

Interviewer: Yes.

EAPT: So we should be in constant touch and we should feel, I would say discouraged why this changes. Why should we feel discouraged? Take it, it's a mild modification, we are not in this process going to do it with a whole text book, no. Let us adapt it, include it.

Interviewer: Yeah, you mean that other ideas should be needs responsive.

EAPT: Yeah, otherwise we, we are out of the race.

Interviewer: So, yeah, it's a very important to, I do agree with you we should survey the industry and even also the survey e to students also sometimes. Also stakeholders about their needs and then you, er, then you design your materials accordingly. Right, so do you have any other suggestions about anything you like to say, any questions, because...

EAPT: No, I think we should always, er, especially when it comes to engineering students we should always do that, sort of, I don't, I won't say needs analysis, and we should do a sort of motivational analysis...

Interviewer: Okay, right.

EAPT: ...of the student.

Interviewer: Hmmhmm.

EAPT: Motivational analysis of the student, er, we all speak about needs analysis. Do we analyse the motivation of the student. Why he is here, is he serious, did somebody force him to come here. Because accordingly we could, we could make, I would say manipulate his, er, intentions or his goals. Manipulate positive.

Interviewer: Yes.

EAPT: We just, okay, he happened to be here, do we have something like that; motivational analysis in our curriculum, we think of needs analysis.

Interviewer: But they rarely do that.

EAPT: Needs of course because needs changes but motivation I would say this is my motivation, I want to be here. We do of course goal, goal analysis is there, but this or that, that is the final thing, motivation, do we analyse the motivation of our students, how motivated they are? Do we have the tool for that; do we have mechanism in place? We should think about that.

Interviewer: Yeah, that's very important point, it's very important.

EAPT: That's what I, I personally feel, because it is, sometimes half way through the course you realise, well he's good for nothing.

Interviewer: Hmm, yes.

EAPT: You lost your time, he lost his time.

Interviewer: Hmm.

EAPT: So it doesn't mean that the entire students who come to a particular programme are, they're well motivated, no. There are people who happen to be there, there are people who, who chance, er, to this particular course. Who just came to this course, but there are students who are there well motivated.

Interviewer: Hmm. Yeah, that's a real point. Do you support the idea of collaboration between EAP teachers and engineering teachers?

EAPT: Very much that's good]. We are in a different world; they are in a different world. You see in my previous college the EL, the ELC, we call communication language division, CLD, er, it is actually commonly referred to as a servicing department.

Interviewer: Hmm.

EAPT: And other departments are called mother departments. And we are there to service, to cater to their needs. Of course English is there in, in the industry all over there, they need to know English to get the job, which is there. But they should get the know-how, the content from there. We cannot teach, er, IT in principles.

Interviewer: Yeah.

EAPT: So we, we are, we always offer to ask some servicing department, we are there to service the students so that they get to there.

Interviewer: Collaboration is very important.

EAPT: Collaboration is very much, it should be there. I don't know the system yet I'm still...

Interviewer: New to the system.

EAPT: ...new, because I'm not quite familiar with. I'm just familiar with my programmes, that's it.

Interviewer: Yeah, yeah.

EAPT: But my seniors should be able to give you.

Interviewer: Yeah, but I think your suggestions are really important for improving this kind of, erm, ESP and EAP programme, but actually the courses that you are teaching, I feel that they are no longer ESB, it could be EIB orientated because...

EAPT: Yeah, it's a mixture of both actually; it's a mixture of both.

Interviewer: Yeah.

EAPT: And again I would say, when we, when we actually, when a student comes to course, what is it that he, he gets hold of? He gets some brochure or some books. He will go through it, the pages, if it is a course book. He finds something, well this is what, but he knows something else.

Interviewer: Hmm.

EAPT: Well my father told me or my uncle told me, he is now working for Oman Oil and he is now let us in the offshore, er, drilling, erm, platform, he's working there. My uncle told me they are using this, but I don't find this here, what is this?

Interviewer: Hmm.

EAPT: So are we updated, are we giving the student something that he actually wants to know. He has heard of it but it is not there. He came expecting for that here, he didn't get it and there it goes. And he continues just because if he completes this programme he gets certified.

Interviewer: Hmm.

EAPT: He gets certified.

Interviewer: Yeah.

EAPT: But does he get skilled and qualified...

Interviewer: Yeah, that's...

EAPT: ... to be employed?

Interviewer: ...that's a question.

EAPT: The employability that is what is important.

Interviewer: Yeah, yeah.

EAPT: So we have to offer them the materials which are a limit.

Interviewer: Thank you very much Mr Joy.

EAPT: Thanks a lot.

Interviewer: I really appreciate your input, yes.

EAPT: Thank you very much.

Interviewer: Almost just one hour. Thank you.