Attitudes and Challenges in the Implementation of EMI among Saudi Students

Shaykhah Raffaa[1], Nor Liza Ali[2]

[1]Department of English and Translation, King Khalid University, Abha, Saudi Arabia, [2]Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia
Email: shesaeed@kku.edu.sa, norlizaa.kl@utm.my

Abstract

The Ministry of Higher Education decrees English as the Medium of Instruction (EMI) in all the higher education institutions across the kingdom. Since Arabic is the sole and official spoken language in the kingdom, it is the only medium of instruction in all schools up to the secondary level. English is formally introduced as the language of instruction at the undergraduate level. This shift in languages leads to problems in classrooms where English is used as a medium of instruction. This paper examines students' attitudes toward EMI among Saudi undergraduate students at one premier public university in Saudi Arabia and identifies the challenges resulting from using EMI in teaching and learning in a Computer Science College. The study employs a quantitative research design. Using a questionnaire as an instrument, the study examines three factors: students' attitudes towards EMI, the challenges of EMI implementation, and the effect of these challenges on students' learning experiences. A total of 200 undergraduate students from a computer science department were selected as a sample for this study. The collected data were analyzed using descriptive and inferential statistics via SPSS. The results demonstrated that the students' overall level of attitude of EMI was relatively high, regardless of their low English proficiency level. The findings also indicated that students in EMI classrooms encounter a variety of difficulties, including difficulties in writing, comprehending lectures and communication with non-native teachers. Another important finding is that using EMI's challenges has an effect on how students learn English. Some recommendations and implications are provided at the end of the paper to improve students' performance in EMI.
Keywords: English as a Medium of Instruction, Higher education, EMI challenges, Students' Attitude

Introduction
Adoption of EMI
EMI (English-medium instruction) is defined by Dearden and Macaro (2016) as providing instruction in English in contexts where English is not the language which is normally spoken in the country. English is a highly acknowledged and utilized as a medium of instruction worldwide. The reason behind its popularity is its extensive usage in both spoken and written forms, which promotes globalization by enabling people from diverse backgrounds to

communicate and interact in various economic sector (Rao, 2019). The widespread integration of the English language has been observed to be prevalent in the global higher education sector (Crystal, 2004). During the period of 1995 to 2005, a considerable number of international educational institutions demonstrated a noteworthy inclination towards embracing English as the primary language of instruction (Ebad, 2014, Sah & Karki, 2020). Presently, most of universities mandate the delivery of their courses in English around the world including Europe (e.g., Aguilar, 2015; Dearden & Macaro, 2016), the Middle East (e.g., Belhiah & Elhami, 2015; Inan et al., 2012), Asia (e.g., Byun, Chu, Kim, Park, Kim & Jung, 2011; Chapple, 2015; Lei & Hu, 2014) and Africa (e.g., Viriri & Viriri, 2013).

In various non-English speaking countries (NESC), EMI policy has been positioned the EMI classroom as a language planning tool to promote students' mastery of English to achieve the country's overall economic development (Ali, 2013). However, adopting English as an instructional language poses a lot of challenges in higher education setting for students and teachers (Aizawa & Rose, 2018; Jibeen & Khan, 2015; Kruikow & Galloway, 2018). Most students view the integration of EMI into higher education as a challenge to negotiate their learning in English rather than a benefit (GU et al., 2018; Alhamami, 2021). A wide range of studies supports such argument that students face challenges in studying in EMI classrooms because of their low English proficiency. For example, Belhiah and Elhami (2015) found that the students in the current EMI situation in the UAE are struggling to learn the subject matter due to their low proficiency in English". Huang (2015), at the Southern Taiwan University of Science and Technology, found that many students were motivated to take EMI courses, but at the same time, they also felt anxious because of their low level of English proficiency. The students have difficulty in grammar, spelling, writing, and orally speaking English due to the lack of proficiency which suffers more when the teachers have no concern even when mistakes are made. Ebad (2014) indicated that students appeared entirely unresponsive, unwilling to participate, de-motivated, perplexed, disinterested, and absent during class lectures. This situation had a negative impact on how they performed on tests and received their grades. Many studies concluded that the English proficiency of instructors and students plays a vital role in providing fruitful outcomes of EMI classes. Kym and Kym (2014) investigated the correlation between level of students' proficiency and comprehension among Korean university students. The results indicated that there was a significant relationship between students' English proficiency and understanding EMI courses. These studies provide valuable insights to understand the challenges faced by student and to help policymakers to develop strategies to overcome these challenges in EMI classrooms. Alhamami and Almelhi (2021) examined the effect of using EMI in teaching a healthcare course in five medical colleges in Saudi Arabia. The results demonstrated that academic performance of students is negatively impacted by using EMI to teach healthcare- related courses for students with low English proficiency. EMI policy offers a limitation to the affectivity of lectures in passing information to learners. Several studies on EMI have revealed an existing gap between teaching and learning, knowledge acquisition, and overall understanding of the subjects offered through EMI. Undoubtedly, teaching in English makes the learning process more complex and challenging (Doiz & Lasagabaster, 2018) and requires an additional effort for non-native English-speaking lecturers in terms of the elaboration of classroom materials, the preparation of lessons, and the creation and implementation of assessment tools. Ebad (2014) reported a high level of challenges and obstacles encountered by lecturers and students during classroom instruction.

EMI in Saudi Arabia

The impact of global spread of English has affected language policy and language education policy in many countries worldwide (Al-Bakri, 2017). Saudi Arabia has witnessed remarkable socio-economic developments in the past few years, including social, economic and political reforms (Al-Hazmi, 2007). Such developments in the Saudi economy and globalization encourage people in Saudi Arabia to improve their English language competencies alongside their academic skills (Al-Issa, 2011; Al-Jarf, 2006; Habbash, 2011; Shaabi, 2010; Wood, 2007). Saudi Arabia has adopted a top-down internationalization policy in English to gain a competitive edge in the global scene. The decision to adopt the EMI policy in Saudi Arabia is based on the belief that education through EMI would prepare HE students better for the multicultural world of employment (Rice, 2004). The rationale may be the common assumption that spread in some Gulf countries, especially in Saudi Arabia, that relying on EMI would better improve students' English proficiency (Belhiah & Elhami, 2015; Rogier, 2012). Policymakers might have shifted to EMI because they have the perception that English is a key language that facilitates the localisation of science in their countries (Al-Asfour & Khan, 2014; Ellili-Cherif & Alkhateeb, 2015). The concern on the impact of EMI policy on the students' quality of learning and experiences and their academic performance has been observed in global literature (Macaro et al., 2018). Macaro et al (2018) noted that Saudi Arabia, where the official language is Arabic, is a good and interesting illustrative case for evidence of using EMI policy and its influence on the HE students' learning experiences. It seems evident to Macaro et al (2018) that there are challenge s faced by students and teachers related to the use of EMI in higher education.

Implementation of EMI policy in Saudi Arabia has raised debates concerning its impact on students learning due to their low level of English proficiency (Le Ha & Barnawi, 2015; Louber & Troudi, 2019; Zumor & Qasem, 2019). For students to pursue their academic studies at universities, they are required to undertake intensive English courses at their educational institutions as a foundation year programme before they can start their undergraduate study (Al-Shehri, 2017). Most of these programs are offered in Arabic. However, a few of these programs are offered in English to Saudi undergraduate students, specifically in science, engineering, medicine, and computer science. Additionally, the challenges can be associated with the students and lecturers' English language proficiency and their attitudes towards using EMI (Al-Hammami & Ahmad, 2018). There are also challenges which can be attributed to the learning environment, teaching methods, the extent to which the lecturers are ready to teach through EMI and their attitudes towards it, besides the extent to which the students absorption of the content provided by their lecturers. Literature highlighted the challenges that students in EMI programs faced in Saudi higher education (Zumor & Qasem, 2019). Students in Saudi Arabia learned Arabic-medium instruction in the primary and secondary education; while English is taught as a subject (Masri, 2019, 2020; Eslami et al., 2020). Studies also showed that Saudi undergraduate students have low command of English (Al-Seghayer, 2014; Gaffas, 2019). Limited proficiency may affect comprehension; hence, their academic performance. Louber and Troudi (2019) argued that most of the EMI implementation strategies adopted by some Gulf countries, including Saudi Arabia, are somewhat ineffective because they do not equip students to study in English which affect students' performance in classrooms.

These challenges can influence the students' learning experiences, particularly through the EMI mode. According to Alkahtany et al (2019), the implementation of EMI is one of these

concerns that can influence the students learning performance due to their low level of English proficiency. Le Ha and Barnawi (2015); Louber & Troudi (2019) indicated that adapting EMI in higher education has also an influence on content-area lecturers who are catering to delivering the content in English at the university level (Ali, 2013; Ali et al., 2018).

EMI in Computer Science Undergraduate Programs
English has become the language of qualified communication, and science (Belyaeva & Rubtsova, 2020). Students who want to pursue their HE, particularly in medical, health, engineering, computer science and applied science majors, have no option but to study in EMI (Alazemi, 2020; Masri, 2019). Saudi Arabia , where Arabic is the official language, adopted EMI policy at public and private universities (Al-Bataineh, 2020). In Saudi Arabia, a bachelor's degree program for computer science discipline comprises a minimum of 120 credits (Alzuman, 2015). Saudi universities admit students to colleges of computer science based on their high school GPA and their scores on the Scholastic Achievement Admission Test (SAAT) and the General Aptitude Test (GAT). Once enrolled in the program, first-year computer science students take intensive English courses for their first two semesters.

The literature has shown that implementing EMI policies in undergraduate computer science programs is challenging which led to poor learning outcomes (Al-Hammami, 2021). For example, In India, Raj et al (2017) suggested that teaching programming in an EMI mode put a high load on learners who are studying programming for the first time. Al-Hammami (2021) found that most computer science students preferred to learn in Arabic and believed that their GPA would be higher if they could study in Arabic as they are struggling to comprehend the technological terms. Despite the importance of investigating the impact of using EMI for teaching disciplines that may use unusual linguistic terms, such as computer discipline, little has been done in the existing literature to understand the impact that may be left by using EMI in such disciplines (GU et al., 2018; Alhamami, 2021). Furthermore, investigations in previous research show less significant evidence of the impact of the implementation of EMI in the Saudi higher education context (Shamim, 2016; Zumor & Qasem, 2019; Al-Hammami, 2021). This study focuses on a bachelor's computer science discipline, where the English language is used as a medium of instruction (EMI).

Objectives of the Study
This study aims to investigate the students' attitude towards EMI and challenges experienced by students and lecturers in the EMI program at King Khalid University (KKU). Specifically, the study aims to achieve the following objectives:
1- To explore the level of students' attitude towards EMI in KKU.
2- To investigate the challenges encountered by students in EMI classroom in KKU.

Methodology and Data Collection Research Method
The current study employs quantitative research design. This is because it hopes to investigate the challenges experienced by students in the EMI program in a Computer Science College (CSC) and the effect of these challenges on their learning experience and to elicit their attitudes towards using English as a medium of instruction in learning computer science courses.

Population and Sample

The target population of this study consists of Saudi undergraduate students in Computer Science College at one public university in Saudi Arabia. A sample of 200 randomly selected students who fit the population description is selected for this quantitative study.

In this study, the data was collected via self-administrated survey random sampling method that is the University Admin distributed the questionnaire via email to all undergraduate students in CSC.

Questionnaire Design

This study used the survey method to collect the primary data. A questionnaire is designed to include two parts. The first part includes demographic information about the respondents, including, gender, age, faculty, education level. The second part asks the respondents about the variables of interest in the study.

The survey measures three variables: Students' attitude of EMI, challenges encountered and the effect of challenges of using EMI. All the variables that made up the constructs were adopted from previous studies to ensure content validity.

In order to construct a well-designed 5-point Likert-scale closed-ended questionnaire, the researcher constructed the questionnaire by following the guidelines provided by (Dörnyei, 2003, 2007). The items of the constructed questionnaire were developed based on the research questions, the relevant literature on EMI, and own knowledge and experience of teaching students in an EMI setting. This helped to establish the construct validity and content validity of the research tools as shown in appendix.

Data Analysis and Results Normality Test

In the present study, the researcher followed the guideline suggested by Hair et al. (2014) to consider the cut-off critical value ±2.58. From Table 1, it is obvious that the value of skewness and kurtosis for each construct was within the given range (± 2.58). The descriptive analysis indicates an almost normal distribution with skewness values ranging from 0.043 and -0.407 as well as kurtosis values ranged from of -0.771 and -1.145. Table 1 indicates skewness and kurtosis for variables.

Table 1
Skewness and Kurtosis for Variables

Variable	Code	Skewness	Kurtosis
Students' attitude of EMI	ATT	-.243	-1.012
Challenges encountered	CHA	-.407	-.771
Effect of challenges of using	EFF	.043	-1.145

EMI
Source: Prepared by researcher using SPSS

Correlation Matrix between Variables

It was seen from the study's results that the maximum positive correlation between (EFF) and the (CHA) is 0.756, (PS). Contrarily, the lowest negative correlation between the variables was

(EFF) and (ATT) with -0.265 and also (CHA) with (ATT) has a negative relationship at (-0.271). It is shown from the correlation matrix that the values of the correlation are less than 0.80. The findings of the study verified that the multicollinearity is not considered as a problem between the study model's constructs (Sekaran, 2003). Table 2 represents the correlation matrix among the variables.

Table 2
Pearson Correlation among the Variables

	ATT	CHA	EFF
ATT	1		
CHA	-.271**	1	
EFF	-.265**	.756**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).
ATT: Students' attitude of EMI, CHA: Challenges encountered in classroom EFF: Effects of challenges of using EMI

Reliability and Composite Reliability
This study conducted two types of reliability. The first type is Cronbach's alpha using SPSS 20.0 and the second type is composite reliability (CR). The current study indicates the reliability (Cronbach's alpha) from 0.753 to 0.923; while the composite reliability (CR) from 0.802 to 0.934. Therefore, all values for reliability and composite reliability constructs were greater than the recommended value of above 0.60 (Hair et al. 2019). Table 3 below presents the reliability (Cronbach's alpha) and composite reliability for the constructs.

Table 3
Cronbach's alpha and Composite Reliability for the Variables

Name of Construct	Construct code	Number of items	Cronbach's alpha	Composite Reliability
Students' attitude of EMI	ATT	8	0.758	0.802
Challenges encountered	CHA	7	0.916	0.922
Effect of challenges of using EMI	EFF	6	0.923	0.934

Measures of Central Tendency and Dispersion
This section illustrates the descriptive analysis, particularly the tendency. The illustrations of tendency are done among respondents' answers for the three constructs, along with interpretation and discussion. To measure the levels of perception based on the 'rule of thumb' proposed by Pallant (2013), in case the instrument's score is on Likert Scale of five points, the agreement's level among respondents could be split into three categories: the mean score 0~2.33 entitles the perception is in its low value, the mean value falls in 2.34~3.66 designates as modest level of perception, whereas the mean value fall in 3.67~5.00 designates high level of perception.

Descriptive Analysis of Students' Attitude of EMI

Table 4 shows the indicators' frequency, mean and standard deviation (SD), related to the indicators of students' attitude (ATT). The table below shows that the highest mean is ATT1 and ATT8 with 3.86 out of a maximum 5 making up 77.2%. On the other hand, ATT3 has the lowest mean with 2.80 making up approximately 69%. In addition, the mean of these values (overall mean) was 3.427 out of 5 or 68.5%. Therefore, the average of mean score for all items of students' attitude of EMI represented modest level of perception among students in KKU. Furthermore, the standard deviations (SD) for all items range from 1.387 to 1.544, which reflects existence of considerable acceptable variability within the data set. Therefore, this indicates there is a n agreement among undergraduate students in Computer Science specialization regarding attitude of students for EMI.

Table 4

Mean and SD of Students' attitude of EMI

No.	Items	1	2	3	4	5	Mean	%	S.D.
		n %	n %	n %	n %	n %	**3.86**	**77.2**	**1.4**
ATT1	Learning through English would improve my English proficiency	20 10	19 9.5	31 15.5	10 15	100 50	3.19	63.8	1.5
ATT2	Scientific subjects should be taught in English.	46 23	25 12.5	34 17	36 18	59 29.5	3.75	75	1.4
ATT3	Learning in English makes it easier to find more resources in my study field	24 12	17 8.6	36 18	32 16	91 45.5	2.80	56	1.530
ATT4	I feel comfortable speaking English in class.	50 25	31 15.5	46 23	26 13	47 23.5	2.95	59	1.494
ATT5	My English listening skills have improved because all classes are in English	27 13.5	23 11.5	40 20	46 23	64 32	3.49	69.8	1.393
ATT6	My reading skills have improved because I study in English	38 19	35 17.5	44 22	31 15.5	52 26	3.12	62.4	1.458
ATT7	My writing skills have improved because I study in English	31 15.5	18 9	33 16.5	47 23.5	71 35.5	3.54	70.8	1.442
ATT8	I can easily take notes in English during class	27 13.5	21 10.5	37 18.5	47 23.5	68 34	3.86	77.2	1.387
Total							3.427	68.54	.9440

Source: Survey

Note: n=frequency; %=percentage; 1, 2, 3,4, and 5 indicate strongly Disagree, Disagree, I do not know, Agree and strongly Agree respectively; S.D.=Standard Deviation

Descriptive Analysis of the Challenges Encountered by the Students in EMI Classrooms

The results present the frequency, mean and standard deviation (SD), related to the indicators of challenges encountered in EMI classroom. Table 4 indicates that the mean scores ranged

from 3.27 or (65.4%) and 3.75 or (75%).   In addition, the mean of these values (overall mean) was 3.385 out of a maximum 5 or 67.7%. Thus, the overall mean score of all items of challenges encountered represented modest level of perception among students. Furthermore, the standard deviations (SDs) for all items range from 1.42 to 1.51, which reflects existence of considerable acceptable variability within the data set. Therefore, it is indicated t h a t there is a l e v e l o f agreement among undergraduate students in regarding the challenges encountered by students in EMI classrooms.

Table 5
The mean and SD of Challenges encountered by students in EMI classrooms

No	Items	1	2	3	4	5	Mean	%	SD
		n %	n %	n %	n %	n %	3.4	68	1.49
CHA1	I find it difficult to write in English because I do not know a lot of vocabulary.	37 18.5	20 10	37 18.5	38 19	68 34	3.27	65.4	1.50
CHA2	I do not understand what the teachers say in class.	39 19.5	25 12.5	40 20	34 17	62 31	3.48	69.6	1.51
CHA3	I find it difficult to communicate with my teachers who are not native speakers	35 17.5	21 10.5	34 17	33 16.5	77 38.5	3.29	65.8	1.45
CHA4	Teaching in English takes much time and leads to not covering all the course materials.	35 17.5	27 13.5	40 20	40 20	58 29	3.39	67.8	1.44
CHA5	I find it difficult to understand the scientific terms written in English.	35 17.5	24 12	75 37.5	24 12	42 21	3.36	67.2	1.43
CHA6	I would rather engage in an English- language discussion that start a new one or ask questions to the lecturers.	33 16.5	24 12	37 18.5	45 22.5	61 30.5	3.75	75	1.42
CHA7	I feel embarrassed when my teacher asks me to answer.	33 16.5	23 11.5	43 21.4	41 20.5	60 30	3.40	68	1.49
Total							3.385	67.7	1.326

Source: Survey
Note: n=frequency; %=percentage; 1, 2, 3, 4, and 5 indicate strongly Disagree, Disagree, I do not know, Agree and strongly Agree respectively; SD =Standard Deviation

Descriptive analysis of the effects of challenges of using EMI on the students' English learning experience
Table 6 shows the indicators' frequency, mean and standard deviation (SD), related to the effect of challenges of using EMI (EFF). Table 4 below reveals that the highest mean was EFF6 and EFF2 with

3.72 and 3.69 making up 74.4% and 73.8% respectively. On the other hand, EFF1 had the lowest mean score with 3.26 making up approximately 65.2%. Furthermore, the mean of these values (overall mean) was 3.48 out of 5 or 69.6% (modest level). The standard deviations (SD) for all items range from 1.36 to 1.52, which reflects existence of considerable acceptable variability within the data set. This r e s u l t indicates t h a t there is a n agreement among undergraduate students in the university regarding the effects of challenges of using EMI on the students' English learning experience.

Table 6

The mean and SD of challenges Effects of using EMI

Items		1	2	3	4	5	Mean	%	SD.
		n %	n %	n %	n %	n %			
EFF1	I memorize the content in order to pass quizzes and exams	39 19.5	23 11.5	39 19.5	45 22.5	54 27	3.26	65.2	1.46
EFF2	Teachers play an important role in reducing the challenges I face while studying in English.	24 12	13 6.5	43 21.5	41 20.5	79 39.5	3.69	73.8	1.36
EFF3	The challenges of studying in English have reduced my passion towards my specialization	39 19.5	25 12.5	38 19	30 15	68 34	3.31	66.2	1.52
EFF4	I feel frustrated because my English proficiency level is not good enough to learn through English.	33 16.5	19 9.5	40 20	34 17	74 37	3.49	69.8	1.477
EFF5	The challenges in learning in English reduced focusing on the content of the course.	31 15.5	22 11	45 22.5	35 17.5	66 33	3.42	68.4	1.440
EFF6	I stop reading when I did not understand the text written in English	25 12.5	16 8	34 17	39 19.5	86 43	3.72	74.4	1.407
Total							3.481	69.6	1.090

Discussion

The analyses show that the students' overall level of students' attitude of EMI was relatively high regardless of their low English proficiency. In addition, the findings indicated that undergraduate students have many challenges in EMI classrooms such as difficulty in writing in English due to their limited English vocabulary and also difficulty of communicating with their teachers who are not native speakers.

As noted from the results, the students believe that teaching in English takes much time and leads to not covering all the course materials and they found difficult to understand the scientific terms written in English. This result is supported by Zumor and Qasem (2019)

findings who reported that most of Saudi undergraduate students find it very challenging to understand scientific terms written in English. This result indicates that the language proficiency of the students is insufficient to understand and follow information provided in English scientific materials.

Another interesting finding is that effects of challenges of using EMI on the students' English learning experience. Students believe teachers play an important role in reducing the challenges they face while studying in English. In addition, many students (49%) agree that the challenges of studying in English have reduced their passion towards their specialization. Zumor and Qasem (2019) also found that 70% of the participants failed in assessment test and do not perform well because the language of tests is English. Therefore, the majority of them agree their performance would improve if they took the test in Arabic. However, for students to pursue their academic studies at universities, they are required to undertake intensive English courses at their educational institutions as a foundation year program before they can start their undergraduate study.

Conclusion, Implications and Recommendations
The main aim of this study is to investigate the attitudes and challenges facing Saudi undergraduate students in the implementation of EMI. The results revealed that the students' attitude towards EMI was relatively high. However, it was also found that the students encountered some challenges while implementing the EMI in the classrooms, which may affect the overall teaching and learning process.

These findings suggest several implications for the practice of EMI in Saudi Arabia context. Firstly, in order to support the EMI programs to achieve desired outcomes, both instructors and students should be equipped with better communicative English skills. Intensive English programs in advance of, or along with EMI classes should be provided for those who need to improve their language proficiency. In particular, the response from the students suggests that listening skill and vocabulary are the most demanding skills for their current EMI success. Secondly, the findings of this study strongly suggest that background knowledge or content familiarity is as important as students' English proficiency for the success of an EMI program. The impact of individual learner factors shows that background knowledge enhances students' satisfaction and comprehension, and it implies that content familiarity partially compensates for limit English proficiency by filling in missing information with background knowledge. Thus, it would be effective if the instructor distributed supplementary learning material in advance and encouraged students to preview it for the sake of content preparation. To conclude, the results of this study are consistent with previous studies in the literature on EMI in different settings in terms of challenges and problems incurred by this university instruction mode, including limited participation and comprehension on the part of students, surface learning, rote learning of content, low achievement in exams and limited acquisition and mastery of disciplinary knowledge (Arkin, 2013). The study recommends ensuring quality English education in the foundation year and examining the option of "bilingual education". The study also recommended that the Ministry of Higher Education might consider providing effective mechanisms for greater effective implementation of language support for students studying in EMI programs, such as training and development programs, English proficient capacity-building programs, and professional development for the existing faculty to foster internationalization of Education. Therefore, the Saudi

government should allocate more funds towards the implementation of English as an instructional language at tertiary education level.

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