



University Students and Teaching Staff
Attitudes toward Language of Instruction in
Libyan Science and Engineering Education

By

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of PhD is entirely my own work, and that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Table of Contents

DECLARATION.....	I
TABLE OF CONTENTS.....	III
TABLE OF FIGURES.....	X
LIST OF TABLES.....	XII
LIST OF PUBLICATIONS.....	XVIII
ABSTRACT.....	XX
1. INTRODUCTION.....	1
1.1 STUDY BACKGROUND.....	1
1.2 UNIVERSITY AND HIGHER VOCATIONAL EDUCATION.....	2
1.3 SIGNIFICANCE OF THE STUDY.....	3
1.4 AIM OF THE STUDY.....	4
1.5 RESEARCH QUESTIONS.....	4
1.6 DEFINITIONS.....	9
1.6.1 Attitude.....	9
1.6.2 Attitude toward language of instruction.....	9
1.6.3 English Medium Instruction.....	9
1.6.4 Modern Standard Arabic.....	9
1.6.5 Bilingual.....	9
2. REVIEW OF THE LITERATURE.....	10
2.1 GLOBALIZATION AND ENGLISH.....	11
2.2 GLOBALIZATION IN HIGHER EDUCATION: ENGINEERING EDUCATION.....	12
2.3 LINGUISTIC, RELIGIOUS AND CULTURAL ASPECTS OF LIBYA.....	15
2.4 TAMAZIGHT (BERBER).....	17
2.5 ARABIZATION.....	17
2.6 HISTORY OF ENGLISH LANGUAGE IN LIBYA.....	20
2.7 THE IMPORTANCE OF TEACHING ENGLISH IN LIBYA.....	22
2.8 LANGUAGE PLANNING AND LANGUAGE STATUS.....	24
2.9 LANGUAGE ATTITUDES.....	26
2.10 ENGLISH AS A MEDIUM OF INSTRUCTION: EMI.....	29
2.11 CASE STUDIES: IMPLEMENTATION OF EMI.....	30
2.11.1 Asia.....	30
2.11.2 Europe.....	31

2.12 EMI: ARAB ENGINEERING EDUCATION	32
2.13 BILINGUAL EDUCATION AND IMMERSION FOREIGN LANGUAGE PROGRAM... 32	
2.13.1 Total Immersion	34
2.13.2 Partial Immersion	34
2.13.3 Two-Way Immersion	35
2.14 BILINGUALISM AND BILINGUAL EDUCATION.....	36
2.14.1 Bilingualism and Modern World.....	39
2.14.2 Bilingualism: Motivation and Identity	40
2.14.3 Bilingualism: Math and Science Problem Solving Skills.....	40
2.14.4 Bilingual Education.....	42
2.15 ATTITUDE TOWARDS BILINGUAL EDUCATION.....	44
3. METHOD.....	47
3.1 SETTING	48
3.1.1 Case Study I.....	48
3.1.2 Case Study II	48
3.2 SURVEY PARTICIPANTS	48
3.2.1 Case Study I.....	48
3.2.2 Case Study II	49
3.3 RESEARCH INSTRUMENT	50
3.4 SURVEY QUESTIONNAIRE	52
3.4.1 Students Questionnaire Form.....	53
3.4.2 Teaching Staff Questionnaire Form.....	55
3.5 INTERVIEW	56
3.6 ETHICAL CONSIDERATIONS	57
3.7 RELIABILITY AND VALIDITY OF INSTRUMENTS.....	58
3.7.1 Arabic as a Language of Instruction.....	58
3.7.2. English as a Language of Instruction	60
3.7.3 Arabic/English (bilingualism) as a Language of Instruction.....	62
3.8 DATA COLLECTION	64
3.8.1 Case study I.....	64
3.8.2 Case Study II	65
3.9 DATA ANALYSIS.....	65
3.9.1 Quantitative Analysis: SPSS.....	65
3.9.1.a Chi Square Test: Quantitative Analysis	66

3.9.2 <i>Qualitative Analysis: Coding</i>	67
4. RESULTS	69
4.1 ANALYSIS OF PRELIMINARY INFORMATION:.....	69
4.1.1 <i>Case Study I</i>	69
4.1.2 <i>Case Study II</i>	70
4.2 STUDENTS' DATA ANALYSIS	70
4.2.1 <i>Students' Data Analysis: Research Question 1</i>	70
4.2.2 <i>Students' Data Analysis: Research Question 2</i>	77
4.2.3 <i>Students' Data Analysis: Research Question 3</i>	85
4.2.4 <i>Students' Data Analysis: Research Question 4</i>	93
Research Question 4.1	93
4.2.4.1.a Analysis on the bases of education.....	94
4.2.4.1.b Analysis on the bases of gender	97
4.2.4.1.c Analysis on the bases of students college of study.....	100
4.2.4.1.d Analysis on the bases of students ethnic origin.....	103
Research Question 4.2.....	105
4.2.4.2.a Analysis on the bases of education.....	105
4.2.4.2.b Analysis on the bases of gender	109
4.2.4.2.c Analysis on the bases of students college of study.....	112
4.2.4.2.d Analysis on the bases of students ethnic origin.....	115
Research Question 4.3.....	117
4.2.4.3.a Analysis on the bases of education.....	117
4.2.4.3.b Analysis on the bases of gender	121
4.2.4.3.c Analysis on the bases of students college of study.....	124
4.2.4.3.d Analysis on the bases of students ethnic origin.....	127
4.3 TEACHING STAFF DATA ANALYSIS	129
4.3.1 <i>Teaching Staff Data Analysis: Research Question 1</i>	129
4.3.2 <i>Teaching Staff Data Analysis: Research Question 2</i>	137
4.3.3 <i>Teaching Staff Data Analysis: Research Question 3</i>	145
4.3.4 <i>Teaching Staff Data Analysis: Research Question 4</i>	153
Research Question 4.1	153
4.3.4.1.a Analysis on the bases of education.....	154
4.3.4.1.b Analysis on the bases of gender	156
4.3.4.1.c Analysis on the bases of teaching staff's college of teaching .	159

Research Question 4.2.....	162
4.2.4.2.a Analysis on the bases of education.....	162
4.3.4.2.b Analysis on the bases of gender	165
4.3.4.2.c Analysis on the bases of teaching staff’s college of teaching .	168
Research Question 4.3.....	171
4.3.4.3.a Analysis on the bases of education.....	171
4.3.4.3.b Analysis on the bases of gender	173
4.3.4.3.c Analysis on the bases of teaching staff’s college of teaching .	176
<i>4.3.5 Teaching Staff Data Analysis: Research Question 5</i>	<i>179</i>
4.3.5.1 English.....	180
4.3.5.1.1 Language Proficiency.....	180
4.3.5.1.1.1 Case Study 1	180
4.3.5.1.1.2 Case Study 2.....	180
4.3.5.1.2 Impact.....	180
4.3.5.1.2.1 Case Study 1	181
4.3.5.1.2.2 Case Study 2.....	181
4.3.5.1.3 Stage that language should starts	181
4.3.5.1.3.1 Case Study 1	181
4.3.5.1.3.2 Case Study 2.....	182
4.3.5.1.4 Job opportunity.....	182
4.3.5.1.4.1 Case Study 1	182
4.3.5.1.4 .2 Case Study 2.....	182
4.3.5.1.5 Culture.....	183
4.3.5.1.5.1 Case Study 1	183
4.3.5.1.5.2 Case Study 2.....	183
4.3.5.2 Arabic	184
4.3.5.2.1 Language proficiency.....	184
4.3.5.2.1.1 Case Study 1	184
4.3.5.2.1.2 Case Study 2.....	184
4.3.5.2.2 Impact.....	184
4.3.5.2.2.1 Case Study 1	184
4.3.5.2.2.2 Case Study 2.....	184
4.3.5.2.3 Job opportunity.....	185
4.3.5.2.3.1 Case Study 1	185

4.3.5.2.3.2 Case Study 2.....	185
4.3.5.2.4 Resources	185
4.3.5.2.4.1 Case Study 1.....	185
4.3.5.2.4.2 Case Study 2.....	186
4.3.5.3 Arabic-English Bilingualism.....	186
4.3.5.3.1 Language proficiency.....	186
4.3.5.3.1.1 Case Study 1.....	186
4.3.5.3.1.2 Case Study 2.....	187
4.3.5.3.2 Impact.....	187
4.3.5.3.2.1 Case Study 1.....	187
4.3.5.3.2.2 Case Study 2.....	187
4.3.5.3.3 Job opportunity.....	187
4.3.5.3.3.1 Case Study 1.....	188
4.3.5.3.3.2 Case Study 2.....	188
5. DISCUSSION	190
5.1 RESEARCH QUESTION 1	190
5.2 <i>Research Question 1: Students</i>	191
5.1.2 <i>Research Question 1: Teaching Staff</i>	194
5.1.3 <i>Comparison between Students and Teaching Staff</i>	198
5.1.3.1 Case 1	198
5.1.3.2 Case 2	199
5.2 RESEARCH QUESTION 2	201
5.2.1 <i>Research Question 2: Students</i>	202
5.2.2 <i>Research Question 2: Teaching Staff</i>	205
5.2.3 <i>Comparison between Students and Teaching Staff</i>	208
5.2.3.1 Case 1	208
5.2.3.2 Case 2	210
5.3 RESEARCH QUESTION 3	211
5.3.1 <i>Research Question 3: Students</i>	212
5.3.2 <i>Research Question 3: Teaching Staff</i>	215
5.3.3 <i>Comparison between Students and Teaching Staff</i>	218
5.3.3.1 Case 1	218
5.3.3.2 Case 2	219
5.4 RESEARCH QUESTION 4	221

5.4.1 <i>Research Question 4.1</i>	221
5.4.1.1 Education.....	221
5.4.1.2 Gender	222
5.4.1.3 College of Study.....	223
5.4.1.4 Ethnic Origin	224
5.4.2 <i>Research Question 4.2</i>	224
5.4.2.1 Education.....	224
5.4.2.2 Gender	225
5.4.2.3 College of Study.....	226
5.4.2.4 Ethnic Origin	226
5.4.3 <i>Research Question 4.3</i>	227
5.4.3.1 Education.....	227
5.4.3.2 Gender	228
5.4.3.3 College of Study.....	228
5.4.3.4 Ethnic Origin	229
5.5 RESEARCH QUESTION 5	230
5.5.1 <i>English</i>	230
5.5.2 <i>Arabic</i>	232
5.5.3 <i>Arabic-English Bilingualism</i>	233
5.6 FINDINGS	234
5.6.1 <i>English</i>	234
5.6.2 <i>Arabic</i>	234
5.6.3 <i>English-Arabic Bilingualism</i>	235
5.6.4 <i>General Findings</i>	235
6. CONCLUSION AND RECOMMENDATIONS	236
6.1 CONCLUSION	236
6.2 STUDY CONTRIBUTIONS	238
6.4 LIMITATIONS OF THE STUDY.....	239
6.4 RECOMMENDATIONS FOR FURTHER STUDIES	240
6.5 IMPLICATIONS OF THE STUDY	241
REFERENCES:.....	242
APPENDIX A:	I
STUDENT QUESTIONNAIRE FORM	I
APPENDIX B:	VIII

TEACHING STAFF QUESTIONNAIRE FORM	VIII
APPENDIX C:	XV
INTERVIEW QUESTIONS FORM.....	XV
APPENDIX D:	XVII
DCU RESEARCH COMMITTEE APPROVAL FORM	XVII
APPENDIX E:	XVIII
STUDY RESULT TABLES	XVIII

Table of Figures

Figure 1: Map of Libya	1
Figure 2: Triglossic representation of Arabic	18
Figure 3: SPSS Software user interface	66
Figure 4: Research Question 1: Comparison across case 1& 2.....	77
Figure 5: Research Question 2: Comparison across case 1& 2.....	85
Figure 6: Research Question 3: Comparison across case 1& 2.....	93
Figure 7: Research Question 4.1.a: Comparison across year of education for both cases	96
Figure 8: Research Question 4.1.b: Comparison across gender for both cases	99
Figure 9: Research Question 4.1.c: Comparison across science and engineering students for both cases	102
Figure 10: Research Question 4.2.d: Comparison across students' ethnic origin..	105
Figure 11: Research Question 4.2.a: Comparison across years of education for both cases	108
Figure 12: Research Question 4.2.b: Comparison across gender for both cases ...	111
Figure 13: Research Question 4.2.c: Comparison across science and engineering students for both cases	114
Figure 14: Research Question 4.2.d: Comparison across students' ethnic origin..	117
Figure 15: Research Question 4.3.a: Comparison across years of education for both cases	120
Figure 16: Research Question 4.3.b: Comparison across gender for both cases ...	123
Figure 17: Research Question 4.3.c: Comparison across science and engineering for both cases	126
Figure 18: Research Question 4.3.a: Comparison across students' ethnic origin..	129
Figure 19: Research Question 1: Comparison across teaching staff case 1 & 2....	137
Figure 20: Research Question 2: Comparison across teaching staff case 1 & 2....	145
Figure 21: Research Question 3: Comparison across teaching staff case 1 & 2....	153
Figure 22: Research Question 4.1.a: Comparison across teaching staff's education	156
Figure 23: Research Question 4.1.b: Comparison across teaching staff's gender for both cases	158

Figure 24: Research Question 4.1.c: Comparison across teaching staff's college of teaching for both cases	161
Figure 25: Research Question 4.2.a: Comparison across teaching staff's education	164
Figure 26: Research Question 4.2.b: Comparison across teaching staff's gender for both cases	167
Figure 27: Research Question 4.2.c: Comparison across teaching staff's college of teaching for both cases	170
Figure 28: Research Question 4.3.a: Comparison across teaching staff's education	173
Figure 29: Research Question 4.3.b: Comparison across teaching staff's gender for both cases	175
Figure 30: Research Question 4.3.c: Comparison across teaching staff's college of teaching for both cases	178

List of Tables

Table 1.1: Enrolment in University Education after getting the specialized secondary education certificate	3
Table 3.1: Case Processing Summary	58
Table 3.2: Reliability Statistics	59
Table 3.3: Item-Total Statistics	59
Table 3.4: Case Processing Summary	60
Table 3.5: Reliability Statistics	60
Table 3.6: Item-Total Statistics	61
Table 3.7: Case Processing Summary	62
Table 3.8: Reliability Statistics	62
Table 3.9: Item-Total Statistics	63
Table 4.1: Case Study I Frequencies and Distributions of Respondents on Attitude toward English as a Medium of Instruction	71
Table 4.2: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward English as a Medium of Instruction	73
Table 4.3: Research Question 1: Comparison across case 1& 2 (%).....	77
Table 4.4: Case Study I Frequencies and Distributions of Respondents on Attitude toward Standard Arabic as a Medium of Instruction	78
Table 4.5: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward Standard Arabic as a Medium of Instruction	81
Table 4.6: Research Question 2: Comparison across case 1 & 2 (%).....	85
Table 4.7: Case Study I Frequencies and Distributions of Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction .	86
Table 4.8: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction.....	89

Table 4.9: Research Question 3: Comparison across case 1 & 2 (%).....	93
Table 4.10: Research Question 4.1.a: Comparison across years of education for both cases (%)	95
Table 4.11: Research Question 4.1.a: Comparison across years of education for case study I (%).....	96
Table 4.12: Research Question 4.1.a: Comparison across years of education for case study II (%).....	97
Table 4.13: Research Question 4.1.b: Comparison across gender for both cases (%)	98
Table 4.14: Research Question 4.1.b: Comparison across case study I male and female students (%).....	99
Table 4.15: Research Question 4.1.b: Comparison across case study II male and female students (%).....	100
Table 4.16: Research Question 4.1.c: Comparison across science and engineering students for both cases (%)	101
Table 4.17: Research Question 4.1.c: Comparison across case study I science and engineering students (%).....	102
Table 4.18: Research Question 4.1.c: Comparison across case study II science and engineering students (%).....	103
Table 4.19: Research Question 4.2.d: Comparison across students' ethnic origin (%)	104
Table 4.20: Research Question 4.2.a: Comparison across years of education for both cases (%)	107
Table 4.21: Research Question 4.2.a: Comparison across years of education for case study I (%).....	108
Table 4.22: Research Question 4.2.a: Comparison across years of education for case study II (%).....	109
Table 4.23: Research Question 4.2.b: Comparison across gender for both cases (%)	110

Table 4.24: Research Question 4.2.b: Comparison across study I male and female (%).....	111
Table 4.25: Research Question 4.2.b: Comparison across case study II male and female (%).....	112
Table 4.26: Research Question 4.2.c: Comparison across science and engineering student for both cases (%)	113
Table 4.27: Research Question 4.2.c: Comparison across case study I science and engineering students (%).....	114
Table 4.28: Research Question 4.2.c: Comparison across case study II science and engineering students (%).....	115
Table 4.29: Research Question 4.2.d: Comparison across students ethnic origin (%)	116
Table 4.30: Research Question 4.3.a: Comparison across years of education for both cases (%)	119
Table 4.31: Research Question 4.3.a: Comparison across years of education for case study I (%).....	120
Table 4.32: Research Question 4.3.a: Comparison across years of education for case study II (%).....	121
Table 4.33: Research Question 4.3.b: Comparison across gender for both cases (%)	122
Table 4.34: Research Question 4.3.b: Comparison across case study I male and female (%).....	123
Table 4.35: Research Question 4.3.b: Comparison across case study II male and female (%).....	124
Table 4.36: Research Question 4.3.c: Comparison across science and engineering students for both cases (%)	125
Table 4.37: Research Question 4.3.c: Comparison across case study I science and engineering students (%).....	126
Table 4.38: Research Question 4.3.c: Comparison across case study II science and engineering (%).....	127

Table 4.39: Research Question 4.3.d: Comparison across students' ethnic origin (%)	129
Table 4.40: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward English as a Medium of Instruction.....	130
Table 4.41: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward English as a Medium of Instruction.....	133
Table 4.42: Research Question 1: Comparison across teaching staff case 1 & 2 (%)	137
Table 4.43: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Standard Arabic as a Medium of Instruction	138
Table 4.44: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Modern Standard Arabic as a Medium of Instruction.....	141
Table 4.45: Research Question 2: Comparison across teaching staff case 1 & 2 (%)	145
Table 4.46: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction.....	146
Table 4.47: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction	149
Table 4.48: Research Question 3: Comparison across teaching staff case 1 & 2 (%)	153
Table 4.49: Research Question 4.1.a: Comparison across teaching staff's education(%)	155
Table 4.50: Research Question 4.1.b: Comparison across gender for both cases (%)	158
Table 4.51: Research Question 4.1.b: Comparison across case study I male and female (%).....	159

Table 4.52: Research Question 4.1.b: Comparison across case study II male and female (%).....	159
Table 4.53: Research Question 4.1.c: Comparison across teaching staff's college of teaching for both cases (%).....	161
Table 4.54: Research Question 4.1.c: Comparison across case study I science and engineering teaching staff (%)	162
Table 4.55: Research Question 4.1.c: Comparison across case study II science and engineering teaching staff (%)	162
Table 4.56: Research Question 4.2.a: Comparison across education (%).....	164
Table 4.57: Research Question 4.2.b: Comparison across gender (%).....	166
Table 4.58: Research Question 4.2.b: Comparison across case study I male and female teaching staffs (%).....	167
Table 4.59: Research Question 4.2.b: Comparison across case study II male and female teaching staffs (%).....	168
Table 4.60: Research Question 4.2.c: Comparison across teaching staff's college of teaching for both cases (%)	169
Table 4.61: Research Question 4.2.c: Comparison across case study I science and engineering teaching staff (%)	170
Table 4.62: Research Question 4.2.c: Comparison across case study II science and engineering teaching staff (%)	171
Table 4.63: Research Question 4.3.a: Comparison across education (%).....	173
Table 4.64: Research Question 4.3.b: Comparison across gender for both cases (%)	175
Table 4.65: Research Question 4.3.b: Comparison across case study I male and female teaching staff (%)	176
Table 4.66: Research Question 4.3.b: Comparison across case study II male and female teaching staff (%)	176
Table 4.67: Research Question 4.3.c: Comparison across teaching staff's college of teaching for both cases (%).....	178

Table 4.68: Research Question 4.3.c: Comparison across case study I science and engineering teaching staff (%)	179
Table 4.69: Research Question 4.3.c: Comparison across case study II science and engineering teaching staff (%)	179
Table 4.70: Students Themes on English Medium Instruction	183
Table 4.71: Students Themes on Modern Standard Arabic	186
Table 4.72: Students Themes on Arabic/English Bilingualism	188

List of publications

Peer reviewed journal papers:

- 1 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2011). "Higher education in Libya, System under stress". *Procedia – Social and Behavioral Sciences*, 29, pp742 751
- 2 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2012). "A Comparative Study of the Implementation of EMI in Europe, Asia and Africa". *Procedia – Social and Behavioral Sciences*, 47, pp1417-1425
- 3 - Tamtam, A., Gallagher, F., Naher, S. and Olabi, G., A. "The Impact of Language of Instruction on Quality of Science and Engineering Education in Libya: Qualitative Study of Faculty Members". *European Scientific Journal*, Vol 9, No 31.

Conference papers:

- 4 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2010). Bilingual Education for Libyan Engineering Education and Twenty First Century Challenges, *The Third Academic Symposium of Libyan Students in UK*. Sheffield Hallam University, UK. June 2010.
- 5 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2010). Implementing English Medium Instruction (EMI) for Engineering Education in Arab world and Twenty First Century Challenges, *International Symposium for Engineering Education*, University College Cork: Ireland. July 2010.
- 6 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2011). Quality Assurance in Irish Higher Education as a Sample, *AROQA 3rd Annual Conference "Towards Harnessing Quality in Education and Research: Challenges and opportunities"* University of Wales Institute, Cardiff, UK. June 2011

Poster presentation:

7 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2011), Students Attitudes toward English Medium Instruction in Libyan Higher Education System, *Third All Ireland Conference for Doctoral Researchers in Education*. UCD, Ireland. May 2011.

8 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2011), Teaching-Staff Attitudes toward English Medium Instruction in Libyan Higher Education System, *2nd Faculty Research Day*. DCU, Ireland. Sep 2011.

9 - Tamtam, A., Gallagher, F., Olabi, G., A. and Naher, S. (2012), Students Attitudes toward Bilingual Education in Libyan Engineering Education, *3rd Faculty Research Day*. DCU, Ireland. Sep 2012.

Abstract

This comparative and analytic study in two universities, Al-Jabal Al-Garbi University and Nasser International University in Libya, addressed and investigated the attitudes and preference of Libyan students and teaching staff toward the use of English, Standard Arabic or English Arabic Bilingualism as medium instruction in science and engineering education. It further investigated the relationship between attitudes toward language of instruction and students\teaching staff background variables such education, gender and language proficiency and lastly, the impact of language of instruction on quality of science and engineering education in Libya.

The formerly published literature and studies were consulted to gather as much information about the topic as possible and to provide a solid base for the current study. Researcher adopted a mixed methodology, both quantitative and qualitative approach: Questionnaires and Interviews. Questionnaires were collected from both teaching staff and students of respective universities with prior consent and information about the study. Quantitative data is analyzed using SPSS software 17. Interviews were conducted from the teaching staff of both universities in order to gain in-depth insight on the topic of research and the collected data was analyzed by using Manual Coding Method.

The result of collected data from Al-Jabal Al-Garbi University showed that students tend to favour Arabic-English Bilingualism, then Standard Arabic as a medium of instruction while students of Nasser International University tend to favour Arabic-English Bilingualism, then English. The teaching staffs of both the universities tend to strongly favour Arabic-English Bilingualism and English, and Standard Arabic was least preferred. The interview data showed that teaching staffs appreciate mostly English as a language of instruction, since it is the international language. English was recognised as important and necessary for a number of reasons, such as it has an impact on quality of education, its being the language in which most science and engineering text is written, most textbooks and journals are written, most data published online, and English opens many opportunities for future progress and development for both individual level and national level as well. On the basis of findings of the research conclusions are drawn and recommendations are made.

CHAPTER - 1

1. INTRODUCTION

1.1 Study Background

Libya was granted its independence by the United Nations on 24 December 1951. It was described as one of the poorest and most backward country of the world, (Wallace and Wilkinson 2004).The Transitional National Council of Libya was established as an Executive Board after the Libyan revolution on Gaddafi regime in February 2011 to act as the political face of the state of Libya, Talmon (2011). Libya is located in the centre of North Africa facing the Mediterranean to the North coastline of close to 2000 kilometres, borders Egypt and Sudan to the East, Niger, Chad and Sudan to the South and Algeria and Tunisia to the West. Libya has an area of 1.8 million square kilometres; it is the third largest among the countries of Africa and seventeenth among the countries of the world. The population of Libya is approximately 6.5 million includes 1.7 million students (The World Factbook 2011), most lives in the North of the state. Arabic is the official language, other languages used as dialects, (Hamdy 2007).



Figure 1: Map of Libya

Source: World Factbook 2011

The Libyan higher education system is very modern if it is compared to other developing countries that there were almost no higher education at all in the last 6 decades, while today education is free for all at all stages and the participation rate is extremely high in undergraduate level (National report presented to UNESCO 2007). Any system growing at that rate faces pressures and challenges. Over the period of 1980s and 1990s, the system faced many problems, particularly in the use of language of instruction and changes of the education system, (Tamtam et al 2011).

In recent years, Libya opened for investment and businesses over the world, and many foreign companies entered Libya for investments. Today, Libya as a republic country, the higher education students' and teaching staff voice, perceptions and attitudes are very important for the Ministry of Education, the policy and decision makers, especially in relation to the fields of science and engineering education.

1.2 University and Higher Vocational Education

Students who complete specialized secondary education may enrol in one of the university faculties suited to the specialized secondary certificate they hold. Higher education is free, only those who enrol in Open University or private higher education require tuition fees. Students can enrol in higher technical and vocational institutions as well, which include polytechnics; higher teacher training institutes; higher institutes for trainers, higher institutes of technical, industrial and agricultural sciences. Requirement for admission in science and engineering faculties is that students must have completed the specialized secondary education in the field of sciences or engineering with 60% marks or over.

Table 1.1: Enrolment in University Education after getting the specialized secondary education certificate

Source: National Commission for Education Culture and Science, (2008)

Division	University Faculties the students enrol in
Basic Sciences	Sections of faculty of science: Math, Statistics, Physics, Earth Sciences, Computing, Meteorology, Teacher Training College, Higher Vocational Training Centres
Engineering Sciences	Various Sections of the Faculty of Engineering, and Teacher Training College, Higher Vocational Training Centres
Life Sciences	Medicine, Dentistry, Pharmacy, Veterinary, Medical Technology, Teacher Training College, Higher Institutes of Health, Faculty of Science Departments (Plant and Animal)
Economic Sciences	Economy, Accounting, Administrative Sciences, Teacher Training College, Higher Vocational Training Centres
Social Sciences	Literature, Law, Political Sciences, Physical Education, Arts and Media
Languages	Language Departments, Faculty of Arts, Teacher Training College

1.3 Significance of the study

The importance of this study stems from its knowledge and information, which will throw light to support future development in the use of language of instruction in higher engineering and science education in Libya. After finishing this research, it is hoped that the result will provide Libyan educators with new understanding of the issues relating to the usage of language of instruction in higher engineering and science education, and students attitude to it. It will also provide the Ministry of Education and the policy makers with new information related to the issues of language of instruction in science and engineering education, which will need to be considered in addressing future policies in higher education. It is hoped that the result will also open more ways for future research in general education in the Libyan context.

1.4 Aim of the study

The main problem in most developing countries is the qualities of higher education and as there are:

- ❑ Limited research previously conducted on language of instruction.
- ❑ Need to provide base platform for future researchers.
- ❑ Lack of questions/tools for research covering the topic.

Therefore the aim of this study:

- **Investigate and understand university students\teaching staff**
 - Attitudes and beliefs toward language of instruction in science and engineering.
 - Possibilities of using English, Modern Standard Arabic or Arabic/English as bilingualism.
- **Investigate the relationship between attitudes toward language of instruction and**
 - Students' variables such as education, gender, college of studying and ethnic origin.
 - Teaching staff variables such as education, gender and college of teaching.
- **The study may help**
 - Key decision-makers in the Ministry of Higher Education in Libya.
 - Understand the effects of language of instruction type on quality of education.
 - Formulate questions for further research.

1.5 Research Questions

1 – What are attitudes of students\teaching staff towards the use of English medium instruction in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 1

H₀: Are students/teaching staff attitudes toward the use of English as medium of instruction in science and engineering education in Libya in both the cases same?

H₁: Are students/teaching staff attitudes toward the use of English as medium of instruction in science and engineering education in Libya in both the cases different?

2 - What are attitudes of students\teaching staff towards the use of Modern Standard Arabic in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 2

H₀: Are students/teaching staff attitudes toward the use of Modern Standard Arabic as medium of instruction in science and engineering education in Libya in both the cases same?

H₁: Are students/teaching staff attitudes toward the use of Modern Standard Arabic as medium of instruction in science and engineering education in Libya in both the cases different?

3 - What are the attitudes of students\teaching staff towards the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 3

H₀: Are students/teaching staff attitudes toward the use of Modern Standard Arabic/English Bilingualism as medium of instruction in science and engineering education in Libya in both the cases same?

H₁: Are students/teaching staff attitudes toward the use of Modern Standard Arabic/English Bilingualism as medium of instruction in science and engineering education in Libya in both the cases different?

4 – What is the relationship between attitudes toward the language of instruction and students\teaching staff background variables such as education, gender, college of studying\teaching and ethnic origin?

Following Hypothesis have been made for Research Question 4.1

H₀: Do students/teaching staff with different education have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different education have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different gender have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya

H₁: Do students/teaching staff with different gender have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different college of studying/teaching have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different college of studying/teaching have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students with different ethnic origin have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different ethnic origin have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 4.2

H₀: Do students/teaching staff with different education have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different education have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different gender have same attitude toward English as a Medium of Instruction in science and engineering education in Libya

H₁: Do students/teaching staff with different gender have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different college of studying/teaching have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different college of studying/teaching have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students with different ethnic origin have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different ethnic origin have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 4.3

H₀: Do students/teaching staff with different education have same attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different education have different attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different gender have same attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different gender have different attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students/teaching staff with different college of studying/teaching have same attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students/teaching staff with different college of studying/teaching have different attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₀: Do students with different ethnic origin have same attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different ethnic origin have different attitude toward Arabic/English bilingualism as a Medium of Instruction in science and engineering education in Libya?

5 – What is the impact of language of instruction on quality of science and engineering education in Libya?

1.6 Definitions

1.6.1 Attitude

Attitude involves on evaluation a positive, negative or mixed reaction to something or someone beliefs and feelings and values and dispositions to act in certain ways

1.6.2 Attitude toward language of instruction

Student beliefs about the language in which engineering and science education curricula should be taught.

1.6.3 English Medium Instruction

It is a method that uses English as the primary medium of instruction in teaching, in particular where English is not the mother tongue of the students.

1.6.4 Modern Standard Arabic

It is a variety of Arabic language which has been modernized to make it applicable to the needs of modern life (newspapers, political speeches, televisions, radios etc) and that is most often used as the medium of instruction in education.

1.6.5 Bilingual

Bilingualism can be termed as having knowledge of two different languages. It does not mean that the person should be flawless in a given language; the point is to have reasonable knowledge of a language other than the mother tongue

CHAPTER - 2

2. REVIEW OF THE LITERATURE

Modern world is changing at an unprecedented pace, most importantly education world is changing rapidly. Today, changes in the field of education are most important. Education is a principal factor for national success and progress. Constant modification is required not only in classrooms but also in teaching methods and government education policies. Educators worldwide are continuously evaluating the most appropriate teaching strategies to meet ever changing needs of education systems. All this is done to prepare individuals for the ever intensifying and diversifying world, a global village.

All over the world governments and educators are constantly trying to cope with technological, economical and social changes by restructuring their educational policies. The striking changes in the education world are bound to create many challenges. First and foremost issue is balancing old and new policies and teaching methodologies to avoid traditional, social or religious clashes.

Governments, all over the world, are also trying to restructure their educational, economic and social policies to cope properly with the explosion of technological, economic and communal changes. According to Graddol (2006), we are ensnared in a never ending competition for constant upgrading and training of individuals.

Equally, same challenge is faced by Libya to ensure that its students are prepared and trained in an effective manner to meet escalating demands to meet new world order called globalization, without disrupting beliefs and traditions. This chapter looks at the spread of English in Libyan educational scene, its current position and the associated challenges especially the use of English as the Medium of Instruction (EMI) in academic institutions.

2.1 Globalization and English

Crystal (2003), an expert on the evolution of English language, in his book *English as a Global Language* states that “This is the first time we actually have a language spoken genuinely globally by every country in the world”. A linguist, John McWhorter (2001) stresses the argument above and states that “English is dominant in a way that no language has ever been before...it is vastly unclear to me what actual mechanism could uproot English given conditions as they are.”

English has become the most used language of internet globally. According to another linguist David Graddol (1997), English has secured its supremacy as the language of the Internet, where 80 percent of the world’s electronically stored information is in English. “English has become the second language of everybody. It’s gotten to the point where almost in any part of the world to be educated means to know English”, (Warschauer, 2000).

Globalization and English language are intermingled and woven together in such a way that we can really create a new concept of a globalized language. According to Phillipson (2001) English plays a very important role in making the concept of globalization progress. Further Bamgbose (2003) comments that globalization functions as a driving force to strengthen the position of English as a global language. We can safely conclude that globalization and English are both strengthening each other position and we can justly say that essentially English individually is the language of globalization, Graddol (1997).

English is considered the universal language for its worldwide presence, although English does not rank first in terms of the number of native speakers (Kitao, 1996). Yet, English is the most dominant language, as it serves as a bridge for communication in countries which inhabit diverse cultures and ethnicities particularly Hong Kong, Singapore, Nigeria, etc. (ibid.).

Kitao (1996) stresses that the relevance of teaching English is not in its number of speakers but in the role it serves. English plays a significant role in all sectors, namely science, engineering, business, government, education, politics, law, entertainment, and communication etc. It is the chief language of information

technology and communication. Over the years, the English language has been most widely read (ibid). It is the language of many global publications which provides a window to the world.

According to Al-Khwaiter (2001), English serves an important part of the information age. All the developed countries provide all modern technology and research mainly in English and developing countries rely on English to acquire the modern technology. Therefore, English provides a link between the developing and developed world's cultures, technology, innovation and research.

Globalization and English both work as a joined factor in increasing jobs and employment opportunities. English plays an all the time more vital role in the job market (Shields and Price, 2002; Tainer, 1988). Accordingly, Shield and Price (2002) conducted a study in United Kingdom which revealed higher hourly wages among non native ethnic immigrants with English speaking fluency. English language proficiency has major positive effect on income (Tainer, 1988).

2.2 Globalization in Higher Education: Engineering Education

Globalisation, in the context of education, can be defined as the integration of information, ideas and knowledge. The term 'Globalisation' was primarily associated with economics. However, its usage is now common in the field of education, De Wit (2002). Globalisation brings the cultures of different countries together. When it comes to education, the effect of globalisation can be felt in terms of languages and technology; it is currently considered that globalisation has made English the common medium of communication in most countries, De Wit (2002). According to Zughoul (2003) the English language has become entrenched in the Arab world, especially after the Second Gulf War 2003.

New technologies are encouraging mergers at a global level. Industries and businesses are becoming international. Engineering problems of the next generation will deal with global issues, and solving complicated tasks. Future engineers must have the ability to combine their knowledge and make connections across different areas and disciplines. In order to become an integral division of the global environment, the educational institutes must modify academic programs, and

consider their relevance to the requirements of the knowledge based society. Educators recommend applying the integrated approach for academic programs as common policy for studies, Stukalina (2007). According to (Bey et al. 2008) the effects of globalisation can be observed in industry and trade. More technical expertise is needed join the globalised industry, in which the integrated technology exists. For this reason it is required that the educational system of engineering should be improved and developed. Students of engineering now face new responsibilities, duties and skills, and the ability to demonstrate competency are a pre-requisite for future employment. The engineers of the next generation need to be able meet the requirements that have been set by globalisation. Therefore, it would not be wrong to say that globalisation has totally changed the vision of engineering studies, (Bey et al. 2008). Globalisation has also provided infrastructures to abate the solving of the complexities and uncertainties regarding any issue. It is of the utmost priority, therefore, that present teaching methods, which are based on outdated, rigorous approaches, be transformed and improved on. In order to produce a more creative, flexible dynamic that is both reflective and matched to current global needs, Zahlan (2007).

The 21st century has introduced many challenges in engineering education. Information technologies hold out the promise of new scientific discoveries, higher standards in communication and increased production, and leading to a higher quality of life. The most important challenges to engineering education in the Arab world are the levels of access to information and the quality of education. Problems are currently found in curricula and teaching methods. Lack of access to computers, the internet, and electronic equipment, as well as teaching staff shortages, are many of the main problems (UNESCO 2003).

Globalisation has made English the common medium of communication in most countries. According to Jones and Oberst (2007), restructuring and reformation is consistently required throughout the world. Higher education helps to prepare the professionals who will be responsible for handling markets and industries (Jones and Oberst 2007). Thus, at this level, innovative technologies are needed to meet the requirements of globalisation. The Arab world has tried its best to promote

engineering studies. They also tried to develop engineering programs that can be favourable for women (Jones and Oberst, 2007).

Arab countries initially found it to be a great challenge to adapt to the global standard level of quality in the field of engineering (Shaw, 2003). They tried to develop engineering programs that would be favourable for all, as they wanted more people to take part. Initial results were positive after the implementation of education programs that were aimed at improving the level of engineering studies. Some Arab countries are now able to produce skilled engineers in all areas. Such changes are important not only in the educational sphere; they also reflect a desire on the part of those Arab countries to educate their people to move in the political, social and economical environment (Jones and Oberst, 2007). The education of the next generation is very important for any country. Arab countries have developed very rapidly, so the future of these countries totally depends on the education of its young people.

A report issued by the World Bank (2006) shows that majority of Arab countries, who benefited from oil and other natural resources over the past fifty years, primarily utilised foreign labour in the exploitation of such industries. Immigrant workers, especially in the engineering fields, were hired in large numbers to develop these industries, and the majority of specialists within these fields were non nationals. A study by Al-Jarf (2004) and other studies on teaching medical, science and engineering education in Arabic medium of instruction, including Muhaidib (1998) cited in, Al-Jarf (2004), showed that there was a negative effect on engineering graduates, this is because lack of translations of books and scientific and engineering research in Arabic and that the industrial market preferably who knows English.

Arab countries need to develop a robust engineering curriculum. Most of these countries are now trying to overcome this issue by introducing courses that can enhance English proficiency abilities of students as well as instructors (Zughoul, 2003). Arab governments are attempting to enhance education systems by looking at ways of meeting global challenges. Governments are concentrating on higher level education, with particular emphasis on the engineering sector and have reformed the systems so that they can meet international requirements. Most of

Arab higher institutes are concentrating on the implementation of EMI in educational system so that the graduates of engineering will be able to meet the challenges that are faced by engineers (Al-Jarf, 2004). It can be observed in most Arab countries that foreign companies hold a large stake in their respective economies, whilst their own people only make investments. Restructuring is needed in the educational system of the engineering institutes in order to make positions in engineering and other higher education more accessible, available, and widespread (UNESCO, 2008).

2.3 Linguistic, Religious and Cultural Aspects of Libya

Libya is located at the east of Greater Maghreb (Libya, Tunisia, Algeria and Morocco). Facing the Mediterranean Sea in the north, and many of the African countries in the south, Libya, throughout its history, has been the target of repeated invasions and conquests by Greek, Phoenicians, Arabs, Ottomans and Western Europeans. All these civilisations have deeply influenced Libya and contributed to its linguistic and cultural aspects to make the complex of multilingual today (Falola and Morgan et al., 2012).

The Arabic language and culture were brought to Libya by Arabs during the seventh century. Arabic speaking Muslims of mixed Arab and Berber ancestry probably make up well over 90% of the country's population. Berber, other indigenous minority people and black Africans account for most of the remainder (Obeidi, 2001).

Majority of the Libyan people are native Arabic-speakers and thus consider them to be Arabs. Arabic, a Semitic language is the mother tongue of almost all peoples of North Africa and the Middle East. Three levels of the language are distinguishable: Classical, the language of the Quran; Modern Standard, the form used in the present-day press; and the regional colloquial dialects. In Libya classical Arabic is used by religious leaders; Modern Standard Arabic (MSA) appears in formal and written communication and sometimes in the schools (Obeidi, 2001)

Socio-cultural aspects have been recognized as important determinants for education, economic and technology development in Arab countries in general, and

Libya in particular. These aspects play a significant role in the struggle for the country's development. Arabic culture and Islamic rules are the most dominant elements in Libyan society in individual and group behaviour, social values, beliefs and attitudes, state laws, and political and education policies. In Libya, as in most Arabic and Islamic countries, family, religion and language have a huge impact on the attitudes and behaviour of the people (Farley, 1971).

Abuznaid (1994) argues that religion has a great impact on human behaviour, social interactions and social relations. Islam as a religion and as a way of life has an influence on the political, economic and educational system as well as other cultural aspects of Arab and Muslim societies.

Regarding development in education during the 1950s, the government realised that education had to be developed because of its effects on all other aspects of life; therefore both the numbers of pupils and the number of schools were increased and many faculties, in different subjects, were opened (Muftah, 1982). For example, through the 1960s and 1970s there were remarkable increases in the numbers of pupils and students at all levels of education. Thus, Libyan education programmes were responsible for preparing a large number of people to work in administrative posts in public enterprises, reflecting the high level of financial support allocated for this purpose. However, there was no proper coordination between these programmes on the one hand and many important issues, such as manpower planning and the country's culture on the other, and this influenced the degree of success in educational development (Farley, 1971).

As a result of these efforts, nevertheless, manpower input to the Libyan public sector increased from 454,100 students in 1975 to 678,400 students in 1985, an increase of 49 % and further to 861,800 students in 1989, an increase of 27%. Also, the percentage females within the total Libyan workforce increased from 6.2% to 17.4% through the period 1970-89. Most of these women were employed in education, health services and administration activities (Gannous et al., 1989). However, in spite of increasing the output of education and training, different sectors are still in need of specialised and qualified manpower and expertise to work in many activities, especially in high administrative positions and oil companies.

Therefore, the country still depends on non-Libyans to work temporarily in different activities.

2.4 Tamazight (Berber)

The indigenous language spoken by the inhabitants of Libya before the Arab invasion called Tamazight. In Libya as well as Tunisia, Algeria and Morocco, The Europeans called them Berber, Marley (2003), Ilahiane (2006) , the people who speak Tamazight, called Imazighen (singular Amazigh), which means a free man. Although Tamazight has many different dialects, in Libya, most of Imazighen Live in western Libya in Nafosa Mountain (Western Mountain), border of Tunisia and Algeria.

2.5 Arabization

Following the independence of Libya in December 1951, Arabic became the official language of the newly United Kingdom of Libya. It gained the status of national policy of Libya. Arabization means restoring Arabic to dominant position in Libyan life. It means that in education, Arabic should be the language of instruction and foreign languages may be used in some specialist fields. First university was established in 1958 under the name of Libyan University, and many Islamic institutions were opened during the period 1956-1961, then these institutions were merged in a single university called the Islamic University of Mohamed Ali Al-Sanusi (Muftah, 1982). Therefore Arabization was the official policy of the state, characterised in higher education during the kingdom period (1952-1969), as largely Arabic/English bilingual or English monolingual. These were same in many Greater Maghreb countries, as Benadi (1980) stated that Algeria has adopted Arabic as a language of instruction since the country's independence in 1962, and most schools still teach in Arabic/French bilingual or French monolingual. Another study by Morsly (1984) as cited in Suleiman (1994) stated that although Arabization had resulted in a decline in the use of French, French is still widely used in Algeria and is the dominant language in technology, science and engineering in higher education.

One of the central contradictions of the linguistic Arabization policy of Libya is that the official language, MSA, although having the status of a written language, is not an indigenous language (Ennaji, 1991; Cote, 2006). Most Libyans speak dialectical Arabic. Berbers (Amazigh) speak both Berber and dialectical Arabic. For Berber, Libyan Arabic becomes a second language. MSA is a language of structure that is formally similar to Classical Arabic, which is used for Islamic (Holly Quran) purposes only. However MSA has a very similar syntax to the English language of verb-subject-object, MSA is based on Classical Arabic, (Farghaly and Shaalan 2009). Ennaji (1991) has described Modern Standard Arabic as codified, standardised, and possessing historicity, but lacking the vitality of Dialectical Arabic.

MSA, in oral and written form is used as a language of wider communication among Arabs for a range of communicative situations in business, media, politics and education. The three Arabic languages (Classical, Standard and local dialectal varieties) are triglossic as represented in figure 2 below, which means using three different speeches in different situations, Ennaji (2005).

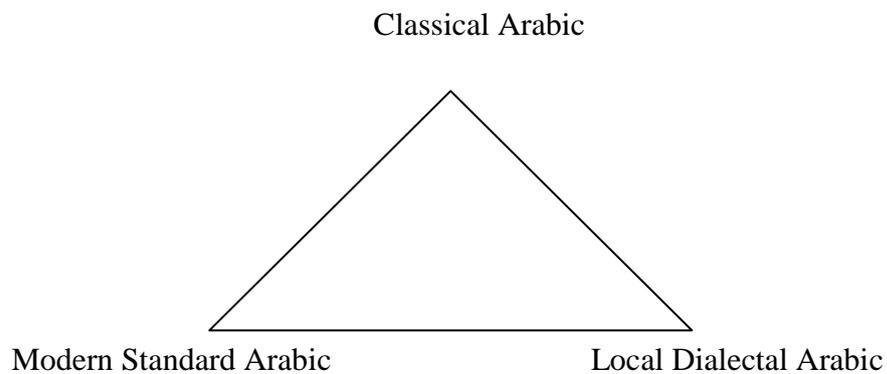


Figure 2: Triglossic representation of Arabic

In countries where Arabic is spoken, local dialects rather than MSA are the languages used internally, Amin (2009). Local Dialectal Arabic varies from country to country in such a way that speakers from one dialect can understand speakers

from other dialects to a limited extent. In Libya, Libyan Arabic is the most common dialect, spoken by almost all Libyans and it varies from the three main regions of the country (Tripolitania, Cyrenaica and Fezzan), with the exception of monolingual Berbers, Libyan population estimated of 90% speaks Libyan Arabic (Pereira, 2007; Cutajar, 2007). Libyan Arabic is grammatically and lexically simpler than MSA. It also includes Turkish, Italian, English and Berber loan words. Nevertheless, in comparison with MSA and English, Arabic dialects have low status and prestige (Pereira, 2007).

MSA, because of its widespread use in education and media, does have the probable to become a living language. At present, however, there is a lack of communication and agreement among Arabic countries over the direction and development of MSA (Al-Jarf 2008; Tamtam et al 2010).

The issue of whether or not MSA is suitable for the teaching of science and engineering has not been resolved (Al-Jarf, 2004). Some Arabian researchers, especially from Greater Maghrib and the Middle East, think that MSA is unsuitable for the instruction and communication of scientific and technological concepts, the fact that scientific translation, problems in standardising scientific terminology, and the shortage of staff to engage in Arabization and translation activities, the existence of materials and references in most fields especially in science and engineering are limited (Taha, 1990; El-Hassan, 1992; Ennaji, 2002; Kareosh, 2008). They criticised MSA for its problems with scientific terminology. By contrast, others have pointed out that in the middle ages, Arabic was the language of science and could become that again (Amin, 2009).

The advantages of MSA as a language of instruction are that people think that it has an Islamic dimension and that it appeals to nationalist, and identity (Ennaji,1991; Kareosh,2008). Because of its borrowing from western languages it can take on functions of modern language and be used in science and engineering senses. The major advantage is that, since MSA was developed artificially to accommodate the realities of the modern world and globalisation, it is dependent on western language, and therefore derivative (Amin, 2009). This artificiality makes it second-level as a language of science and engineering since the actual scientists and developers are using other languages, and there is a gap between the time a new concept is

developed and the time when it is translated into MSA (El-Hassan,1992; Al Moghani,2003; Al-Jarf,2008; Kareosh,2008;Tamtam et al 2010).

2.6 History of English Language in Libya

According to Al Moghani (2003), teaching of English as a foreign language in Libya dates back to the mid 1940's, following the end of World War II. Once the British occupation began to administer the northern part of the country, they started to organize intensive English language courses. Swaeih (1984) states that the first English language series used in Libya were *The Basic Way to English*, written by KC. Ogden in 1930. This series comprises of four textbooks, supported by four teacher's guide books. Besides this series, another reading comprehension textbook entitled: *Basic Reading Book*, by L.W. Lockhart (1940), were used by the upper classes. The traditional method that focused on teaching grammatical rules and memorising vocabulary with translation was the predominant method at that time. Reading and writing were also emphasized since they were considered the basic language skills. This series was replaced by a new one called *New Methods*, written by Michael West 1926, who was then an English language inspector in Libya. This series, to some extent focused in terms of content on Arab culture. Compared with the previous series, its cultural content made it more suitable for Libyan learners. This series was used until the late fifties.

In the 1960's, Libyan education officials along with English language teachers and experts felt the need for a new English language programme and textbooks. This need led a Libyan English language expert, Mustafa Gusbi, to write a new series entitled: *English for Libya 1965* (Al Moghani, 2003). The series included three textbooks, Book 1, 2 and 3; as well as three workbooks and three teacher's handbooks. These three books were designed for the preparatory level that is grades 7 – 9. For secondary level, according to Albukbak (2008), the series entitled *The Oxford English Course for the Republic of Iraq*, written by A.S. Hornby and S. Hakim in 1967, was used. This course was adopted in Libya until the academic year 1970-71, when it was replaced by a new Libyan series also written by Gusbi in cooperation with Ronald John which was called *Further English for Libya 1970 - 1977*. This series was designed to be a continuation of its predecessor *English for Libya*. Gusbi used, in the second series, similar methods and techniques to those he

employed in the preparatory one. He also accompanied the series with teacher's handbooks as a guide book. Instead of the local situations which tackled agriculture as a major topic that he adopted in the first series as a framework for teaching vocabulary and reading, Gusbi turns in the second series to English culture as a vehicle for teaching English language. The series included two textbooks, Book 1 and Book 2, designed for the first and second year in secondary schools. For the 3rd year of secondary school, students in each section, literary and scientific, studied textbooks according to their specialisation. This process continued at both the preparatory and secondary stages until 1986.

When the Ministry of Education issued a resolution to suspend teaching any foreign language in schools in 1986 as part of the Arabization campaign in conjunction with another resolution to burn European musical instruments which were eliminated as a sign of Western culture, teaching English in Libyan schools stopped for seven years and only resumed in 1993 (Al Moghani 2003; Albukbak, 2008). At this point the previously mentioned course, *Living English for Libya*, was assigned for both the preparatory and secondary stages. In 1999, a completely new series of books for a new course named *English for Libya* was published. This series was designed to match the changes in secondary education system and adopting the new system of specialised secondary schools.

Libya has been left behind in socio-educational progress due to issues explained by Findlow (2005, p. 286), “the accessibility of reliable information and sensitivities about applying a universalism perspective to analyzing the region – largely connected to such considerations of modernity”. Lately, education especially English is getting increasing importance in Libya after the Gaddafi regime which previously considered it uncivilized and banned it on all levels. The dramatic changes in Libya are bound to be paralleled by many challenges. In the field of education, one of the most important issues: What is the most appropriate language of education from primary to tertiary levels?

Presently, educational reforms are essential and main part of regional and national economic progress in Libya. These reforms aim to make education and literacy consistent and eliminate disparity on national level in Libya and it is hoped to catch up with the developed world by implementation of educational restructuring and

reforms. By improving prospect for quality education, Libya aims to raise levels of literacy and to provide 'Education for All' (The World Education Forum, 2000). Educational development has also enormously increased academic opportunities at elementary, secondary and especially on the higher tertiary levels in Libya. Religion and culture have always had dominance in Libya which goes side by side with these reforms in education. Being an Islamic state the Arabic language has enjoyed supreme position in both politics and education of Libya throughout history. Educators are now trying to strike balance between the needs of modern world and old norms deeply rooted in the socio- political and educational system of the state.

2.7 The Importance of Teaching English in Libya

It is believed that ability to communicate in English will bring many advantages to developing countries. Socio-economic, industrial and technical progress is linked with the ability to comprehend modern global tool to communicate, which certainly is English. Many Asian countries such as China, Thailand and Malaysia etc, have recently shown great progress and undoubtedly provide encouragement to other developing countries in the East such as Libya. Similarly, Qatar a modern and developed country stimulates other Arab countries to take similar steps toward development. While these countries have proven success in economy, the efforts they have made towards English language teaching are remarkable and an ongoing process.

In terms of educational progress and development, Arabian Gulf countries have shown incredible change in a relatively short period of time. Countries like United Arab Emirates are modern and highly technological societies and now are competing on international level. The promising education systems of the GCC States (Gulf Cooperation Council) are showing tremendous increase in student numbers (Syed, 2003; Mazawi, 2007) and academic institutions reflects educational growth and development and education as modern globalized phenomena. This enormous educational development has made it a field of international commerce, with many competitors working neck to neck.

The quality of education is the key factor for Arab countries' socio-economic development and empowerment. Governments, now spend half percentage of their

annual budgets on education to recognize the need for modernization like West (Kirdar, 2007). A new curriculum is being introduced from the developed West and eventually with them comes the English language and native English speaking faculty and staff to run these newly developed and demanding institutions. Modernization and growth have directed the use of the English language and which needs English to be used as a medium of instruction in many, if not the majority, of these academic institutions. It seems that the “English factor” as Graddol (2006, p.20) explains, “is found in virtually every key macro trend” that has happened across the world, including “the reform of education in universities and schools”.

English as a global or international language has stimulated international debate and a great deal of research (Alptekin and Alptekin, 1984; Kachru, 1992; Kramsch, 1993; McKay, 2002; Ahmed, 2010). The argument on the teaching of English to non native speakers has revolved around whether teaching English means teaching English culture or including the culture of the students involved.

Linguists have two views regarding this issue. Firstly, language learners and language is free of bounds of cultures and countries (McKay, 2002). Secondly, it is necessary to expose learners to the culture associated with language to enhance learning experience (Alptekin and Alptekin, 1984; Adaskou, Britten and Fahsi, 1990; Kramsch, 1993; Asraf, 1996; McKay, 2002; Zughoul, 2003; Ahmed, 2010). But, many researches show that students want to learn English without “the cultural load of the target language” (Alptekin and Alptekin, 1984, p. 17). It is also believed that English should not replace other languages but should serve as an integral part of bilingualism (Brutt-Griffler, 2002).

Secondly, culture and social perspective should be included as a vital part to teach second language (Damen, 1987; Byram, 1994; Valdes, 1990; Stern, 1992; Seelye, 1993; Peck, 1998). It is believed that students should learn the “culturally appropriate behaviour” that goes with the language (Peterson and Coltrane, 2003, p. 2).

Hence, language teaching without associated culture background “can become communicatively and culturally vapid” (Oxford, 1994) and learning process losses its impact and purpose (Peterson and Coltrane, 2003). According to Graddol (2006,

p.13), ethical, political and cultural issues are also a part of English being used globally. It gives a new perspective to globalization of economics, culture and language.

Libyan teachers are working hard to make Libyan students learn in English from primary to higher education to prepare them meet the modern world effectively. Some specialized colleges and universities have started offering English medium education is a vivid proof of important role English plays in Libyan development.

2.8 Language Planning and Language Status

Haugen's (1985) idea of language planning was that of standardising a language for communication purposes in a setting (e.g. a school, a community, a nation). Yet, this conception now takes on many different shapes and forms. "language planning is generally seen as entailing the formation and implementation of a policy designed to prescribe, or influence the languages and varieties of language that will be used and the purposes for which they will be used" (Wiley, 1996, p. 108). If the purpose is for the uses and the users of a language to increase markedly, language planning should be organized taking into account the political, social, educative and economic structures in which it exists (Baker, 2006; Corson, 1999; Fishman, 2006; Ricento, 2006).

It is inevitable to notice the above-mentioned structures affect language policy(ies). Freeman (1998, p.35) rightly suggests that a "bilingual education policy is often not based on language or education issues at all...[instead,] it reflects power struggles between particular social groups with particular political interest", and, "standardisation [of language], and the orthography planning...that often accompanies it, is more often motivated by political goals than by pedagogical criteria or concern for equal educational access" (Hornberger, 1996, p.458; Copper, 1989 ; Herriman and Burnaby, 1996). Thus, the underlying purposes of LPP (Language Planning Policy) are rarely for educative reasons (Ricento, 1996, 2006a). For the part, LPP are politically and economically driven or are the result of judicial decisions.

Brief definitions of language planning types and examples of some of its goals for purposes of this dissertation are discussed below (for more explicit discussions regarding language planning see (Baker, 2006; Cooper, 1989; Corson, 1999; Fishman, 2006; Hornberger, 2006):

Fishman (2006) is a very strong advocate and defender of minority languages and minority cultures. He is also known for his writings on reversing language shift (RLS) or revival of a language. Language shift occurs when the native language spoken by a population is abandoned in favour of a language spoken by a different population as a result of extended contact between them (Fishman, 2006, Velez, 2000). Its corresponding acquisition-planning goal (Hornberger, 2006), language spread, concerns an increase in the uses of, generally, a stronger language. For example, French spread throughout Canada due to an increase in the uses of French. Reversing language shift is reviving the minority language, picking up what is left to try to reconstruct the language through language planning. Fishman's Graded International Disruption Scale (GIDS) has eight detailed stages for reversing language shift. The scale "is an aid to understanding language planning and attempted language reversal from an international perspective" (Baker, 2006, p.60; Fishman 2006).

According to Corson (1999) and Fishman (2006), minority languages worldwide are being ignored or devalued. The purpose of most acquisition planning is to reverse the previous statement and to celebrate multilingualism.

Thus, language planning is about social change (Cooper, 1989). The process also entails community wanting to keep a language alive in a setting (e.g., school, work, church, government, country, etc.) through standardization, modernization and renovation (Hornberger, 2006). Furthermore, language planning involves increasing the uses and users language. A strong bond between the language at stake and the peoples who want their languages to succeed may constitute the basis and motivation for a language policy.

In bilingual policy (ies), Ruiz (1984) posited three possible orientations regarding language (while, also suggesting there may be others): language as a problem, language as a right and language as a resource (see also Baker, 2006; Wiley, 1996).

When language is seen as a problem, assimilation and integration usually occur and minority languages tend to be ignored (Baker, 2006; Fishman, 2006; Wiley, 1996). When language is seen as a right, Kloss (1968) introduces two levels: tolerance-oriented rights where “language rights concern protection from discrimination”, and, promotion-oriented rights where a person has the right to use the minority language freely, including in all official contexts (cited in Baker, 2006, p.386). When language is seen as a resource, it refers to the development of a second language in monolingual speakers and to the preservation of minority languages (Baker, 2006, p.391).

Similarly, Wiley (1996) presents three broad types of language policies in the United States: language shift, language maintenance and language enrichment policies. Language shift represents the goal of most transitional bilingual education programs in the United States where the outcome is English monolingualism. Transitional bilingual programs view the student’s home language as a problem, if it is not English. The language maintenance policy suggests that second language learners may maintain their native language while learning the second language. Here, language is seen as a right. The language enrichment policy is one where at least two languages of instruction exist. Multiple languages are seen as resources. Wiley (1996) favours the language enrichment policy where language diversity is seen as a resource instead of as a problem.

A language carries perceptions and beliefs. As a result, language(s) must not be viewed outside of their context. Language planning at any school can be imposed, but the cultural beliefs and perceptions of the school community may be so strong that the imposition may not work. Consequently, language planning is about social change (Hornberger, 2006, p. 25). In the example above, although the purpose of the Anglo-Americans was language shift towards English, their plan did not work. Therefore, one cannot look at language planning without looking at the socio-historical context of the community being studied.

2.9 Language Attitudes

Stevens (1983) discussed Tunisians’ ambivalence toward the various alternative languages in their community. Classical Arabic is given high status among

Tunisians because of its association with Islamic religion and its function as a unifying symbol among Arabs. However, because of its high esteem and sacredness, it is not considered appropriate for use as a living everyday language which creates great difficulties when attempts are made to modernise it and adapt it to current practices. It is not spoken natively by anyone and can only be learned through formal education. The Tunisian Arabic dialect rejected as a corruption of Classical Arabic, is used in third level education. Stevens (1983), on the basis of participant observation, concluded that Tunisian Arabic is accorded high status covertly among Tunisian. It is a modern living language and expresses Tunisian authenticity. With the limitations of Classical Arabic, French is the language of the elite and has prestige. It is also a language of social distance because of its association with French colonisation, French is the most used and written language among bilinguals. Gradual Arabization in Tunisia was adopted as a social policy in 1958 when Tunisia became independent. However, Arabized high schools were abandoned in favour of bilingual ones. Critics of Arabization have argued that Arabic is not adequate for engineering and scientific concepts. Generally, Tunisians have positive attitudes toward bilingualism because it helps them to enjoy the best of both languages. Among those who are positively disposed to bilingualism, there are two major camps. One group accepts bilingualism because it is a middle ground between two unacceptable extremes. A second group views bilingualism positively, but they reject the Frenchification of the country, which is perceived as a threat.

A study by Taha (1990) reported that the language policy of Arabization in the Republic of Sudan has led to a great deal of controversy. He analysed the process in Khartoum University, in which English was the language of instruction until 1969. Although officially Arabicized, some faculties still teach in English. A study of attitudes toward English and Arabic was administered by Taha at Khartoum University, sampling 250 students and 31 faculty members. 56% of students preferred to use Arabic as the language of instruction, while 40% preferred English as the language of instruction. Thus attitude was stated much more frequently than faculty members, of whom 71% preferred English compared with 29% who preferred Arabic. 81% of the faculty members and 89% of the students preferred to read in Arabic in their free time. Both faculty members and students were critical of the implementation of Arabicization at the university. The participants thought that

there was a lack of planning and resources, especially about the availability of references and materials in Arabic. Faculty members were more positively disposed to Arabicization than the students, although both groups were generally positive in their attitudes. However, English was valued for its instrumental use. English was perceived as important for obtaining a good job after graduation and as a means of access to international communication. Implementation of Arabicization has been slowed by lack of resources, problems in standardising scientific terminology, and the lack of staff to engage in Arabicization and translation activities.

A study by Al-Jarf (2004) investigated college students' attitudes towards the teaching and learning of English and Arabic, towards using English and Arabic as a medium of instruction at university level. The participants were two groups, 272 students, male and female from science and engineering faculties at Jordan University, Jordan, and 470 female students from faculty of languages and translation at King Saud University, Saudi Arabia. All were randomly chosen. The question was which language is more suitable for teaching medicine, engineering, science pharmacy and other science fields, Arabic or English? The researchers used two methods for the study: interviews with the Jordan university students and an open questionnaire with the King Saud university students. The data collected in the study was quantitative, as the researcher conducted the main reasons for favouring or not favouring English as a language of instruction. 96% of students from Jordan University and 82% from King Saud University think that the Arabic language is suitable for teaching Arabic literature, religion studies, history and education, but the English language is suitable for teaching science and engineering. Both groups gave reasons for their responses. For favouring English, students agreed (i) that the English language is very important for technology and the development of the country, (ii) and the English language is a global language and the language of scientific research and publications, (iii) and shortage of Arabic translation for science and technology studies, the lack of publication in Arabic language in science and engineering studies, (iv) labour markets prefer people who have studied in English in fields of science and engineering, and English is a prestige language.

2.10 English as a Medium of Instruction: EMI

The debate over Arabization and foreign languages revolves around politics and practicality. The Arabs rejected French because of specific historical relationship between French domination and colonialism. The Francine (French-educated) accepts French because it is one of the world languages that have economic, scientific, and technological advantages. However, according to Ennaji (1991), a third alternative has presented itself with arrival of English in Maghrib. It has the advantage of not being the language of the coloniser and being the premier language of instruction in science, engineering, technology and international trade. Because of its advantages, English has been spreading rapidly in Arab countries (Zughoul, 2003; Ahmed, 2010).

English Medium Instruction (EMI) for non-English speakers is known as a bilingual teaching method. It is a recent emergence and is being implemented widely (Jusuf, 2001; Tamtam et al 2010). The main purpose of introducing this method of teaching is to provide the students with a mixture of language learning and other content area subjects. This with such certainty a good approach to making students learns another language (Jusuf, 2001). A foreign language is required in order to improve levels of communication. According to (Schützenhöfer and Mathelitsch (2001), the Austrian Ministry of Education supported and promoted this concept of implementing EMI. They concluded that there was a huge need to have foreign language learning in schools and other educational institutes, for this purpose English was chosen, (Tamtam et al 2010). It can be seen that Arab countries are now very much concerned with the developments of communication by using a foreign language. Using a foreign language is an efficient way of improving relations between different states. EMI has encouraged international co-operation and interaction in various education fields, especially, science and engineering (Crystal, 2003).

As described above, English has the advantage in Libya of not being a language of the oppressor and the additional benefit of being a language of science and technology. It has the distinct disadvantage of not being widely known or used in the state, because it was suspended for almost ten years by the regime (Al Moghani, 2003; Albukbak, 2008; Tamtam et al 2011).

2.11 Case studies: Implementation of EMI

Implementing EMI is the current trend that is being followed widely. This section discusses some of the countries that have adapted EMI in their educational systems:

2.11.1 Asia

EMI has been in use in Indonesian higher education for some time, and many universities have developed international programs using EMI. Their goal is to be bilingual; English is being used as the second medium of instruction in its classes by the academic year 2004/2005, (Jusuf, 2001). There are four factors supporting the possible implementation of EMI at Indonesian universities. These are as follows:

1) Bilingualism aids communicative and societal advantages. 2) EMI plays an important role in helping to motivate students and teachers in learning the language. 3) EMI would help students as well the teachers in exploring English and having more chances to learn it well. 4) Literacy skills and strategies learned in the native language, Indonesian, is transferred to a second language, namely, English.

EMI is growing very popular in the Indonesian universities on a daily basis. The advantage of utilising global opportunities is a priority for Indonesian universities. Being able to access up-to-date information, either through printed materials or online, as well as being able to engage in international dialogue is critical for those institutes. Thus, EMI usage has been increased and results show that such methods have improved proficiency in the English language (Jusuf, 2001). The basic goal is to be able to write and communicate in two languages. However, EMI in Indonesia is not as simple as it seems. All the aspects of EMI should be considered before making a decision to adopt it. The aspects that should be considered before adopting are opportunities of EMI, threats of EMI, problems faced by EMI and possible solutions.

English is also regarded as an important language in Korea. Korean universities have implemented EMI in order to improve their education level and meet the requirements of today's competitive environment. In the majority of Korean institutes, the lectures are conducted in the English language rather than using their

native tongue (Kim and Shon, 2009). EMI is being used in mostly higher level education courses such as engineering and science. English is necessary for maintaining international dialogue and for keeping pace with the changing standards of the industry. EMI is widely integrated into the syllabus of engineering in Korean universities. EMI is being implemented in such a way that the students can increase their knowledge of the language as well as the subject content. As a result, by providing sound knowledge regarding the language, EMI courses in Korea are improving the quality of education given at those institutes (Kim and Shon 2009). Nonetheless, some countries in Asia have had some difficulties while implementing EMI in higher education. One major problem was the shortage of lecture material. Some instructors did not have a robustly proficient knowledge of English (Bagachi, 2002). In such cases the instructors were limited to the available content and could not give examples or references related to the topic. This resulted in some students misunderstanding lecture content.

With time, though, EMI implementation has improved and has been an overall success. The reason for this high usage of English in the lectures is because educational institutions in Korea are determined to meet the standards of international universities. Whilst, there have been problems in the past, the advantages are presently numerous to the point where students now graduating can meet the global industry standards (Kim and Shon, 2009).

2.11.2 Europe

The proposal to use EMI at Dutch universities was first introduced in 1990 (Hagers, 2009). Efforts are being made to improve the quality of teaching by increasing the level of English language instruction. At first, the level of higher education in Netherlands was not impressive enough to convince people from other countries to enrol in Dutch universities, (De Wit, 2002). The reason for the low popularity of the Netherlands's higher education institutes was mainly the language problem. Dutch was the sole language being used in those institutes, a language which many foreigners were unfamiliar with.

After observing the emerging competitive environment, these universities started to introduce courses that helped in improving the level of English language. Higher

education institutes also started introducing courses that were being taught in international standard (Tamtam et al 2012). The steps taken by the Dutch helped to improve the overall level of education and eventually aided in their integration with international educational institutions. The Dutch institutes have implemented the EMI in their educational systems and now they are giving priority to English in high levels of education. EMI is now also being implemented in other European countries like Denmark, Norway, Finland, Germany, Austria and Sweden, (De Wit, 2002).

2.12 EMI: Arab Engineering Education

Today, most engineering graduates in Arab world face big challenges in finding good job (Al-Alkim, 2008). However, most engineering students in Arab countries have learned English as a subject since the age of twelve in high school, and have continued learning the language until on average of twenty three years of age (Zughoul, 2003). However, implementing EMI in Arab engineering education by using the Immersion method is not in use. In this method, the language is not the subject of instruction, but rather is the vehicle through which subject areas are taught. Most Immersion programs include math, science, social studies, and health taught in the target language (Chamot and El-Dinary 1999). A study by Al-Jarf (2004) showed that 96% of Jordan University students and 82% of King Saud University students believed that EMI is more appropriate for engineering education, medicine and science.

2.13 Bilingual Education and Immersion Foreign Language Program

Immersion instruction differentiates itself from a standard submersion approach in a few crucial ways (Tamer, 2006). First, special attention is given to the manner in which the language is introduced to the children. The children are not simply exposed to the language the way native speakers of the language would be exposed to it. Rather, the teacher takes special care in presenting the language in a way that is comprehensible to the students. This approach is often referred to as a sheltered instruction approach (Freeman and Freeman, 1998).

A key aspect to sheltered instruction is that limited English proficient (LEP) and English language learning (ELL) students do not compete academically with native speaking students (Freeman and Freeman, 1998). Also, teachers use a wide variety of techniques in which they are specially trained to ensure that the input they are providing their students is comprehensible. One of these strategies include total physical response (TPR), which is a technique that involves body movement associated with specific target language commands on both the teacher and students' behalf (Lee and Van Patten, 2003), others include using visual aids, gestures, basic word and sentence structures, paraphrasing, and modeling (Freeman and Freeman, 1998).

Secondly, it is important to note that the language is not the subject of instruction in an Immersion program, but rather is the vehicle through which subject areas are taught. Most Immersion programs include math, science, social studies, and health taught in the target language, using sheltered instruction approaches. One key aspect to Immersion programs is that they often teach literacy, such as reading, writing, and spelling, in the child's L1. This is based on the idea that children use their L1 to learn the L2, and that the imperative knowledge of literacy of the L1 will in time transfer onto the L2.

Thirdly, Immersion requires that at least 50 percent of instruction is performed in the target language. It does not mean that all instruction has to be in the target language. However, if a program only teaches one subject area in the target language, it is not enough to be considered an Immersion approach, and is instead referred to as an enrichment model of foreign language instruction.

Finally, an Immersion program does not always require students to respond in the target language. The focus is on a gradual, more natural acquisition of the L2, and does not force the acquisition of the new language by any means. Lee and Van Patten stressed the importance of creating a low-stress, low anxiety comfortable environment for language learners (Krashen, 2005). Krashen observed that individuals are more successful in learning a second language if they are not intimidated or afraid of making errors.

In Canada, for example, French-speaking teachers addressed the English speaking students in French while the students responded in English (Bostwick, 2003). Gradually, students' responses would contain some French words, which would change to utterances, which in turn would result in speaking French entirely after many years of being in a French Immersion program.

2.13.1 Total Immersion

The goals for students in total Immersion programs are to become academically and functionally proficient in the target language, succeed in the subject matter taught in the target language, and to acquire appreciation and understanding for the cultures that are connected with the target language. Total Immersion programs are proficiency oriented, using sheltered instruction techniques and emphasizing the implementation of providing students with comprehensible input. These programs usually last several years to ensure that the language and academic goals are reached by the students. After several years of being in total Immersion, the curriculum language may change to students' L1 (Bostwick, 2003). These types of programs are conducted in the target language 100 percent of the time.

Total Immersion programs are common in areas in which students encounter bilingual and bicultural experiences on a daily basis. For example, many schools in Canada have total Immersion French programs for English speaking students, because English and French are both official languages in the country (Bostwick, 2003). The general lack of English language proficiency and communication among students and teachers in Arab higher education system, (Rababah, 2003; Al-Jarf 2004) and high cognitive skills required for higher education tasks would make total Immersion hard to implement. Therefore, partial EMI is a viable option (Jusuf, 2001).

2.13.2 Partial Immersion

Partial Immersion programs dedicate about half of the class time teaching the subject matter in the target language. Reading, writing, and spelling are taught in the students' native language, while the other subject material is taught in the second language, (Chamot and El-Dinary 1999).

According to Bostwick (2003) students in partial Immersion programs are expected to become proficient in the second language to a lesser extent than students who are in total Immersion classes. Nonetheless, they are still expected to become proficient in the subject matter appropriate to their grade level, comparable to students who received instruction in their native language. Students in partial immersion classrooms are also expected to gain a heightened understanding and sensitivity for the other cultures with which the target language is associated, (Jusuf, 2001).

2.13.3 Two-Way Immersion

Two-Way Immersion (TWI) programs are also referred to as dual or bilingual immersion programs. TWI programs were first introduced nearly 40 years ago from Canada's TWI French programs, (Crawford, 2002; Howard, and Christian 2002; Howard, Sugarman and Christian 2003). French and English speaking students were taught together in a TWI program that mimicked the Canadian bilingual approach to education nearly 40 years ago. Because of the growing population of minority students in the United States, many schools and districts have become increasingly interested in TWI programs in an effort to help both English and Spanish-speaking children become bilingual.

Ideally, TWI classes are comprised of native speakers of the primary language of the country and students whose L1 is another language. Oftentimes two different teachers teach the class, one who is proficient in the L1 of 50 percent of the students, and another who is proficient in the L1 of the other half of the class. Other times, a bilingual teacher teaches the children full time, but teaches half the day in the primary language and the other half in the target language (Bostwick, 2003). The main objective for Two-Way Immersion classes is to benefit both populations of students by offering them all opportunities to become proficient in another language, while providing students a comfortable, accepting environment in which they can also share and learn about other cultures. Teachers in Two-Way immersion programs still pay particular attention to the way in which each language is spoken and use sheltered instruction techniques in their teaching. Students are still expected to meet academic goals in literacy and other subject areas, but have the benefit of becoming competent in these areas in two different languages.

Howard and Christian (2002) provided schools and policy makers information on how to design and implement effective TWI programs. They based their information on 15 years of research on TWI education that was conducted by the Centre for Applied Linguistics. Howard and Christian emphasize that effective TWI programs ensure that students develop highly levels of proficiency in their L1. This recommendation is based on the research that has supported that children use their L1 to acquire knowledge about the L2 (Thomas and Collier, 2002).

2.14 Bilingualism and Bilingual Education

As stated by Rasul (2006), Bilingualism can be defined as the knowledge of two languages and it does not restrict a person to be flawless in any language and it only means that a person knows another language apart from the mother tongue. According to Bar-Adam (1971) and Fishman (1973), there is too much research with Bilingualism in the subject of linguistics. Language plays an important role in interaction and communication. According to Mercer (1973), Bilinguals are termed as mentally slow or “miss diagnosed as mentally retarded”, due to negligence of learning of language. All the concerned should have better information about bilingual children (Chavda, et al., 2003). Carpenter (1992) says that this can be implied to only a few children. However there are many scales to analyze the mental process in bilingualism and one is how the brain functions. There can be various links between bilingualism and functioning of brain. According to (Adamson and Hallige 2006) the layout of brain of bilingual and monolingual differs a lot. Typical children might be affected by this; it is true to forecast that institutional differences of the brain can have links with learning problems.

Studies have shown fruitful results for bilinguals (Lucas, McKhann and Ojemann, 2004). The research aroused the need of language organization in bilingualism to ascertain the function of various languages within a bilingual brain and if the languages are organized equally and whether the organization of bilingual brain resemble the monolingual brain (Dehaenem, Dupoux, and Mehler, 1997). Results showed the findings that a bilingual brain differs to monolingual brain (Ojemann and Whitaker, 1978). The layout of language in bilingual differs as the Language 1 (L1) and Language 2 (L2) sites functions differently. Ojeman et al., (2003) succeeded to identify the organization of L1 and L2. This refers to that cortical

posterior regions and temporal and parietal lobe centres differ for L2. These regions are considered language sites in youngest at earlier stages (Ojeman et al., 2003).

As stated by Chomsky (1975) process of language is shaped by perceiving early linguistics experiences. The human brain has exceptional flexibility for learning of a language. According to Mehler et al., (1998) the studies show that psycholinguistics has limited approach in the flexibility of brain. According to Perani et al., (1996) a foreign language is understood by filtration of sound phonological system of dominant language. According to Werker and Tees, (1984) the ability to distinguish between different languages is basic requirement that seems to be present in infants. In efficient bilingual studies carried out by PET and FMRI brain investigation show that cortical representation in first language and second language varies.

Results show that the differences for the first language and second language are located at different places and vary from person to person. Findings of even-related potential (ERP) with children of dominant and non-dominant language is different.

The difference of quality for bilinguals and monolinguals has shown that neural development from the exposure to a bilingual atmosphere (Mills et al., 2005). To study the language development needs to understand the brain's processing of languages (Daneman and Merikle, 1996). Conceiving abilities are required to understand and speak languages. It also requires attention to use the memories, store the data and to compare the processed information. These help for listening and speaking of a language.

According to Federmeier and Kutas (2000), Electrophysiological of language make a person to understand the flexible mode to learn a complicated language coding and decoding. Corina, Vaid and Bellugi (1992) suggested that vocal and non vocal languages are due to different sites of the linguistics or symbolic properties the hemisphere lateralisation. The left of brain functions especially to mediate different languages. By Hohlfield, Mierke, and Sommer (2004) it has been showed that differences are there in both organization and attitude between monolinguals and bilinguals. Under an experiment by Furtado and Webster (1991) it is found that when a second language is learned at an early age it is processed in left half of brain

similar to first language and contrary to this if learned later it is mainly on the right half of brain. However, the main results are still insufficient.

Present importance of bilingual studies is due to inflows of people to North America. It is hoped that bilingual students will be able to adjust themselves with English as medium of education. Children's background of bilingual and bicultural is not taken into account. However there are many programmes to tackle the issue but their vocabulary of dominant language is not considered. This results that bilingual students a slow development for bilingualism.

There are many facets for bilingual education, as French and Jacquet (2004) reconsidered their research conducted by division of language, knowledge, organisation and all other mechanisms. Portes (2005) tried to discuss either bilingualism is a positive or negative factor in American Culture. Other research almost has the same results. Chavda, et al. (2003) discussed the growth of multilingual and problems related to it. Chee (2005) has reviewed social and political pressure regarding mother tongue and second language. The research also deals with poor ability those results in pain, deficiency and restricted access to education and job opportunities. Chee (2005) said that apart from many issues the arguments are based upon feelings and not upon facts. This proves that still more research is needed.

Another research carried out by Lesaux and Siegel (2003), shows that in kindergarten ESL learners scored poorly but at second grade they scored better than native students, and concluded that being bilingual is an advantage.

When it comes to education, bilingualism is becoming a requirement because of the competitive world today. It is the world of globalisation and it is necessary to meet the standards of today's industry and market. English has become the language that needs to be adopted by every country for international usage (Zughoul, 2003). Bilingual education means to mix the instruction of subject contents with foreign language teaching as well as learning instead of the first language a foreign language is used as a vehicle for communication in different subjects (Vinke, Snippe and Jochems 1998). To implement bilingualism effectively it will be required that courses be arranged in order to provide the students as well as the

instructors with the proper knowledge of the language (Jusuf, 2001). Many countries have implemented the EMI system (Schützenhöfer and Mathelitsch 2001). This change has resulted in growth and development in those countries. Therefore, having English as the medium of instruction should be promoted, as the returns of doing so are beneficial (Rasul, 2006).

EMI is also helping to influence cultural awareness and learning abilities (Jia-Huey, 2007). When first implementing this method, there are some issues that have to be addressed. First of all, it is necessary to develop an interest amongst students to learn a new language. Teachers should also give time to improve student's language learning skills. It is also necessary that efficiently trained staff be appointed. Obviously, students who are not very proficient in English will be unable to read books, journals and newspapers, therefore for those students it is necessary that appropriate methodology be developed (Schützenhöfer and Mathelitsch 2001).

2.14.1 Bilingualism and Modern World

Having a second language in the modern world is not only personal benefit but also an essential requirement to maintain the pace nationally and internationally. Scientific and Technical development has produced many opportunities throughout the world. Modern facilities have enabled the people to have contact regardless of the distances; however some rifts are still there such as violence and terrorism. Apart from scientific and technical development there is some gap between peoples of different cultures and this can be filled by language acquisition as it is a basic element of culture. By having other languages many barriers can be broken down for peace and friendship.

Linguistic and Cultural barriers must be demolished for globalization. Translators and interpreters are helpful to understand one another. This task cannot be accomplished by one person to connect the various people precisely and accurately. A language comprises of culture, religion and social issues when these are ignored a misconception results there. For effective communication, it is necessary to have a sound knowledge of both the cultures and languages, (Meier and Stormer, 2009).

Usually the diplomats are unable to speak the language of a country where they are deployed and it creates many negative impacts. The increasing violence and terrorism is result of communication gap. North Americans mostly communicate through an interpreter but Germans and Russians can speak the language of a country working there. Now the authorities have noticed this problem and try to deploy young people who can speak many languages.

2.14.2 Bilingualism: Motivation and Identity

With so many differing aspects of identity, it should come as no surprise that there are also several approaches and frameworks for researching motivation and identity as related to bilingualism, each seeking to emphasize and explain different motivations and methods to identity construction. Giles and Powesland (1997, p. 233), for example, discuss how “an individual can induce another to evaluate him more favourably by reducing dissimilarities between them” in language, behaviour, or other acts. Such reactions, or accommodations, can result in possible changes in one’s identity and persona. This approach to language and identity is also seen in the work of Coupland (1984) on style shifting, work on audience design. Although not focusing chiefly on identity and motivation, both emphasized that a speaker’s style and language variation was the result of “responding primarily to other people... Speakers are designing their style for their audience” (Bell 1984, p.197). These studies illustrate how speakers’ language variation and stylistic choices made in reaction to their perceptions of other participants are resources in the construction of social roles and identities.

2.14.3 Bilingualism: Math and Science Problem Solving Skills

Maximum academic benefit from schooling accrues to students who develop high levels of bilingual language proficiency. Student with high levels of proficiency in two or more languages will, on average, academically outperform similar students operating with fluency in a single language. Of course inadequate language fluency will impede academic success. More importantly learning is not facilitated when students are fluent in one language but trying to grasp concepts in another. Cummins (1980) identified the conditions that result into cognitive advantages. He identified two thresholds; lower and upper. Each threshold represents level of

language competence in L1 and L2 that has cognitive consequences for a child. Students who are below the lower threshold (have not reached age appropriate competency in any of the languages) will suffer negative or subtractive effects of bilingualism and as a result will perform less well academically especially in math and science than monolingual students. A child who is unable to cope in the classroom in either language will not be able to process information because of lack of comprehensible input. This does not mean that the student cannot progress to higher thresholds. Linguistic competence in the language of instruction is fairly independent of content knowledge, (Cummins, 1979). Thus a child can develop age appropriate competency in one or two languages depending on various factors such as instructional program characteristics, teacher practices, amount of time exposed in two languages, students prior academic experience, and intelligence.

According to Cummins (1980), direct evidence of the existence of the concept of higher threshold level has been reported by various researchers. For example, Barik and Swain (1977) evaluated the longitudinal effects of Immersion programs in Ottawa and Toronto. The Immersion programs were designed to teach English speaking Canadians the French language. The study had shown, after controlling for initial IQ and age differences, that students who were fluent in both English and French languages performed significantly better on IQ tests than those who were only fluent in the English. In addition, they found that the IQ score for the first group increased over the three-year study duration, while it stayed the same for the second group. Other studies conducted by Dawe (1983) and Bialystock (1999) also reported the existence of thresholds. Dawe (1983) for example, examined bilingual Punjabi children and found that as competency in two languages increased so did children's deductive reasoning in Mathematics, while limited competency resulted in negative academic outcomes. Bialystock (1999, p.567) while examining the performance of English monolinguals with partial and fluent English-French bilinguals on linguistic knowledge found that "the level of bilingualism is decisive in determining the effect it will have on development. Differences between the achievements of children in various types of language development programs have also led to the popularization of the concept of threshold.

2.14.4 Bilingual Education

Knowing more than one language has many advantages today. Researches on multilingual children show that they have many advantages as compared to bilinguals or monolinguals (Clark, 2000). The results are useful for those who chalk out the policies and syllabus for students in public schools as multilingual have more chances to avoid.

Literacy Skills

At the beginning the educationists mainly focused on literacy skills. There is a great burden on infants to learn a language at an early age. Well defined testing/examination system is needed to estimate the progress of literacy. Teachers can be held responsible for the poor progress of their students based upon defined standards. Due to this teachers/educationists try to use different methods which are helpful to educate the students. Bilingual students have shown good score as compared to monolinguals. These results are helpful for bilingual coaching at an early stage. Various researches show that bilingual students have better learning approach. A study of bilinguals and monolinguals of Hebrew and English reached at result that it was necessary for bilinguals to move between two languages called Code Switching (Ben-Zeev, 1977; Bialystok, 2002; Durgunglo, Nagy, and Hancin-Bhatt, 1993; Anderson, 2004). It is said that Code Switching compelled the children to develop learning ability that is helpful for their cognitive development.

Bilinguals do not have as much vocabulary in two languages as compared to a monolinguals, who have vocabulary in one language only but they can show a better performance in various tasks. Monolinguals are better in oral communication; moreover the bilinguals are better in visual instructions than monolinguals. The result shows that bilinguals are having more prospects not only in languages but also other subjects of learning.

Phonological Awareness

According to Bialystok (2002) Bilingualism is termed as being helpful for Meta-Linguistics, which is an ability to think consciously a language. Phonological awareness is a skill which enables an individual to differentiate different parts of a

language, and it is stressed in early stages of learning. There are various methods to differentiate speech sounds they hear and repeat while playing and listening.

Qureshi (2005) stated that phonological awareness is helpful to learn an L2 easily and they are more competent in literacy. It is partly due to reason that language skills is the L1 often shift over the L2 (Durgunglo, Nagy, and Hancin-Bhatt, 1993).

Research was carried out for children's level of phonological awareness and skills in Spanish and then tested on the basis of English capabilities and their awareness was predicted on the Spanish phonological awareness and recognition. The research shows that children use their skill of one language for other one and have a benefit. Another research shows that children use the distinction of both the languages and do not confuse between two languages.

Reading

A study was carried out by (Lesaux and Siegel 2003) and assessment was made on patterns of reading development on children of native L1 and those who were learning English (ESL). The phonological awareness was similar for both of them for 3 years. They were tested for spelling, phonological processing, reading and memory. The ESL children's skill was comparable with L1 children at the end of second grade moreover they showed better performance on many topics. Result showed that bilingualism is positive at early stages for reading skills.

Writing

Those children who only learn to speak a language they try to write it later on. Some people believe that to teach the students two languages by reading and writing can confuse them and can cause some literary problems (Kenner, 2004). This is due to different phonetic rules of each language and some parents fear to give their children education in two different languages. Research has disproved this point as a child can learn to read and write two languages when literary skills are introduced. Although, these skills also increase their skill of writing in native language.

Communication and Social skills

Studies carried out by Luria (1961) and Bain (1976) also show that bilinguals have more learning benefits than those who are monolinguals and have a better learning process. Luria (1961) and Bain (1976) showed that bilinguals respond better and accurate for oral instruction than those who are monolinguals. According to Bialystok et. al, (2001) and Ekstrand (1992) their positive effect germinates from childhood.

Personality and Self Identity

Kanno (2003) says that bilingual children have better social and communication skills and adaptability and adjustability to new environment, yet they face many difficulties and confusions at an early stage. They have better capacity to face the variations in social and cultural areas.

Attention Control

Bialystok (1999) says that bilinguals show a better control of attention than monolinguals. Here attention control is termed as a capacity to concentrate on a specific job. She further says that bilinguals can have an advantage to solve higher problems due to higher control levels, yet she says that it is still a mystery.

2.15 Attitude Towards Bilingual Education

Many schools have a plus point of multilingual education and parents by knowing this they admit their children in such schools and teachers differentiate then on the basis of being bilinguals or multilinguals.

De Houwer (1999) and Merrill (1984) say that majority of children in the world speak two or more languages without any problem. This idea is further supported that bilingualism is not responsible for language and literacy disorders.

Kenner (2004) says that some bilingual children have a trend to delete some alphabets or having a confusion of vowel sound. These errors vary from language to language a child is learning and difficult to have a general rule. Watson (1991) shows a number of confrontations for this issue as little information is available for bilinguals' phonological acquisition and this is hurdle for pathologist of speech.

Next the pathologist of speech does not have sufficient knowledge for a child's second language and lastly a few assessments and standards are present for multilingual students.

It is obvious that we need further research for language development for bilinguals. Goldstein (2004) has elaborated this point in his book for bilingual development and problems for those who speak French and English. Goldstein (2004) says that the children who learn two or more languages at an early stage are specific learners as they have acquired this learning in good time and they will become skilful in the passage of time in their surroundings. Goldstein (2004) has discussed that mainly and mostly children do not have a language confusion or disorder being bilinguals. The disorder for English-French can be due to their compromise of cognitive linguistics. This point is further confirmed by Holm, Dodd, Stow, and Pert (1999), that if there is any disorder or problem, it is equal in both the languages. The result supports the idea that if there is some disorder for one language, it is the same for both languages.

Research regarding bilingual education and English Medium Education can prove to be helpful for Libya for multilingual education for its people, yet some people misconceive the idea of education in multiple languages. This is only due to unawareness or a jaundiced approach towards the issue.

Those who are carrying research on bilingualism should be given due status as the research plays a vital role for those who chalk out future programmes such as bureaucrats. By having this better education plans can be made for future students.

Every language has a large data about its own culture and social issues. By learning a second language one has a benefit to have a better understanding for others related to him. It is optimistic to become bilingual as one can have a better concern for those who are different. Due to this awareness a better co-relation and harmony can be established for people living apart. People of Libya should be given more education in other languages also. By this better understanding can be achieved by removing the hurdles. Various cultures come closer by the instrument of bilingualism or multilingualism.

Problems can be there while doing this due to seeing everything in one's own perspective, but there must be an optimistic approach about bilingualism in Libya. Learning from others Libya has tried to start bilingual education in the country.

At present to learn English is not possible at an affordable price. Bilingual education should be designed for English and Arabic speaking students in Libya to have a better understanding of both the languages.

CHAPTER - 3

3. METHOD

This chapter deals with the procedure adopted to conduct the study. This study is comparative and analytic in nature. The study investigates the attitudes of students and teaching staff toward the language of instruction in science and engineering fields of higher education in Libya. The present study addressed itself to these questions: 1 – What are students\teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya? 2 - What are students\teaching staff attitudes toward the use of Modern Standard Arabic in science and engineering education in Libya? 3 - What are students\teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya? 4 – What is the relationship between attitudes toward language of instruction and students\teaching staff background variables such education, gender, college of studying\teaching and ethnic origin? 5- What is the impact of language of instruction on quality of science and engineering education in Libya?

The research compares the attitudes of students and teaching staff toward the language of instruction in science and engineering fields from two universities located in different regions of Libya i.e. Al-Jabal Al-Garbi University located in Nafusa Mountain, and Nasser International University, located in Tripoli.

Researcher adopted a mixed methodology, both quantitative and qualitative approach. Researcher considered questionnaire method appropriate to investigate the attitudes of students and teaching staff toward the language of instruction in science and engineering fields, and interview questions to explore the impact of language of instruction on quality of science and engineering education. This section includes a description of the study with account of sample, instrument used to collect data, the method of data collection and analysis of data.

3.1 Setting

3.1.1 Case Study I

Al-Jabal Al-Garbi University, the site for this study, was established by higher education ministry in 1990. It is located in western mountain, 200 KM south west of the capital city Tripoli.

The student population for the university is recruited from the south west region of Libya. Requirement for admission in engineering and science faculty is that students must have completed the specialized secondary education in the field of engineering or science. Al-Jabal Al-Garbi University is selected because English is not being used as a medium of instruction in teaching and learning.

3.1.2 Case Study II

Nasser International University, Tripoli, which during this study has renamed to Zetona University, was established in 2001, during a period of progressive economic development in the country. Tripoli is the capital city and the largest city of Libya. The city is located in the northwestern part of Libya on the edge of the desert, on a point of rocky land projecting into the Mediterranean and forming a bay.

Requirement for admission in engineering and science faculty is that students must have completed the specialized secondary education in the field of engineering or sciences with 60% marks or over, and they are also require to pass an entry test.

Nasser International University is selected because English is currently being used as a medium of instruction in teaching and learning.

3.2 Survey Participants

3.2.1 Case Study I

The data for this study was collected from students and teaching staff at Al-Jabal Al-Garbi University, engineering and science faculties. The questionnaire were distributed and administrated by the researcher.

a) Students

Students are the first source of data collection for the study. The population of the study was about 230 students who attend faculties of engineering and science. A total of 191 questionnaires were returned to the researcher. Twelve were eliminated from the study because an inadequate number of survey questions were answered. The sample consisted of 179 students from engineering and science programs from first year to fourth year students who completed the questionnaire. The sample consisted of approximately 78% of the population.

The students to be sampled were those to whom the researcher had access and who volunteered to participate.

b) Teaching Staff

Teaching staffs are the second source of data collection for the survey. The total population of the teaching staffs at faculty of engineering and science is 36. They were all included in the study and provided with the questionnaires. A total of 30 samples were returned to the researcher. The sample consisted of approximately 83% of the population.

The teaching staffs to be sampled were those to whom the researcher had access and who volunteered to participate.

3.2.2 Case Study II

The data for this study is collected from students and teaching staff at Naser International University, engineering and science faculties. The questionnaire were distributed and administrated by the researcher.

a) Students

Students are the first source of data collection for the second case study. The population of the study was about 200 students who attend faculties of engineering and science. A total of 175 questionnaires were returned to the researcher. Twelve were eliminated from the study because an inadequate number of survey questions were answered. The sample consisted of 160 students from engineering and science

programs from first year to fourth year students who completed the questionnaire. The sample consisted of approximately 80% of the population. The students to be sampled were those to whom the researcher had access and who volunteered to participate.

The students to be sampled were those to whom the researcher had access and who volunteered to participate.

b) Teaching Staff

Teaching staffs are the second source of data collection for the second case study. The total participation of the teaching staffs at faculty of engineering and science is 30. They were all included in the study and provided with the questionnaires. A total of 26 samples were filled and returned to the researcher. The sample consisted of approximately 86.6% of the participation.

The teaching staffs to be sampled were those to whom the researcher had access and who volunteered to participate.

3.3 Research Instrument

The measuring instrument was a questionnaire which focused on the students and teaching staff attitudes toward the language of instruction in science and engineering fields of higher education in Libya. Additionally, it aimed to explore the differences in the participants' attitudes by their demographic information.

Suitable research methodology and devise appropriate research questions is not an easy and straightforward process as Bechhofer, (1974, p.73) states: "...the research process is not a clear-cut sequence of procedures following a neat pattern but a messy interaction between the conceptual and empirical world, deduction and induction occurring at the same time".

Questionnaires and interview questions, considered an apt survey instrument, were designed in such a way that both qualitative and quantitative data were collected. A mixed approach is used to take benefits from the qualities of both types of data and to collect as much information as possible from the participants.

Quantitative data is any data that is in numerical form such as statistics, percentages (Creswell, 1994; Given, 2008) refers to quantitative research as “the systematic empirical investigation of social phenomena via statistical, mathematical or computational techniques...the process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships”.

Glesne and Peshkin (1992) explains the quality of qualitative researchers as: “they seek to make sense of personal stories and the ways in which they intersect”.

Any qualitative data collected through any research is called “soft”. (Bogdan and Biklen 1992) explains that qualitative data is “rich in description of people, places, and conversations, and not easily handled by statistical procedures”. In qualitative research researchers approach the data collection with not a preset specific pattern, questions or hypothesis. Subject of research is given main importance by understanding and evaluating male/female or other factors rationale about the question of research, Neuman (1997). Qualitative research has "multiple ways of interpreting experiences are available to each of us through interacting with others, and that it is the meaning of our experiences that constitutes reality. Reality, consequently, is socially constructed” (Bogdan and Biklen, *ibid*).

The benefit of the qualitative approach is that the information gathered is more affluent and gives better and deeper understanding of the study. As described by Jacob (1988) detailed data is gathered through interview questions and open ended questions that provide direct quotations. This differs from mixed methods research, as described by Smith (1983), which attempts to gather data by objective methods to provide information about relations, comparisons, and predictions and attempts to remove the investigator from the investigation.

Glaser and Strauss (1967) explain that the process of data collection, analysis and theory generation are much more closely linked in qualitative than in quantitative research. Qualitative and quantitative data are both equally important, especially when used in the current research. Both sets of data present significant information that, when used together, can give good overall information about the research questions.

3.4 Survey Questionnaire

According to Key (1997), “a questionnaire is a means of eliciting the feelings, beliefs, experiences, perceptions, or attitudes of some sample of individuals...structured or unstructured...very concise, preplanned set of questions designed to yield specific information to meet a particular need for research information about a pertinent topic”.

Characteristic features of a good questionnaire as explained by Hunt (n. d.) are:

- Questions are simple and clear, objective.
- Questionnaire is attractive in appearance (questions spaced out, and neatly arranged)
- Keep questionnaire uncluttered and easy to complete
- Design for easy tabulation
- Design to achieve objectives
- Phrase questions for all respondents

The above mentioned characteristics of questionnaires are kept in mind. Questionnaire, designed to collect quantitative and qualitative data, consisted of four sections. The first section contained information on personal background and the knowledge of foreign language including participant’s level in English; the second section contained foreign language and English as a foreign language, and the third section contained on language attitude, the fourth section contained education process. Questionnaires were constructed and administered in Arabic by the researcher to make sure that the students/teaching staff had no difficulty reading and understanding the instrument.

The questions were modelled after the attitude questionnaire employed in a study by Zughoul and Taminia (1984): a study measured attitude toward the use of English vs. Arabic as the medium of instruction in higher education scale in Jordan. Jordan, an Arabic country for which the attitude scale was used had been subject to English colonization. After achieving independence, the regime called for the reinstallation of Arabic as the language of instruction for all social, political, economic, and educational activities.

In order to design a questionnaire, the researcher first drew up list of questions by slight modification of questionnaires of above mentioned study because it measures very similar material in Libya, with Arabic and Islamic cultural aspect and the questionnaire was used in other studies. For example “The use of Arabic as medium of instruction will promote the transfer of technology to Libya” was modified from “the use of Arabic as a medium of instruction will promote transfer of technology to Jordan”. Similarly, “I feel that it is possible to use Arabic as a medium of instruction but the university authorities do not want that” was considered invalid in this current study since in Libya language policy is made by Ministry of Education.

The questionnaire were designed in two versions, the students version and teaching staff version (see Appendices A and B).

3.4.1 Students Questionnaire Form

Part 1: General Information

Part one of the questionnaire investigated participants’ background.

a) *General Information:* College, age, gender, specialized qualification (secondary school), years of English study at college, and current semester or year.

b) *Foreign Language Skills:* Any education in foreign language other than English, and its proficiency level using three point Likert scale: Very Good, Good and Poor.

c) *Self Assessment:* In Libya there is usually no assessment for students to enter university. In the case of this research Al-Jabal Al-Garbi University does not assess students and there is no entry test, while Nasser International University takes an entry test for admission. In this regard, participants were asked to provide a self-assessment of their English (reading, listening writing, speaking, grammar and vocabulary) using a five point Likert scale that was anchored as follows: fluent, very good, good, fair and poor.

However, researcher is well aware of the limitations of the self assessment technique on the following grounds:

- Students can be undecided, as they need to have a very high degree of consciousness to analyze their previous performance.
- Self-assessment only works if students have been trained to self-assess themselves.
- The major disadvantage is the lack of maturity on behalf of students. Some students are not ready to have a self-assessment task, mostly because they aren't aware of the seriousness or importance of the process; therefore they tend to give themselves a higher grade or vice versa. This can revise the final result.

d) Usage of Language: Language usage in classes and examinations/tests in secondary school and university is assessed using a five point Likert scale: only Arabic, usually Arabic, partly Arabic, Arabic and English and usually English.

Part 1 specifically addresses research question 4 (What is the relationship between students\teaching staff attitudes toward language of instruction and background variables such education, gender and language proficiency?)

Part 2: Foreign Language

It includes 16 questions about foreign language and English as a foreign language. They explore whether participants support instruction in foreign languages in Libyan public institutes and what foreign languages, using a 1 to 5 Likert scale. Five point Likert scale included: strongly agree, agree, neutral, disagree, and strongly disagree.

It investigated questions about use and attitudes towards foreign language(s) in Libya especially English. It especially investigated use of English as a medium of instruction at primary, high school, college and university. Further, it investigated impact of English on Arabic Language and Arabic culture in Libya.

Part 2, also, had one open ended question for any additional comments.

Part 3: Language of Instruction

Part three contend of statements to measure participants' general attitude to language(s) of instruction in their science and engineering classes. Attitude towards the use of Standard Arabic, English, and Arabic/English bilingualism as a medium of instruction is assessed. This was done using three sets of eight questions each with the Five point Likert scale response mode (strongly agree, agree, neutral, disagree, and strongly disagree) is used. At the end, one open ended question was included for any additional comments.

Part 3 specifically answers research question 1, 2 and 3(1- What are students\teaching staff attitudes toward the use of English medium instruction in higher engineering and science education in Libya? 2 - What are students\teaching staff attitudes toward the use of Standard Arabic in higher engineering and science education in Libya? 3 - What are students\teaching staff attitudes toward the use of English medium instruction and Standard Arabic bilingually in higher engineering and science education in Libya?)

3.4.2 Teaching Staff Questionnaire Form

The teaching staffs' questionnaire form, slightly different form students' questionnaire form is explained in detail below.

Part 1: General Information

a) *General Information:* College, nationality, age, gender, qualification, specialization, years of experience and faculty/ institute.

b) *Foreign Language Skills:* Any education in foreign language other than English, and its proficiency level using three point Likert scale: Very Good, Good and Poor.

c) *Usage of Language:* Language usage in courses studied in college and university is assessed using a five point Likert scale: only Arabic, usually Arabic, partly Arabic, Arabic and English and usually English.

Part 2: Foreign Language

It includes 16 questions about foreign language and English as a foreign language. They explore whether participants support instruction in foreign languages in

Libyan public institutes and what foreign languages, using a 1 to 5 Likert scale. Five point Likert scale included: strongly agree, agree, neutral, disagree, and strongly disagree.

Part 2, also, had one open ended question for any additional comments.

Part 3: Language of Instruction

It included statements to measure teacher's general attitude of language or languages they would like for instruction in their class. This was done using five point Likert scale response mode (strongly agree, agree, neutral, disagree, and strongly disagree) is used.

Finally, one open ended question was included for any additional comments.

3.5 Interview

(Lindzey and Aronson 1968) have defined interview as “a two-person conversation, initiated by the interviewer for the specific purpose of obtaining research-relevant information and focused by him on the content specified by the research objectives of description and explanation”.

Interviews are a tool to collect data which will give meaningful understanding of any individuals' ideology about any topic of reference. The main purpose of conducting interviews is to get in depth information and understanding of the interviewees' perception.

Seidman (1998) explains that interviews are a technique to collect qualitative data by understanding experiences of other people. Interviewing is flexible and exploratory method and gives a lot of freedom to the interviewer to get in-depth information and “subjective understanding”. Accordingly, it is desired to know more about the subject which is not possible in providing two or more options in regular questionnaire method of data collection, “At the heart of interviewing research is an interest in other individuals' stories because they are of worth”. Thus interviewing is most effective verbal questioning.

Description and exploration are the two most effective functions of the interview techniques. In conducting interviews, interviewees get chance to get in touch with the respondents by spending some time and this helps in seeking additional and meaningful information. It explores the personal dimensions which were not possible in any other method of data collection. Personal communication, instant response, personal touch and rapport between interviewer and interviewee, equality of status, flexible format, etc are many characteristics of interviews given by (Black and Champion, 1976; Oppenheim, 1992).

Interviews can be structured or unstructured. Unstructured interviews are flexible and spontaneous. There are no set questions and it goes with the flow. While structured interview has a set of questions as a guide line but essentially different from questionnaires.

In this study five teaching staffs were selected from each university. Interviews were conducted to benefit from their above mentioned qualities and get greater understanding of the topic of research. Interviews were specially designed to answer research question 5(What is the impact of language of instruction on quality of science and engineering education in Libya?) see (Appendix C).

3.6 Ethical Considerations

Study was designed and conducted with keeping ethical considerations in account. Firstly, written permission to conduct the research was granted to the researcher from both universities: Al-Jabal Al-Garbi University and Nasser International University. And Ethics approval for this study was obtained from Research Ethics Committee, Dublin City University (See Appendix D).

In second step, the teaching staffs and students were well informed about the research design, purpose, aim and scope of research. Participants had right and were encouraged to ask questions, discuss about the survey and were allowed to leave at any time. Writing name was optional to ensure that collected data was entirely confidential and subject to privacy. It was also declared that data collected was going to be 'ONLY' used for the research purpose.

In the third step, volunteers were selected and given a detailed briefing about the method of data collection, data collection tool (questionnaires) and the role of participants was also explained. Interviews were conducted from the teaching staffs of science and engineering faculty of above mentioned universities and same protocol was repeated.

Lastly, the collected data has been checked and rechecked to avoid errors in data analysis and interpretation. This has been considered ethically necessary to avoid non-sampling errors as much as possible (ABS, 2013).

3.7 Reliability and Validity of Instruments

An analysis of item reliability was determined by using the SPSS (version 17.0) through the reliability coefficient test. A reliability coefficient of .70 or higher is considered “acceptable” in most social science research situations.

A pilot study was conducted to measure the reliability level of the questionnaire items. To do so, 25 students were randomly selected from the target population and these students were excluded from the actual study. The Cronbach Alpha for the following 3 measurements scale type is calculated.

3.7.1 Arabic as a Language of Instruction

The following tables show the reliability check by Cronbach Alpha on Arabic as a language of instruction.

Table 3.1: Case Processing Summary

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

Table 3.2: Reliability Statistics

Cronbach's Alpha	N of Items
.781	8

Table 3.3: Item-Total Statistics

Questions	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I prefer Arabic to be the medium of instruction for high engineering education	.545	.746
Given the choice, I would study all my courses in Arabic	.413	.768
I believe my result would be better if I studied in Arabic	.222	.796
I believe that students' participation would be more effective if Arabic were the medium of instruction	.403	.769
I believe the curriculum would provide the learner more efficiently if it were in Arabic	.588	.738
I believe that Arabic is able of handling modern sciences and engineering	.600	.735
I believe that is possible to use Arabic for teaching in high engineering education	.708	.724
The use of Arabic as medium of instruction will promote the transfer of technology to Libya	.424	.768

3.7.2. English as a Language of Instruction

The following tables show the reliability check by Cronbach Alpha on English as a language of instruction.

Table 3.4: Case Processing Summary

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

Table 3.5: Reliability Statistics

Cronbach's Alpha	N of Items
.826	8

Table 3.6: Item-Total Statistics

Questions	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I prefer English to be the medium of instruction for high engineering education	.553	.806
Given the choice, I would study all my courses in English	.536	.809
I believe my result would be better if I studied in English	.644	.797
I believe that students' participation would be more effective if English were the medium of instruction	.603	.799
I believe the curriculum would provide the learner more efficiently if it were in English	.590	.801
I believe that English is able of handling modern sciences and engineering	.534	.808
I believe that is possible to use English for teaching in high engineering education	.546	.807
The use of English as medium of instruction will promote the transfer of technology to Libya	.453	.823

3.7.3 Arabic/English (bilingualism) as a Language of Instruction

The following tables show the reliability check by Cronbach Alpha on Arabic/English (bilingualism) as a language of instruction.

Table 3.7: Case Processing Summary

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

Table 3.8: Reliability Statistics

Cronbach's Alpha	No. of Items
.962	8

Table 3.9: Item-Total Statistics

Questions	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
I prefer Arabic-English bilingualism to be the medium of instruction for high engineering education	.762	.962
Given the choice, I would study all my courses bilingually in Arabic and English	.841	.958
I believe my result would be better if I studied bilingually in Arabic and English	.823	.959
I believe that students' participation would be more effective if Arabic and English bilingualism were the medium of instruction	.819	.959
I believe the curriculum would provide the learner more efficiently if it were bilingually in Arabic and English	.909	.954
I believe that Arabic and English bilingualism is able of handling modern sciences and engineering	.890	.955
I believe that is possible to use Arabic and English bilingualism for teaching in high engineering education	.885	.955
The use of Arabic and English bilingualism as medium of instruction will promote the transfer of technology to Libya	.917	.953

Above tables indicate the reliability of the questionnaire items in terms of the three measurement scales separately. The value of Cronbach's Alpha regarding Arabic as a language of instruction is 0.781, English as a language of instruction is 0.826, and the Cronbach's Alpha value of Arabic/English (bilingualism) as a language of instruction 0.962. This shows that the questionnaire items were completely appropriate for research goals.

To investigate the validity of the questionnaire items, the questionnaire was given to two experts in TEFL and Science Education chosen by National Authority for Scientific Research – Ministry of Higher Education. The comments were taken into consideration and they advocated that the items of the questionnaire are valid and reliable to investigate the research objectives.

3.8 Data Collection

Following methods were adopted for the data collection.

3.8.1 Case study I

Permission to conduct the study was granted to the researcher by the dean of Al-Jabal Al-Garbi University. The researcher was given access to the students attending the faculties. The researcher, who is a former member of the faculty of science at Al-Jabal Al-Garbi University, enlisted the head of each department at the university to help in distributing the teaching staff questionnaire and data collection.

At each faculty of the university, the researcher administrated the questionnaires' distribution with some students who volunteered for help in collecting data. The researcher explained the general purpose of the research to students, students' right as participants, and the nature of their participation. The students were allowed to ask questions they may have had about the study and their participation. Following the question and answer period, students completed the questionnaires.

When the questionnaires were completed, volunteer students placed them in a large envelope. Once the questionnaire was in the envelope, there was no way for it to be identified as belonging to a particular individual. Summary request forms were handed directly to the researcher.

3.8.2 Case Study II

Permission to conduct the study was granted to the researcher by Nasser International University. The researcher was given access to the students attending the faculties. At each faculty of the university, the researcher administrated the questionnaires' distribution with some volunteer students. The whole process and idea behind the research was explained. The whole process used to collect data in case study I was repeated to get the questionnaires filled.

3.9 Data Analysis

Data Analysis is the process of systematical evaluation of the data. According to (Shamoo and Resnik 2003) many investigative procedures “provide a way of drawing inductive inferences from data and distinguishing the signal (the phenomenon of interest) from the noise (statistical fluctuations) present in the data”...

Upon completion of the collection of the data, two techniques were used to analyse the survey data, both qualitative and quantitative approaches were run.

3.9.1 Quantitative Analysis: SPSS

Quantitative data (3 and 5 point Likert scales) were entered into an electronic data file using statistical software called SPSS version 17 (Statistical Package for the Social Sciences) which is a computer application that provides statistical analysis of data. It helps in detailed data analysis.

Data was converted from string data to numerical data from the questionnaire by the researcher and saved on SPSS software version 17 for Windows, Figure 3. Quantitative procedures involved statistical analysis run on the items by SPSS software computing frequency distributions of responses of the participants.

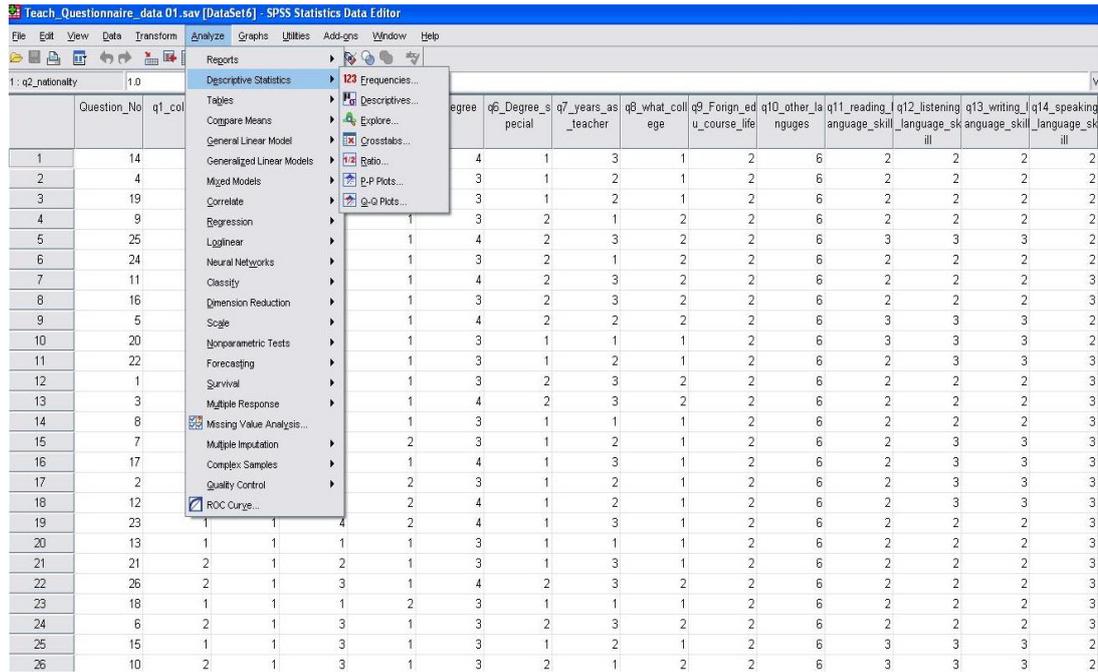


Figure 3: SPSS Software user interface

3.9.1.a Chi Square Test: Quantitative Analysis

Pearson's chi-squared test (χ^2), commonly known as chi-squared test was first introduced and investigated in 1990 by Karl Pearson (Greenwood and Nikulin, 1996). Chi-square tests a null hypothesis against alternate hypothesis, which states “that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive and have total probability”.

Independence Test: Independence test measures the dependence of two or more variables/ observations with each other. It also test that if one variable estimates or associate with other variables.

In this case, we will compare the frequencies collected from Al-Jabal Al-Garbi University and Nasser International University to check associated of the data to be similar or different from each other.

Goodness of Fit: Testing for the goodness of fit determines the factor that if the observed frequencies coincides and matches with the hypothetical/ theoretical frequency distribution.

In this case, we are going to compare frequencies obtained from Al-Jabal Al-Garbi University with the frequencies obtained from Nasser International Universities.

In both cases, Chi-square test is calculated with the help of following equation:

$$\chi^2 = \frac{\sum (O - E)^2}{E}$$

Here,

O → represents the frequencies observed,

E → represents the frequencies expected,

Method of Analysis

The results of a chi-square test, with the selected degree of freedom, are calculated with a previously designed table of chi-square distributions to find a value of p, known as p-value. The *p*-value is ultimately used to determine the significance of the test.

Finally, inferences are drawn by correlating the percentages of both case studies, to strengthen the findings of Chi-square. A comparison will be made as Case Study I (Al-Jabal Al-Garbi University) does not use EMI for teaching and learning, while Case Study II (Nasser International University) uses EMI for teaching and learning.

3.9.2 Qualitative Analysis: Coding

Lofland (1984) defines coding as using labels to classify and assign meaning to pieces of information—helps you to make sense of qualitative data, such as responses to interview questions and open-ended survey questions.

Coding is an interpretive procedure which gives a mean to analyze qualitative data in quantitative manner. Coding helps and provides organization of data in such a way that we can deduce quantitative results, (Taylor and Gibbs 2010). Qualitative data analysis procedures (coding) involved content to the interview questions and answers of open-ended questions, which was used as follows:

Firstly, the answers will be translated in English. Each emerging characteristic will be given a distinct code which will be manually written on the questionnaires. There will be three basic codes/categories: positive responses, neutral responses and negative responses. Any additional codes will be made, if the collected data is diverse and does not fall in the above mentioned categories. Secondly, with the help of the codes common characteristics will be grouped together. Further, content analysis of the responses falling in these three basic codes will be made. Finally, they will be scanned and reorganized to the relevance to the study questions.

CHAPTER - 4

4. RESULTS

The chapter, Data Analysis, is divided in two sections according to the main respondents of the study i.e. students and teaching staffs. These two sections have the following subsections:

1. Analysis of Preliminary Information: It gives detailed analysis of background information of the respondents.
2. Analysis of Quantitative Data: This section contains analysis of data for research questions (1-4).
3. Analysis of Qualitative Data: This section contains analysis of qualitative data derived from open ended questions of questionnaires and research question 5 (interviews)

4.1 Analysis of Preliminary Information:

4.1.1 Case Study I

Al-Jabal Al-Garbi University, the site for this study, was established by higher education ministry in 1990. It is located in western mountain, 200 Km south west of the capital city Tripoli.

The student population for the university is recruited from the south west region of Libya. Requirement for admission in engineering and science faculty is that students must have completed the specialized secondary education in the field of engineering or science.

Teaching Faculty here does not require strong skills of English Language as Standard Arabic is used as Medium of Instruction. Al-Jabal Al-Garbi University is selected because English is not being used as a medium of instruction in teaching and learning.

4.1.2 Case Study II

Nasser International University, Tripoli, was established in 2001, during a period of progressive economic development in the country. Tripoli is the capital city and the largest city of Libya. The city is located in the northwestern part of Libya on the edge of the desert, on a point of rocky land projecting into the Mediterranean and forming a bay.

Requirement for admission in engineering and science faculty is that students must have completed the specialized secondary education in the field of engineering or sciences with 60% marks or over, and they are also require to pass an entry test.

Teaching Faculty here has especially strong skills of English Language as they are supposed to employ English Medium Instruction. Nasser International University is selected because English is currently being used as a medium of instruction in teaching and learning.

4.2 Students' Data Analysis

4.2.1 Students' Data Analysis: Research Question 1

What are university students' attitudes toward the use of English medium instruction in science and engineering education in Libya?

The items 46-53 of students' questionnaire were designed to answer the research question 1. Item contents are: 46 - I prefer English to be the medium of instruction for higher science engineering education. 47 - Given the choice, I would study all my courses in English. 48 - I believe my result would be better if I studied in English. 49 - I believe that students' participation would be more effective if English were the medium of instruction. 50 - I believe the curriculum would be taught more efficiently if it were done through the medium of English. 51 - I believe that English is the best medium for dealing with modern sciences and engineering. 52 - I believe that is possible to use English for teaching in high engineering education. 53 - The use of English as medium of instruction will promote the transfer of technology to Libya.

Table 4.1: Case Study I Frequencies and Distributions of Respondents on Attitude toward English as a Medium of Instruction

Item		SA	A	N	D	SD	Total
46	n	16	41	16	77	29	179
	%	8.9%	22.9%	8.9%	43.0%	16.2%	100.0%
47	n	7	11	53	85	23	179
	%	3.9%	6.1%	29.6%	47.5%	12.8%	100.0%
48	n	5	22	70	61	21	179
	%	2.8%	12.3%	39.1%	34.1%	11.7%	100.0%
49	n	9	43	32	72	23	179
	%	5.0%	24.0%	17.9%	40.2%	12.8%	100.0%
50	n	12	36	40	68	23	179
	%	6.7%	20.1%	22.3%	38.0%	12.8%	100.0%
51	n	39	88	33	12	7	179
	%	21.8%	49.2%	18.4%	6.7%	3.9%	100.0%
52	n	31	89	22	31	6	179
	%	17.3%	49.7%	12.3%	17.3%	3.4%	100.0%
53	n	71	57	26	19	6	179
	%	39.7%	31.8%	14.5%	10.6%	3.4%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

The main analyses will provide answers to the research questions that guide this study. The first research question was, “What are students’ attitudes toward the use of English medium instruction in higher engineering and science education in Libya?” The data in Table 4.1 present the frequencies and distributions of students’ responses to the eight items about English as the medium language of instructions.

On item 46, which stated, “I prefer English to be the medium of instruction for science and engineering at the university level” a majority (59.2%) disagreed or strongly disagreed with the statement, while slightly more than one-fourth (31.8%) either agreed or strongly agreed with it, with slightly less than one-tenth (8.9%) indicating neutrality. Since more than half number strongly disagreed or disagreed, the statement was generally not in favor of English as the medium of instruction.

On item 47, which stated, “Given the choice, I would study all my courses in English” a large majority (60.3%) disagreed or strongly disagreed with the statement, while one-tenth (10%) either agreed or strongly agreed with it.

On item 48, which stated, “I believe my results would be better if I studied in English” a majority (45.8%) either disagreed or strongly disagreed with the statement, while a smaller number (15.1%) either agreed or strongly agreed with it.

On item 49, which stated, “I believe that students’ participation would be more effective if English were the medium of instruction” a majority (43.8%) either disagreed or strongly disagreed with the statement, while more than one-fourth (29.0%) either agreed or strongly agreed with it.

On item 50, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of English” a majority (50.8%) either disagreed or strongly disagreed with the statement, while more than one-fourth (26.8%) either agreed or strongly agreed with it.

On item 51, which stated, “I believe that English is the best medium for dealing with modern sciences and engineering a smaller number (10.6%) either disagreed or strongly disagreed with the statement, while a large majority (71.8%) either agreed or strongly agreed with it.

On item 52, which stated, “I believe that is possible to use English for teaching in high science and engineering education” less than one-fourth (20.7%) either disagreed or strongly disagreed with the statement, while a large majority (67.0%) either agreed or strongly agreed with it.

On item 53, which stated, “The use of English as medium of instruction will promote the transfer of technology to Libya” a smaller number (14.0%) either disagreed or strongly disagreed with the statement, while a large majority (71.5%) either agreed or strongly agreed with it.

The answer to research question one, in general most Libyan students at Al-Jabal Al-Garbi University, science and engineering faculties do not wish English to be the medium of instruction and do not see the use of English as the exclusive language

of instruction as an advantage. Students were split evenly between those who believed that the curriculum would be taught more efficiently if it were done through the medium of English and who thought that English could effectively handle modern science and engineering to Libya. A minority of the students' population was in favor of using English as the medium of instruction and viewed its exclusive use favorably. It is interesting that a majority of students saw that the use of English as promoting technological transfer to Libya.

Table 4.2: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward English as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	14	78	14	49	5	160
46	%	8.8%	48.8%	8.8%	30.6%	3.1%	100.0%
	n	6	38	39	68	9	160
47	%	3.8%	23.8%	24.4%	42.5%	5.6%	100.0%
	n	5	61	53	32	9	160
48	%	3.1%	38.1%	33.1%	20.0%	5.6%	100.0%
	n	7	81	22	44	6	160
49	%	4.4%	50.6%	13.8%	27.5%	3.8%	100.0%
	n	8	73	25	43	11	160
50	%	5.0%	45.6%	15.6%	26.9%	6.9%	100.0%
	n	12	113	14	19	2	160
51	%	7.5%	70.6%	8.8%	11.9%	1.3%	100.0%
	n	13	111	10	26	0	160
52	%	8.1%	69.4%	6.3%	16.3%	0.0%	100.0%
	n	27	100	10	21	2	160
53	%	16.9%	62.5%	6.3%	13.1%	1.3%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

The data in Table 4.2 present the frequencies and distributions of students' responses to the eight items about English as the medium language of instructions.

On item 46, which stated, “I prefer English to be the medium of instruction for science and engineering at the university level” (33.7%) disagreed or strongly disagreed with the statement, while majority (57.6%) either agreed or strongly agreed with it, with slightly less than one-tenth (8.8%) indicating neutrality. Since more than half number strongly agreed or agreed, the statement was generally in favor of English as the medium of instruction.

On item 47, which stated, “Given the choice, I would study all my courses in English” a large majority (48.1%) disagreed or strongly disagreed with the statement, almost one-fourth (27.6%) either agreed or strongly agreed with it. One fourth (24.4%) were also neutral about the phenomenon.

On item 48, which stated, “I believe my results would be better if I studied in English” (25.6%) either disagreed or strongly disagreed with the statement, while a large number (41.2%) either agreed or strongly agreed with it. Again (33.1%) respondents are neutral.

On item 49, which stated, “I believe that students’ participation would be more effective if English were the medium of instruction” a majority (55%) either agreed or strongly agreed with the statement, while more than one-third (31.3%) either disagreed or strongly disagreed with it.

On item 50, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of English” a majority (50.6%) either agreed or strongly agreed with the statement, while more than one-third (33.8%) either agreed or strongly agreed with it.

On item 51, which stated, “I believe that English is the best medium for dealing with modern sciences and engineering” a large number (78.1%) either agreed or strongly agreed with the statement, while a small minority (13.2%) either agreed or strongly agreed with it.

On item 52, which stated, “I believe that is possible to use English for teaching in high science and engineering education” less than one-fifth (16.3%) either disagreed or strongly disagreed with the statement, while a large majority (77.5%) either agreed or strongly agreed with it.

On item 53, which stated, “The use of English as medium of instruction will promote the transfer of technology to Libya” a smaller number (14.4%) either disagreed or strongly disagreed with the statement, while a large majority (79.4%) either agreed or strongly agreed with it.

The answer to research question one, in general, most Libyan students at Nasser International University, science and engineering faculties appreciate English to be the medium of instruction and consider the use of English as the exclusive language of instruction as an advantage. Students were mainly in favor that English could effectively handle modern science and engineering to Libya. A majority of students did consider the use of English as promoting technological transfer to Libya, and this reason has been given as the reason for exclusive use of English as the medium of instruction at Nasser International University.

Chi-square Analysis

H_0 : *Are students' attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases same?*

H_1 : *Are students' attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases different?*

Data

	SA	A	N	D	SD	Total
case 1	190	387	292	425	138	1432
case 2	92	655	187	302	44	1280
Total	282	1042	479	727	182	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), *i.e.* 4 *d.f.*

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_j = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	148.9027	550.2006	252.9233	383.8732	96.10029	1432
case 2	133.0973	491.7994	226.0767	343.1268	85.89971	1280
Total	282	1042	479	727	182	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$
$$= 187.4316$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 187.4316$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students' attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases is different.

In response to item 46, 43.00% of the participants from case 1 disagree while 48.80% of the participants from case 2 agree with the opinion. Item 47 got almost similar responses as 47.50% of the participants from case 1 and 42.50% of case 2 disagreed with the view. In response to item 48 there are different opinions as 39.10% of case 1 has neutral opinion and 34.10% disagree while in case 2 38.10% agree and 33.10% have neutral opinion. Item 49 got different answers from both cases as 40.20% of case 1 disagrees while 50.60% of case 2 agrees with the opinion. 38.00% of case 1 disagrees with the opinion while 45.60% of case 2 agrees in item 50. Item 51 got similar response from participants of both the cases as 21.80% and

49.20% of case 1 and 7.50% and 70.60% of case 2 agree with the view. Most of the participants tend to agree with item 52 as 49.70% of case 1 and 69.40% of case 2 gave opinion in favour of opinion. In response to question 53 there is a tendency towards agreement with a slight difference in opinions as a total of 71.50% of case 1 and 79.40% of case 2 agree with the notion. Though there are similar tendencies in responses of some items but answers are not exactly the same. There exist slight variations across both the cases.

	SA	A	N	D	SD
case 1	13.3	27.0	20.4	29.7	9.6
case 2	7.2	51.2	14.6	23.6	3.4

Table 4.3: Research Question 1: Comparison across case 1& 2 (%)

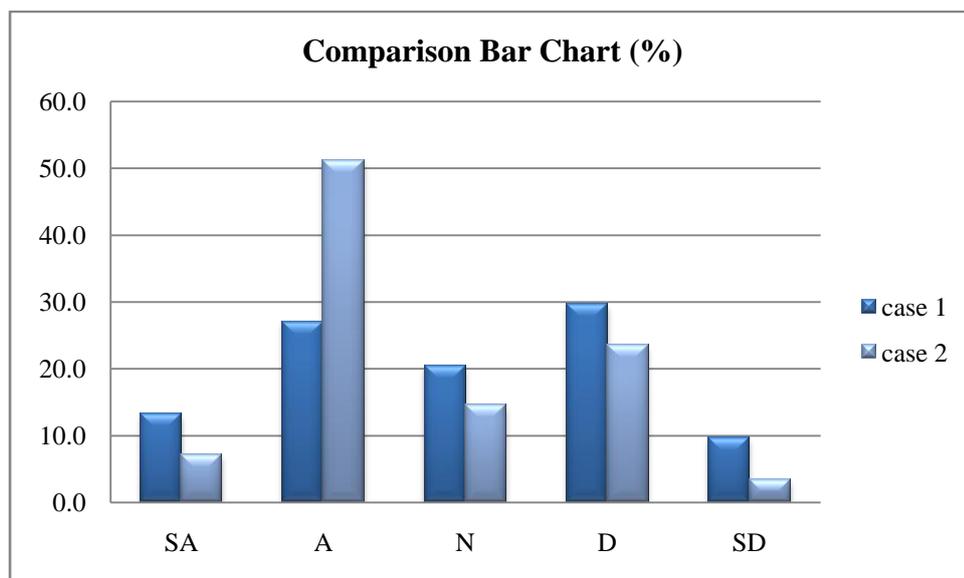


Figure 4: Research Question 1: Comparison across case 1& 2

The graph further reinforces the previous percentage calculations (table 4.1 and 4.2), that students of Nasser International University tend to agree more on the use of English as a language of instruction.

4.2.2 Students' Data Analysis: Research Question 2

What are university students' attitudes toward the use of Modern Standard Arabic in science and engineering education in Libya?

Items 38-45 were designed in the questionnaires, in order to address research question 2.

Item contents are: 38 - I prefer Arabic to be the medium of instruction for higher science and engineering education. 39 - Given the choice, I would study all my courses in Arabic. 40 - I believe my result would be better if I studied in Arabic. 41 - I believe that students' participation would be more effective if Arabic were the medium of instruction. 42 - I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic. 43 - I believe that Arabic is the best medium for dealing with modern sciences and engineering. 44 - I believe that is possible to use Arabic for teaching in high engineering education. 45 - The use of Arabic as medium of instruction will promote the transfer of technology to Libya.

Table 4.4: Case Study I Frequencies and Distributions of Respondents on Attitude toward Standard Arabic as a Medium of Instruction

Item		SA	A	N	D	SD	Total
	n	21	87	37	10	24	179
38	%	11.7%	48.6%	20.7%	5.6%	13.4%	100.0%
	n	11	18	79	67	4	179
39	%	6.1%	10.1%	44.1%	37.4%	2.2%	100.0%
	n	17	69	50	36	7	179
40	%	9.5%	38.5%	27.9%	20.1%	3.9%	100.0%
	n	15	79	64	7	14	179
41	%	8.4%	44.1%	35.8%	3.9%	7.8%	100.0%
	n	24	53	36	50	16	179
42	%	13.4%	29.6%	20.1%	27.9%	8.9%	100.0%
	n	28	33	44	64	10	179
43	%	15.6%	18.4%	24.6%	35.8%	5.6%	100.0%
	n	11	52	69	41	6	179
44	%	6.1%	29.1%	38.5%	22.9%	3.4%	100.0%
	n	24	58	26	62	9	179
45	%	13.4%	32.4%	14.5%	34.6%	5.0%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Research question 2 was answered by calculating the frequencies and distributions of responses of students for the eight items refereeing to the use of Standard Arabic as the language of instruction. Table 4.3 presents the result.

On item 38, which stated, "I prefer Arabic to be the medium of instruction for higher science and engineering education" a large majority (60.3%) agreed or strongly agreed with the statement, while less than one-fifth (19%) either disagreed or strongly disagreed with it. Since more than half agreed or strongly agreed, the statement was in favor by students to use Arabic as the medium of instruction.

On item 39, which stated, "Given the choice, I would study all my courses in Arabic" less than one-fifth (16.2%) agreed or strongly agreed with the statement, while a total of (39.6%) either disagreed or strongly disagreed with it, with (44.1%) indicating neutrality.

On item 40, which stated, "I believe my result would be better if I studied in Arabic" a majority (48%) agreed or strongly agreed with the statement, while less than one-fourth (24%) either disagreed or strongly disagreed with it.

On item 41, which stated, "I believe that students' participation would be more effective if Arabic were the medium of instruction" a majority (52.5%) agreed or strongly agreed with the statement, while (11.7%) either disagreed or strongly disagreed with it.

On item 42, which stated, "I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic" a majority (43%) agreed or strongly agreed with the statement, while more than one-fourth (26.8%) either disagreed or strongly disagreed with it.

On item 43, which stated, "I believe that Arabic is the best medium for dealing with modern sciences and engineering" less than one-fourth (24%) agreed or strongly agreed with the statement, while a majority (41.4%) either disagreed or strongly disagreed with it.

On item 44, which stated, “I believe that it is possible to use Arabic for teaching in high science and engineering education” a total of (35.2%) agreed or strongly agreed with the statement, while a smaller (26.3%) either disagreed or strongly disagreed with it. More than one-third (38.5%) were neutral.

On item 45, which stated, “The use of Arabic as medium of instruction will promote the transfer of technology to Libya” a majority (45.8%) agreed or strongly agreed with the statement, while (39.6%) either disagreed or strongly disagreed with it. Students tended to split almost evenly about the use of Arabic to transfer technology to Libya, with more favoring it than not.

Libyan students at Al-Jabal Al-Garbi University, science and engineering faculties are slightly favoring the use of Standard Arabic as the language of instruction. According to questionnaire responses, there is a slight tendency to favor the use Standard Arabic as the language of instruction, primarily because its use is believed to aid the transfer of technology.

Table 4.5: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward Standard Arabic as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	1	16	28	54	61	160
38 ^b	%	0.6%	10.0%	17.5%	33.8%	38.1%	100.0%
	n	4	7	15	109	25	160
39	%	2.5%	4.4%	9.4%	68.1%	15.6%	100.0%
	n	7	34	23	82	14	160
40	%	4.4%	21.3%	14.4%	51.3%	8.8%	100.0%
	n	12	37	24	70	17	160
41	%	7.5%	23.1%	15.0%	43.8%	10.6%	100.0%
	n	11	23	26	83	17	160
42	%	6.9%	14.4%	16.3%	51.9%	10.6%	100.0%
	n	10	27	15	93	15	160
43	%	6.3%	16.9%	9.4%	58.1%	9.4%	100.0%
	n	5	24	30	87	14	160
44	%	3.1%	15.0%	18.8%	54.4%	8.8%	100.0%
	n	8	27	10	97	18	160
45	%	5.0%	16.9%	6.3%	60.6%	11.3%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Students of Nasser International University gave following responses in order to answer research question 2:

On item 38, which stated, “I prefer Arabic to be the medium of instruction for higher science and engineering education” a large majority (71.9%) disagreed or strongly disagreed with the statement, while around one-tenth (10.6%) either agreed or strongly agreed with it. Since more than large majority disagreed or strongly disagreed, the statement was disfavored by students to use Arabic as the medium of instruction.

On item 39, which stated, “Given the choice, I would study all my courses in Arabic” (83.7%) disagreed or strongly disagreed with the statement, while a total of

only (6.9%) either agreed or strongly agreed with it, with (9.4%) indicating neutrality.

On item 40, which stated, "I believe my result would be better if I studied in Arabic" one fourth (25.7%) agreed or strongly agreed with the statement, while majority (60.1%) either disagreed or strongly disagreed with the idea. Only (14.4%) respondents showed neutrality.

On item 41, which stated, "I believe that students' participation would be more effective if Arabic were the medium of instruction" a majority (54.4%) disagreed or strongly disagreed with the statement, while (30.6%) either agreed or strongly agreed with it.

On item 42, which stated, "I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic" only (21.3%) agreed or strongly agreed with the statement, while more than one-fourth (62.5%) either disagreed or strongly disagreed with it.

On item 43, which stated, "I believe that Arabic is the best medium for dealing with modern sciences and engineering" less than one-fourth (24%) agreed or strongly agreed with the statement, while a majority (55.4%) either disagreed or strongly disagreed with it.

On item 44, which stated, "I believe that it is possible to use Arabic for teaching in high science and engineering education" a total of (23.3%) agreed or strongly agreed with the statement, while a larger number of respondents (67.5%) either disagreed or strongly disagreed with it. Only (18.8%) were neutral.

On item 45, which stated, "The use of Arabic as medium of instruction will promote the transfer of technology to Libya" (21.9 %) agreed or strongly agreed with the statement, while (71.9 %) either disagreed or strongly disagreed with it. Students tended to disagree about the use of Arabic to transfer technology to Libya.

The answer to research question 2 is that the Libyan students at Nasser International University, science and engineering faculties are disfavoring the use of Standard Arabic as the language of instruction. According to questionnaire responses, there is

a slight to none tendency to favor the use of Standard Arabic as the language of instruction, because as stated by respondents that it could hinder the transfer of technology.

Chi-square Analysis

H_0 : Are students' attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases same?

H_1 : Are students' attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases different?

Data

	SA	A	N	D	SD	Total
case 1	151	449	405	337	90	1432
case 2	58	195	171	675	181	1280
Total	209	644	576	1012	271	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_j = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	110.3569	340.0472	304.1416	534.3599	143.0944	1432
case 2	98.64307	303.9528	271.8584	477.6401	127.9056	1280
Total	209	644	576	1012	271	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$
$$= 372.7236$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 372.7236$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students' attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases is different.

In response to item 38, 48.60% of the participants from case 1 agree while 38.10% of the participants from case 2 strongly disagree with the opinion. Item 39 got almost similar responses as 37.40% of the participants from case 1 and 68.10% of case 2 disagreed with the view and 44.10% of case 1 have neutral opinion. In response to item 40 there are different opinions as 38.50% of case 1 agree while in case 2 51.30% disagree. Item 41 got different answers from both cases as 44.10% of case 1 agrees while 43.80% of case 2 disagrees with the opinion. 38.00% of case 1 disagrees with the opinion while 45.60% of case 2 agrees in item 42. Item 43 got similar tendencies from participants of both the cases as 35.80% of case 1 and 58.10% of case 2 disagree with the view. 29.10% of the participants of case 1 tend to agree with item 44 and 38.50% have neutral opinion while 54.40% case 2 tend to disagree with the opinion. In response to question 45 there is an unclear notion in case 1 as 32.40% agree and 34.60% disagree while 60.60% of case 2 disagree with

the view. There exist variations across both the cases along with similar tendencies in few responses but answers are not exactly the same.

	SA	A	N	D	SD
case 1	10.5	31.4	28.3	23.5	6.3
case 2	4.5	15.2	13.4	52.7	14.1

Table 4.6: Research Question 2: Comparison across case 1 & 2 (%)

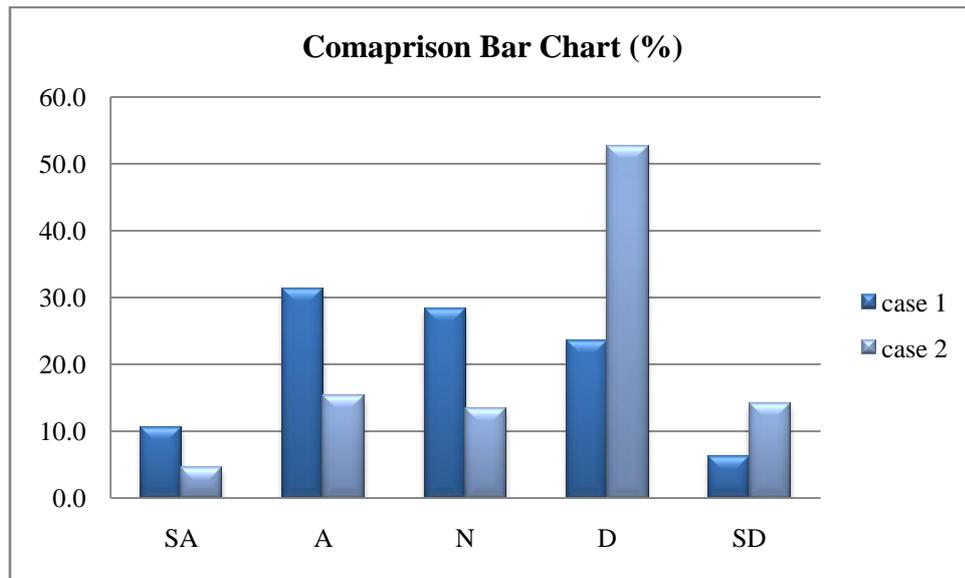


Figure 5: Research Question 2: Comparison across case 1& 2

The graph supports the previous percentage calculations (table 4.4 and 4.5), that students of Nasser International University tend to disagree more on the use of Standard Arabic as a language of instruction.

4.2.3 Students' Data Analysis: Research Question 3

What are university students' attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya?

Items 54-61 of students' questionnaire were designed to answer research question 3. Item contents are: 54 - I prefer Arabic and English bilingually to be the medium of instruction for higher science engineering education. 55 - Given the choice, I would

study all my courses in Arabic and English bilingually. 56 - I believe my result would be better if I studied in Arabic and English bilingually. 57 - I believe that students' participation would be more effective if Arabic and English bilingually were the medium of instruction. 58 - I believe the curriculum would I believe the curriculum would be taught more efficiently if it were in Arabic and English. 59 - I believe that Arabic and English bilingually is the best medium for dealing with modern sciences and engineering. 60 - I believe that is possible to use Arabic and English bilingually for teaching in high engineering education. 61 - The use of Arabic and English bilingually as medium of instruction will promote the transfer of technology to Libya.

Table 4.7: Case Study I Frequencies and Distributions of Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
54 ^b	n	73	26	55	20	5	179
	%	40.8%	14.5%	30.7%	11.2%	2.8%	100.0%
55	n	92	27	25	20	15	179
	%	51.4%	15.1%	14.0%	11.2%	8.4%	100.0%
56	n	74	24	45	31	5	179
	%	41.3%	13.4%	25.1%	17.3%	2.8%	100.0%
57	n	68	43	40	23	5	179
	%	38.0%	24.0%	22.3%	12.8%	2.8%	100.0%
58	n	89	39	25	21	5	179
	%	49.7%	21.8%	14.0%	11.7%	2.8%	100.0%
59	n	79	38	35	22	5	179
	%	44.1%	21.2%	19.6%	12.3%	2.8%	100.0%
60	n	89	33	32	21	4	179
	%	49.7%	18.4%	17.9%	11.7%	2.2%	100.0%
61	n	84	30	39	22	4	179
	%	46.9%	16.8%	21.8%	12.3%	2.2%	100.0%

Research question 3 asked, "What are university students' attitudes toward standard Arabic and English bilingually as the language of instruction in higher engineering

and science education in Libya?” It was answered by calculating the frequencies and distributions of responses of students for the eight items referring to the use of standard Arabic and English bilingually as the language of instruction. The data are presented in Table 4.5.

On item 54, which stated, “I prefer Arabic and English bilingually to be the medium of instruction for higher science and engineering education” a majority (55.3%) agreed or strongly agreed with the statement, while less than one-fifth (14%) either disagreed or strongly disagreed with it. Students were in favor of the use of Arabic-English bilingually as the medium of instruction.

On item 55, which stated, “Given the choice, I would study all my courses in Arabic-English bilingually” a large majority (65.5%) agreed or strongly agreed with the statement, while a total of (19.6%) either disagreed or strongly disagreed with it.

On item 56, which stated, “I believe my result would be better if I studied in Arabic-English bilingually” a majority (54.7%) agreed or strongly agreed with the statement, while one-fifth (20.1%) either disagreed or strongly disagreed with it. One-fourth (25.1%) were neutral.

On item 57, which stated, “I believe that students’ participation would be more effective if Arabic-English bilingually were the medium of instruction” a large majority (62%) agreed or strongly agreed with the statement, while (15.6%) either disagreed or strongly disagreed with it. More than one-fifth (22.3%) were neutral.

On item 58, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic-English bilingually” a strong majority (71.5%) agreed or strongly agreed with the statement, while a smaller number (14.5%) either disagreed or strongly disagreed with it.

On item 59, which stated, “I believe that Arabic-English bilingually is the best medium for dealing with modern sciences and engineering” a large majority (65.3%) agreed or strongly agreed with the statement, while a minority (15.1%) either disagreed or strongly disagreed with it.

On item 60, which stated, “I believe that it is possible to use Arabic-English bilingually for teaching in high science and engineering education” a large majority (68.1%) agreed or strongly agreed with the statement, while a smaller number (13.9%) either disagreed or strongly disagreed with it.

On item 61, which stated, “The use of Arabic-English bilingually as medium of instruction will promote the transfer of technology to Libya” a large majority (63.7%) agreed or strongly agreed with the statement, while a small minority (14.5%) either disagreed or strongly disagreed with it. More than one-fifth (21.8%) were neutral.

The answer to research question 3 is that a substantial majority of the Libyan students at Al-Jabal Al-Garbi University, science and engineering faculties prefer the use of Arabic-English bilingually as medium of instruction. They believe that the use of bilingualism would help instruction, produce better results among the students, and would serve student learners more efficiently. They also think that the use of Arabic-English bilingually as medium of instruction would result on transfer the technology to Libya.

Table 4.8: Case Study II Frequencies and Distributions of Students Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	54	62	31	12	1	160
54 ^b	%	33.8%	38.8%	19.4%	7.5%	0.6%	100.0%
	n	66	49	13	25	7	160
55	%	41.3%	30.6%	8.1%	15.6%	4.4%	100.0%
	n	51	64	25	19	1	160
56	%	31.9%	40.0%	15.6%	11.9%	0.6%	100.0%
	n	46	77	21	15	1	160
57	%	28.8%	48.1%	13.1%	9.4%	0.6%	100.0%
	n	59	73	14	13	1	160
58	%	36.9%	45.6%	8.8%	8.1%	0.6%	100.0%
	n	54	71	20	14	1	160
59	%	33.8%	44.4%	12.5%	8.8%	0.6%	100.0%
	n	62	67	17	13	1	160
60	%	38.8%	41.9%	10.6%	8.1%	0.6%	100.0%
	n	59	65	21	14	1	160
61	%	36.9%	40.6%	13.1%	8.8%	0.6%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

The students of Nasser International University gave the following responses:

On item 54, which stated, “I prefer Arabic and English bilingually to be the medium of instruction for higher science and engineering education” a majority (72.6%) agreed or strongly agreed with the statement, while less than one-tenth (8.1%) either disagreed or strongly disagreed with it. Students were in favor of the use of Arabic-English bilingually as the medium of instruction.

On item 55, which stated, “Given the choice, I would study all my courses in Arabic-English bilingually” a large majority (71.9%) agreed or strongly agreed with the statement, while a total of (20%) either disagreed or strongly disagreed with it.

On item 56, which stated, “I believe my result would be better if I studied in Arabic-English bilingually” a majority (71.9%) agreed or strongly agreed with the statement, while around one-tenth (12.5%) either disagreed or strongly disagreed with it. Only (15.6%) were neutral.

On item 57, which stated, “I believe that students’ participation would be more effective if Arabic-English bilingually were the medium of instruction” a large majority (76.9%) agreed or strongly agreed with the statement, while (10%) either disagreed or strongly disagreed with it. Around one-tenth (13.1%) were neutral.

On item 58, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic-English bilingually” a strong majority (82.5%) agreed or strongly agreed with the statement, while a smaller number (8.7%) either disagreed or strongly disagreed with it.

On item 59, which stated, “I believe that Arabic-English bilingually is the best medium for dealing with modern sciences and engineering” a large majority (78.2%) agreed or strongly agreed with the statement, while a minority (9.4%) either disagreed or strongly disagreed with it.

On item 60, which stated, “I believe that it is possible to use Arabic-English bilingually for teaching in high science and engineering education” a large majority (80.7%) agreed or strongly agreed with the statement, while a smaller number (8.7%) either disagreed or strongly disagreed with it.

On item 61, which stated, “The use of Arabic-English bilingually as medium of instruction will promote the transfer of technology to Libya” a large majority (77.5%) agreed or strongly agreed with the statement, while a small minority (9.4%) either disagreed or strongly disagreed with it. More than one-tenth (13.1%) were neutral.

The answer to research question 3 is that a substantial majority of the Libyan students at Nasser International University, science and engineering faculties prefer the use of Arabic-English bilingually as medium of instruction. They believe that the use of bilingualism would help instruction, produce better results among the students, and would serve student learners more efficiently. They also think that the

use of Arabic-English bilingually as medium of instruction would result in transfer of the technology to Libya.

Chi-square Analysis

H_0 : Are students' attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases same?

H_1 : Are students' attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases different?

Data

	SA	A	N	D	SD	Total
case 1	648	260	296	180	48	1432
case 2	451	528	162	125	14	1280
Total	1099	788	458	305	62	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	580.2979	416.0826	241.8348	161.0472	32.73746	1432
case 2	518.7021	371.9174	216.1652	143.9528	29.26254	1280
Total	1099	788	458	305	62	2712

Now $\chi^2 = \sum (o_i - e_i)^2 / e_i$

$$= 186.2947$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 186.2947$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students' attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases is different.

In response to item 54 there is a tendency towards agreement in both cases as 40.80% of case 1 strongly agrees and 38.80% of case 2 agree with the notion. 51.40% of case 1 and 41.30% of case 2 agree with the view of item 55. In response to item 56 41.30% of case strongly agree while 40.00% of case 2 agree with an overall tendency to agreement. 38.00% of case 1 strongly agrees while 48.10% of case 2 agrees with the opinion in item 57. In answers to item 58, 49.70% of case1 tend to agree strongly and 45.60% of case 2 just agrees with the view. Most participants of case 1 with 44.10% strongly agree and participants of case 2 with 44.40% agree with item 59. In response to item 60, 49.70% of the participants strongly agree while 41.90% of participants agree. Most participants of case 1 with 46.90% strongly agree and participants of case 2 with 40.60% agree with item 61.

Though there is overall agreement throughout the section but respondents of case 1 tend to agree strongly with the opinions and participants of case 2 have kept

subtlety by choosing “agree” instead of “strongly agree”. Hence variation crept in the data.

	SA	A	N	D	SD
case 1	45.3	18.2	20.7	12.6	3.4
case 2	35.2	41.3	12.7	9.8	1.1

Table 4.9: Research Question 3: Comparison across case 1 & 2 (%)

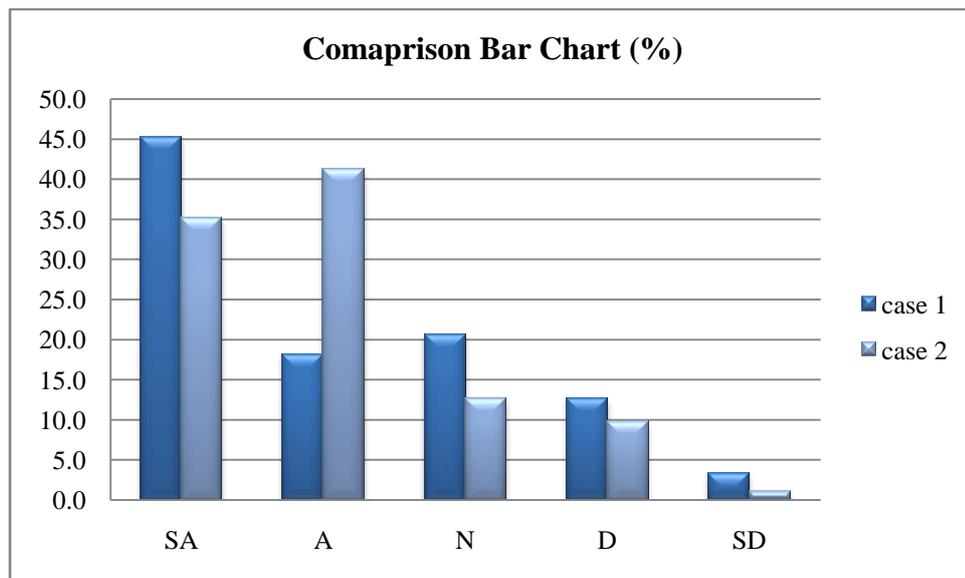


Figure 6: Research Question 3: Comparison across case 1& 2

The data further reinforce the previous percentage calculations (table 4.7 and 4.8), that students of Al-Jabal Al-Garbi University tend to agree more strongly on the use of Arabic English Bilingualism.

4.2.4 Students’ Data Analysis: Research Question 4

What is the relationship between attitudes toward language of instruction and students background variables such as education, gender, college of studying and ethnic origin?

Research Question 4.1

What are university students’ attitudes toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

4.2.4.1.a Analysis on the bases of education

What is the relationship between students' attitudes toward language of instruction and students' education?

H_0 : Do students with different education have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do students with different education have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	TOTAL
1st year	18	27	38	166	39	288
2nd year	59	178	168	202	97	704
3rd year	110	326	266	415	107	1224
4th year	21	114	104	229	28	496
TOTAL	208	645	576	1012	271	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 20 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(4-1)(5-1)$, i.e. 12d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	TOTAL
1st year	22.088	68.496	61.168	107.469	28.779	288
2nd year	53.994	167.434	149.522	262.702	70.348	704
3rd year	93.876	291.106	259.965	456.743	122.310	1224
4th year	38.041	117.965	105.345	185.086	49.563	496
TOTAL	208	645	576	1012	271	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 138.125438$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (12)}$

$$\chi^2 \geq 21.0260$$

Conclusion

Since the calculated value of $\chi^2 = 138.125438$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different education have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
1st year	6.3	9.4	13.2	57.6	13.5
2nd year	8.4	25.3	23.9	28.7	13.8
3rd year	9.0	26.6	21.7	33.9	8.7
4th year	4.2	23.0	21.0	46.2	5.6

Table 4.10: Research Question 4.1.a: Comparison across years of education for both cases (%)

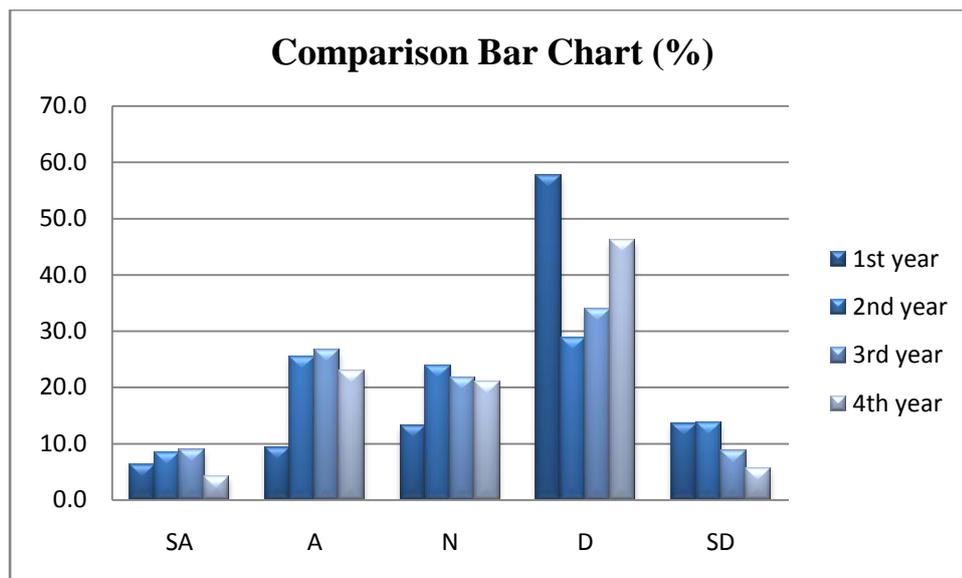


Figure 7: Research Question 4.1.a: Comparison across year of education for both cases

The graph further reinforces that the student's education level is associated with their attitudes use of Arabic medium of learning. Students of 2nd and 3rd year have almost same and a neutral opinion but students of 1st and 4th year tend to disagree more with the use of Standard Arabic as Medium of Instruction.

Table 4.11 for case study I students below shows that students of 2nd, 4th and 3rd year tend to agree more with the use of Standard Arabic, while 1st year students tend to disagree more.

	SA	A	N	D	SD
1st year	8.3	15.3	19.4	45.8	11.1
2nd year	12.2	30.6	28.3	14.3	14.5
3rd year	11.4	35.8	29.5	22.2	1.1
4th year	6.5	30.6	30.2	28.6	4.0

Table 4.11: Research Question 4.1.a: Comparison across years of education for case study I (%)

Table 4.12 for case study II students below shows that majority of 1st, 2nd, 4th and 3rd year students tend to disagree more with the use of Standard Arabic, while 1st year students tend to disagree more. All years of case study II students tend to

disagree more than case I students for using Standard Arabic as medium of instruction.

	SA	A	N	D	SD
1st year	4.2	3.5	6.9	69.4	16.0
2nd year	3.5	18.6	18.3	46.8	12.8
3rd year	6.3	16.3	13.0	47.0	17.4
4th year	2.0	15.3	11.7	63.7	7.3

Table 4.12: Research Question 4.1.a: Comparison across years of education for case study II (%)

4.2.4.1.b Analysis on the bases of gender

What is the relationship between students' attitudes toward language of instruction and students gender?

H₀: Do students with different gender have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different gender have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Male	104	338	278	583	145	1448
Female	106	305	303	439	111	1264
Total	210	643	581	1022	256	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	112.124	343.313	310.209	545.67	136.684	1448
Female	97.8761	299.687	270.791	476.33	119.316	1264
Total	210	643	581	1022	256	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 15.179755$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 15.179755$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different gender have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	7.2	23.3	19.2	40.3	10.0
Female	8.4	24.1	24.0	34.7	8.8

Table 4.13: Research Question 4.1.b: Comparison across gender for both cases (%)

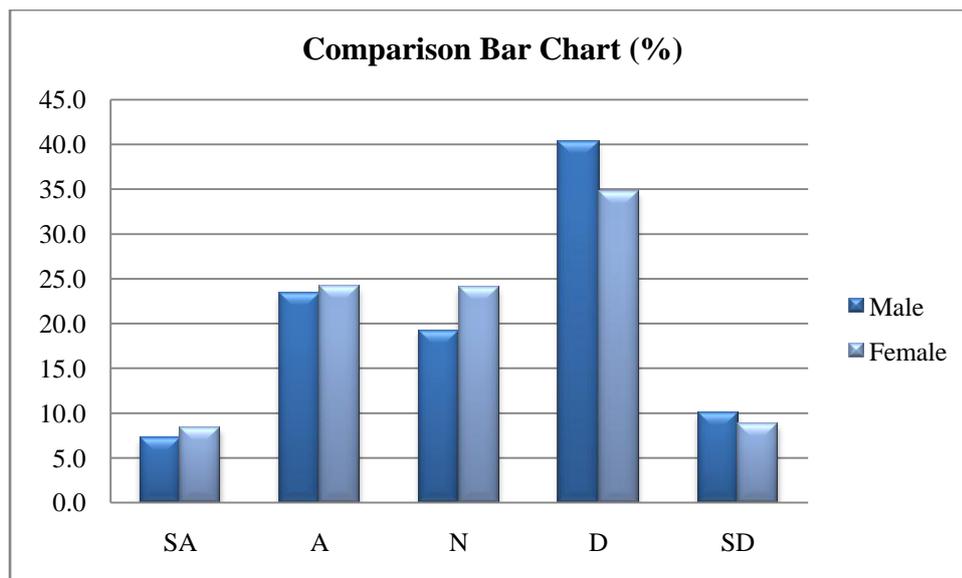


Figure 8: Research Question 4.1.b: Comparison across gender for both cases

The graph further clarifies that there is a slight difference in opinion of male and female respondents. A majority of both the genders tends to disagree with the opinion.

Table below for male and female case study I show that male and female students tend to agree with the using of Standard Arabic. Male students tend to agree more than female students.

	SA	A	N	D	SD
Male	11.3	33.6	26.5	23.9	4.7
Female	9.9	29.4	29.8	23.2	7.7

Table 4.14: Research Question 4.1.b: Comparison across case study I male and female students (%)

Table below for male and female case study II show that male and female students tend to disagree with the using of Standard Arabic. Male students tend to disagree more than female students. Both groups of case study I students tend to agree more than case II students for using Standard Arabic as medium of instruction. On other hand, both groups of case study II students tend to disagree more than case I students for using Standard Arabic as medium of instruction

	SA	A	N	D	SD
Male	3.7	14.5	12.9	53.6	15.3
Female	5.8	16.3	14.1	51.4	12.3

Table 4.15: Research Question 4.1.b: Comparison across case study II male and female students (%)

4.2.4.1.c Analysis on the bases of students college of study

What is the relationship between students' attitudes toward language of instruction and students' College of study?

H₀: Do students with different college of study have same attitude toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different college of study have different attitude toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data:

	SA	A	N	D	SD	Total
Science	137	438	346	557	130	1608
Engineering	71	207	230	455	141	1104
Total	208	645	576	1012	271	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	123.3274	382.4336	341.5221	600.0354	160.6814	1608
Engineering	84.67257	262.5664	234.4779	411.9646	110.3186	1104
Total	208	645	576	1012	271	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 45.67451144$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 45.67451144$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different college of study have different attitudes toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	8.5	27.2	21.5	34.7	8.1
Engineering	6.4	18.8	20.8	41.2	12.8

Table 4.16: Research Question 4.1.c: Comparison across science and engineering students for both cases (%)

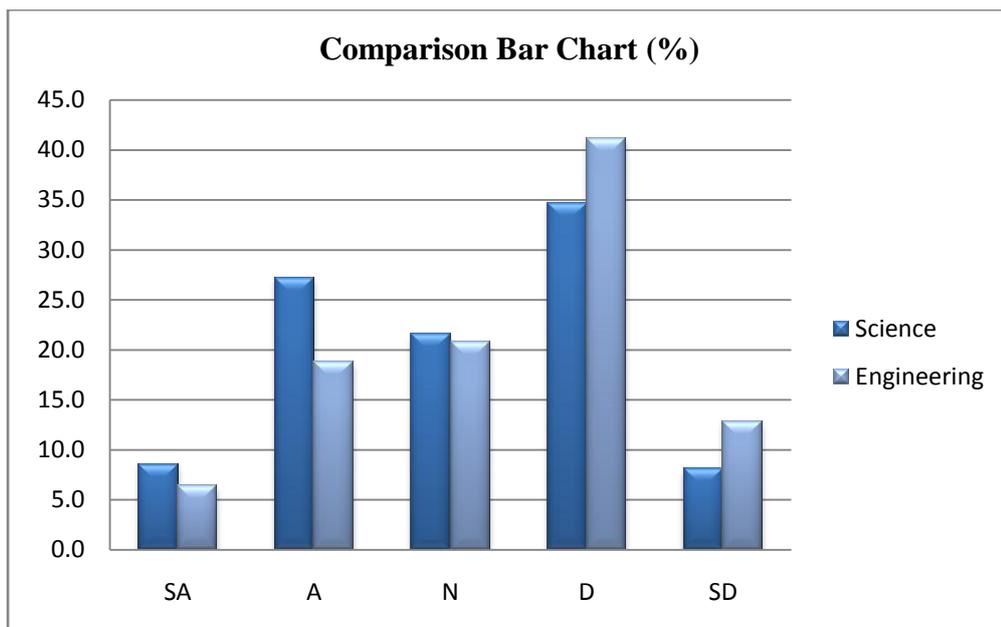


Figure 9: Research Question 4.1.c: Comparison across science and engineering students for both cases

The graph further clarifies that there is a difference in opinion of science and engineering students toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Engineering students tend to disagree more, over all, both of the colleges tend to disagree with the opinion.

Table 4.17 for case study I students below shows that science students tend to agree more than engineering students with the use of Standard Arabic

	SA	A	N	D	SD
Science	10.6	34.1	26.9	21.3	7.1
Engineering	10.3	27.0	30.5	27.2	5.0

Table 4.17: Research Question 4.1.c: Comparison across case study I science and engineering students (%)

Table 4.18 for case study II students below shows that majority of science and engineering students tend to disagree more with the use of Standard Arabic. Engineering students tend to disagree more than science students. Both groups of case study II students tend to disagree more than case I students for using Standard Arabic as medium of instruction

	SA	A	N	D	SD
Science	6.0	18.8	14.9	51.1	9.3
Engineering	2.7	10.7	11.4	54.8	20.4

Table 4.18: Research Question 4.1.c: Comparison across case study II science and engineering students (%)

4.2.4.1.d Analysis on the bases of students ethnic origin

What is the relationship between students' attitudes toward language of instruction and students' ethnic origin?

H_0 : *Do students with different ethnic origin have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?*

H_1 : *Do students with different ethnic origin have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?*

Data

	SA	A	N	D	SD	Total
Arab	58	229	155	101	9	552
Berber	92	221	250	236	81	880
Total	150	450	405	337	90	1432

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Arab	57.821	173.463	156.117	129.905	34.692	552
Berber	92.178	276.5363	248.882	207.095	55.307	880
Total	150	450	405	337	90	1432

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 70.37671$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 70.37671$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different ethnic origins have different attitudes toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Arab	10.5	41.5	28.1	18.3	1.6
Berber	10.5	25.1	28.4	26.8	9.2

Table 4.19: Research Question 4.2.d: Comparison across students' ethnic origin (%)

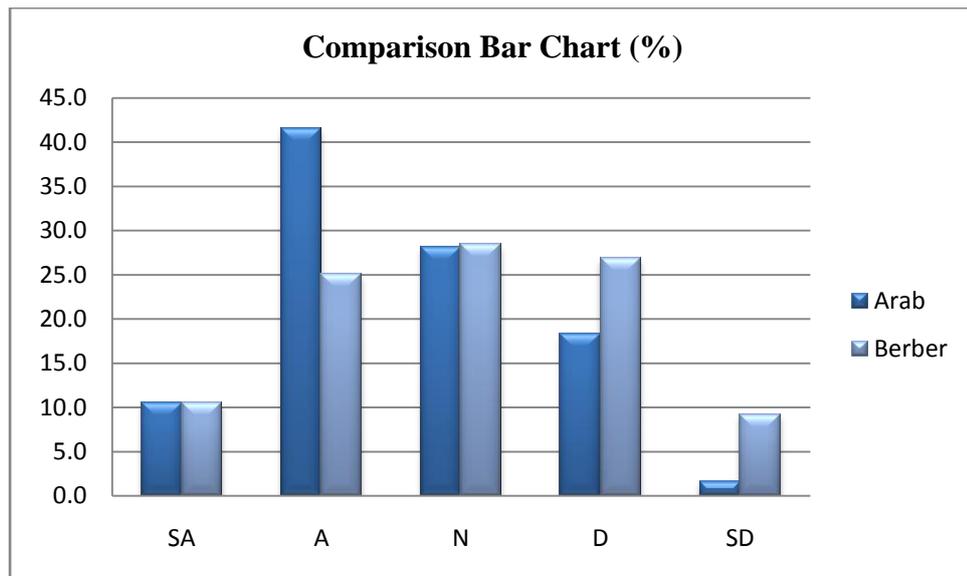


Figure 10: Research Question 4.2.d: Comparison across students' ethnic origin

The graph further clarifies that there is a difference in opinion of Arab and Berber respondents about using Standard Arabic as a medium of instruction. Berber students split almost evenly about the use of Standard Arabic, while Arab students favor using Standard Arabic more and agreed more than Berber students. Berber students tend to disagree with the opinion more than Arab students.

Research Question 4.2

What are university students' attitudes toward English as a Medium of Instruction in science and engineering education in Libya?

4.2.4.2.a Analysis on the bases of education

What is the relationship between students' attitudes toward language of instruction and students' education?

H_0 : *Do students with different education have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

H_1 : *Do students with different education have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

Data

	SA	A	N	D	SD	TOTAL
1st year^a	12	106	71	86	13	288
2nd year	96	251	91	199	67	704
3rd year	97	424	175	449	79	1224
4th year	13	179	111	148	45	496
TOTAL	218	960	448	882	204	2712

Item^a: All the students of 1st, 2nd, 3rd and 4th year of both the cases have been combined. All the four years of education have been assumed as being on different education level.

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 20 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(4-1)(5-1)$, i.e. 12d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	TOTAL
1st year	23.150	101.947	47.575	93.664	21.664	288
2nd year	56.590	249.204	116.295	228.956	52.956	704
3rd year	98.389	433.274	202.195	398.071	92.071	1224
4th year	39.870	175.575	81.935	161.310	37.310	496
TOTAL	218	960	448	882	204	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 105.1782704$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (12)}$

$$\chi^2 \geq 21.0260$$

Conclusion

Since the calculated value of $\chi^2 = 105.1782704$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different education have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
1st year	4.2	36.8	24.7	29.9	4.5
2nd year	13.6	35.7	12.9	28.3	9.5
3rd year	7.9	34.6	14.3	36.7	6.5
4th year	2.6	36.1	22.4	29.8	9.1

Table 4.20: Research Question 4.2.a: Comparison across years of education for both cases (%)

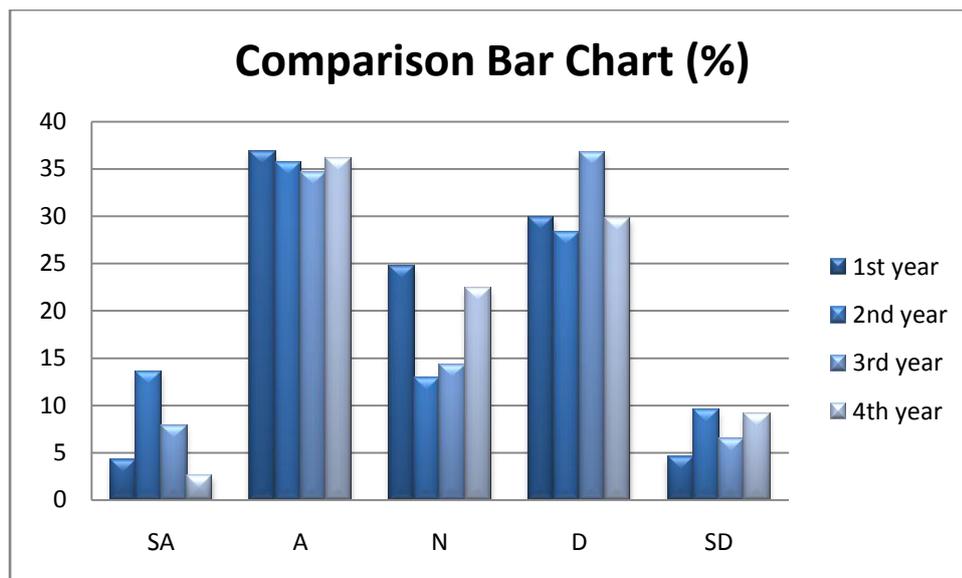


Figure 11: Research Question 4.2.a: Comparison across years of education for both cases

The data further fortify that the student’s education level is associated with their attitudes. Students of 1st and 2nd year tends to agree more than students of 3rd and 4th year, also more than %20 of 1st and 4th students have a neutral opinion as English as Medium of Instruction.

Table 4.21 for case study I students below shows that 1st year students split almost evenly about the use of English Medium Instruction, on other hand majority of 2nd, 3rd and 4th year students tend to disagree more with the use of English

	SA	A	N	D	SD
1st year	4.2	30.6	28.5	30.6	6.3
2nd year	14.8	19.4	13.0	39.8	13.0
3rd year	8.3	21.1	16.4	44.0	10.2
4th year	3.2	19.4	25.4	38.3	13.7

Table 4.21: Research Question 4.2.a: Comparison across years of education for case study I (%)

Table 4.22 for case study II students below shows that majority of 1st, 2nd, 4th and 4th year students tend to agree more with the use of English Medium Instruction, on other hand 25% of 4th year students tend to disagree about the option. All years of

case study II students tend to agree more than case I students for using English as medium of instruction.

	SA	A	N	D	SD
1st year	4.2	43.1	20.8	29.2	2.8
2nd year	12.2	56.1	12.8	13.8	5.1
3rd year	7.5	49.8	12.0	28.5	2.3
4th year	2.0	52.8	19.4	21.4	4.4

Table 4.22: Research Question 4.2.a: Comparison across years of education for case study II (%)

4.2.4.2.b Analysis on the bases of gender

What is the relationship between students' attitudes toward language of instruction and students gender?

H_0 : *Do students with different gender have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

H_1 : *Do students with different gender have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

Data

	SA	A	N	D	SD	Total
Male	148	555	223	443	79	1448
Female	134	487	256	284	103	1264
Total	282	1042	479	727	182	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which , if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	150.566	556.348	255.749	388.162	97.174	1448
Female	131.434	485.652	223.251	338.838	84.826	1264
Total	282	1042	479	727	182	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 33.01358349$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 33.01358349$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different gender have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	10.2	38.3	15.4	30.6	5.5
Female	10.6	38.5	20.3	22.5	8.1

Table 4.23: Research Question 4.2.b: Comparison across gender for both cases (%)

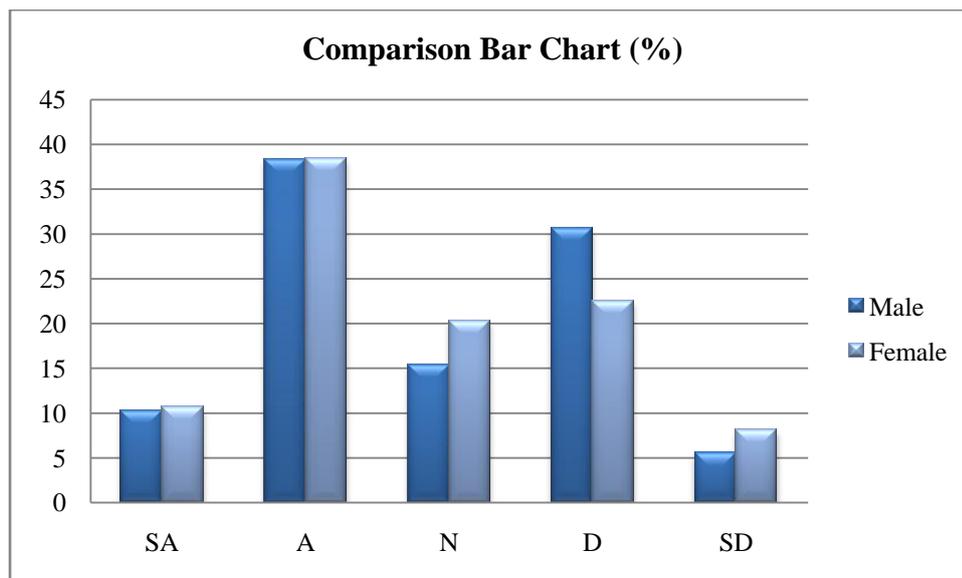


Figure 12: Research Question 4.2.b: Comparison across gender for both cases

The graph further clarifies that there is a slight difference in opinion between male and female students. When male and female students are compared together in both universities, students tend to agree with the opinion.

Table below for male and female case study I shows that male and female students tend to disagree for using English as a medium of instruction. Female students tend to disagree more than male students. Male students tend to agree more than female students for using English as a medium of instruction.

	SA	A	N	D	SD
Male	10.4	22.6	16.3	41.9	8.9
Female	7.7	20.2	19.9	39.1	13.2

Table 4.24: Research Question 4.2.b: Comparison across study I male and female (%)

Table below for male and female case study II shows that male and female students tend to agree for using English as a medium of instruction. Female students tend to agree more than male students. Both groups of case study I students tend to disagree more than case II students for using English as a medium of instruction. On the other hand, male and female case study II students tend to agree more than male and female case I.

	SA	A	N	D	SD
Male	7.9	47.8	13.8	27.3	3.2
Female	6.0	56.5	15.9	17.7	3.8

Table 4.25: Research Question 4.2.b: Comparison across case study II male and female (%)

4.2.4.2.c Analysis on the bases of students college of study

What is the relationship between students' attitudes toward language of instruction and students' College of study?

H_0 : *Do students with different college of study have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

H_1 : *Do students with different college of study have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?*

Data:

	SA	A	N	D	SD	Total
Science	115	594	271	498	130	1608
Engineering	103	366	177	384	74	1104
Total	218	960	448	882	204	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	129.2566	569.2035	265.6283	522.9558	120.9558	1608
Engineering	88.74336	390.7965	182.3717	359.0442	83.04425	1104
Total	218	960	448	882	204	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 11.36997296$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 11.36997296$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different college of study have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	7.2	36.9	17	30.9	8.0
Engineering	9.3	33.2	16	34.8	6.7

Table 4.26: Research Question 4.2.c: Comparison across science and engineering student for both cases (%)

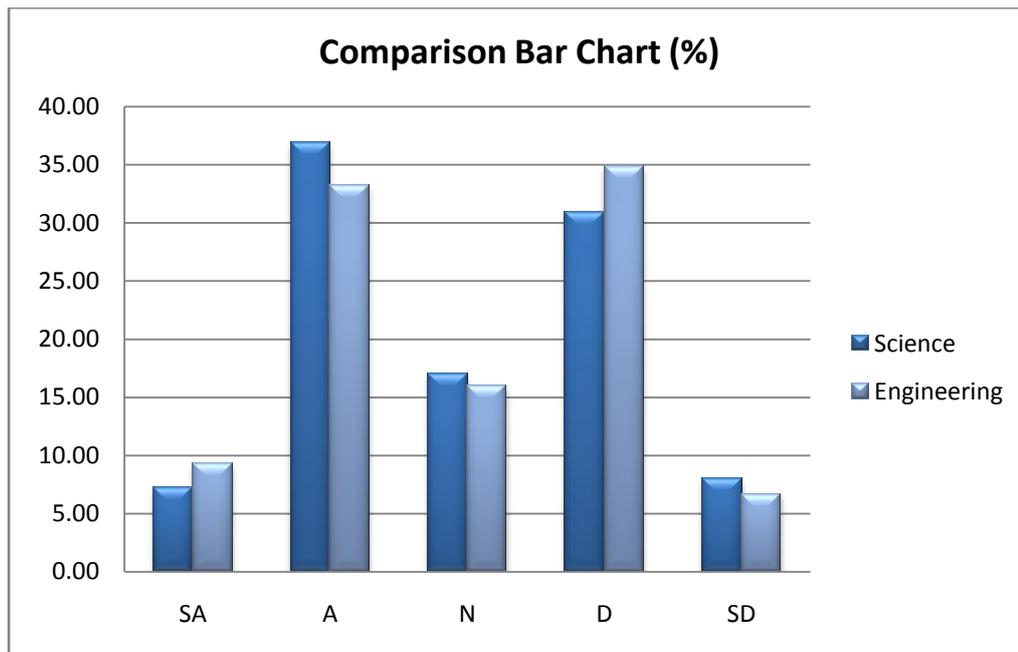


Figure 13: Research Question 4.2.c: Comparison across science and engineering students for both cases

The graph further clarifies that there is a slight difference in opinion of science and engineering students. When the colleges compared together in both universities, students tend to agree with the opinion, science students tend to agree more that English should be Medium of Instruction.

Table 4.27 for case study I students below shows that majority of science and engineering students tend to disagree more with the use of using English as medium of instruction. Engineering students tend to disagree more than science students.

	SA	A	N	D	SD
Science	8.6	22.5	18.1	38.4	12.4
Engineering	9.2	19.3	18.4	43.9	9.2

Table 4.27: Research Question 4.2.c: Comparison across case study I science and engineering students (%)

Table 4.28 for case study II students below shows that majority of science and engineering students tend with the using of English as medium of instruction. Science students tend to agree more than engineering students. Science and

engineering students in case study II tend to agree more than science and engineering in case I for using English as medium of instruction

	SA	A	N	D	SD
Science	5.4	54.7	15.3	21.8	2.8
Engineering	9.5	46.6	13.8	25.9	4.3

Table 4.28: Research Question 4.2.c: Comparison across case study II science and engineering students (%)

4.2.4.2.d Analysis on the bases of students ethnic origin

What is the relationship between students' attitudes toward language of instruction and students ethnic origin?

H_0 : Do students with different ethnic origin have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do students with different ethnic origin have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Arab	31	96	93	242	90	552
Berber	95	209	168	338	70	880
Total	126	305	261	580	160	1432

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Arab	48.569	117.569	100.608	223.575	61.675	552
Berber	77.430	187.430	160.391	356.424	98.324	880
Total	126	305	261	580	160	1432

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 41.35611$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 41.35611$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different ethnic origins have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Arab	5.6	17.4	16.8	43.8	16.3
Berber	10.8	23.8	19.1	38.4	8.0

Table 4.29: Research Question 4.2.d: Comparison across students ethnic origin (%)

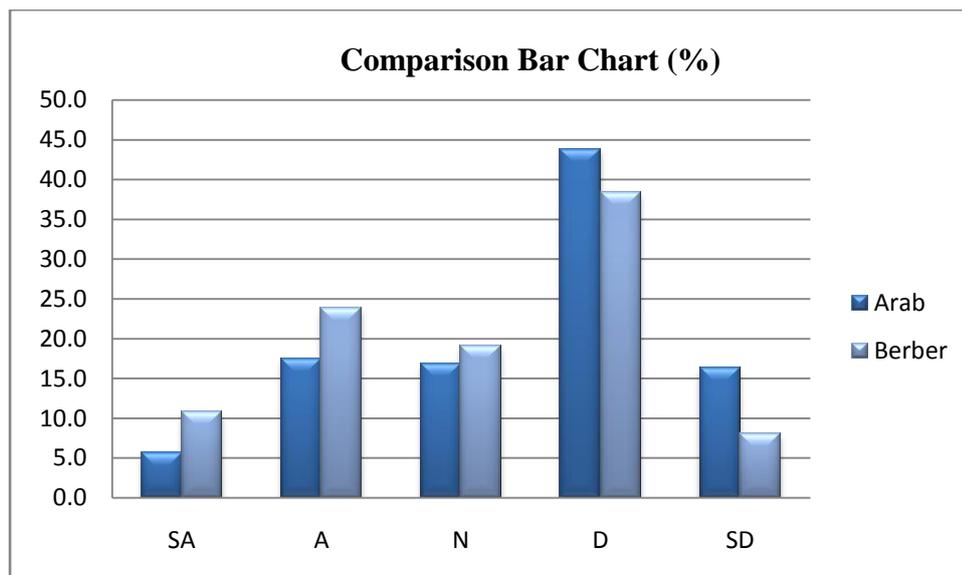


Figure 14: Research Question 4.2.d: Comparison across students' ethnic origin

The graph further clarifies that there is a slight difference in opinion of Arab and Berber participants about using English as Medium of Instruction. Arab students tend to disagree more than Berber students about the use of English Medium Instruction, while Berber students favor using English Medium Instruction more and agreed more than Arab students. Both of students groups tend to disagree with the opinion.

Research Question 4.3

What are university students' attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

4.2.4.3.a Analysis on the bases of education

What is the relationship between students' attitudes toward language of instruction and students' education?

H₀: Do students with different education have same attitude toward English and Arabic Bilingualism as Medium of Instruction in science and engineering education in Libya?

H_1 : Do students with different education have different attitude toward English and Arabic Bilingualism as Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	TOTAL
1st year	168	94	18	8	0	288
2nd year	303	180	155	53	13	704
3rd year	452	353	207	180	32	1224
4th year	176	161	78	64	17	496
TOTAL	1099	788	458	305	62	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 20 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(4-1)(5-1)$, i.e. 12d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	TOTAL
1st year	116.708	83.681	48.637	32.389	6.584	288
2nd year	285.286	204.555	118.891	79.174	16.094	704
3rd year	496.009	355.646	206.708	137.655	27.982	1224
4th year	200.997	144.118	83.764	55.782	11.339	496
TOTAL	1099	788	458	305	62	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 119.3725437$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (12)

$$\chi^2 \geq 21.0260$$

Conclusion

Since the calculated value of $\chi^2 = 119.3725437$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different education have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
1st year	58.3	32.6	6.3	2.8	0.0
2nd year	43.0	25.6	22.0	7.5	1.8
3rd year	36.9	28.8	16.9	14.7	2.6
4th year	35.5	32.5	15.7	12.9	3.4

Table 4.30: Research Question 4.3.a: Comparison across years of education for both cases (%)

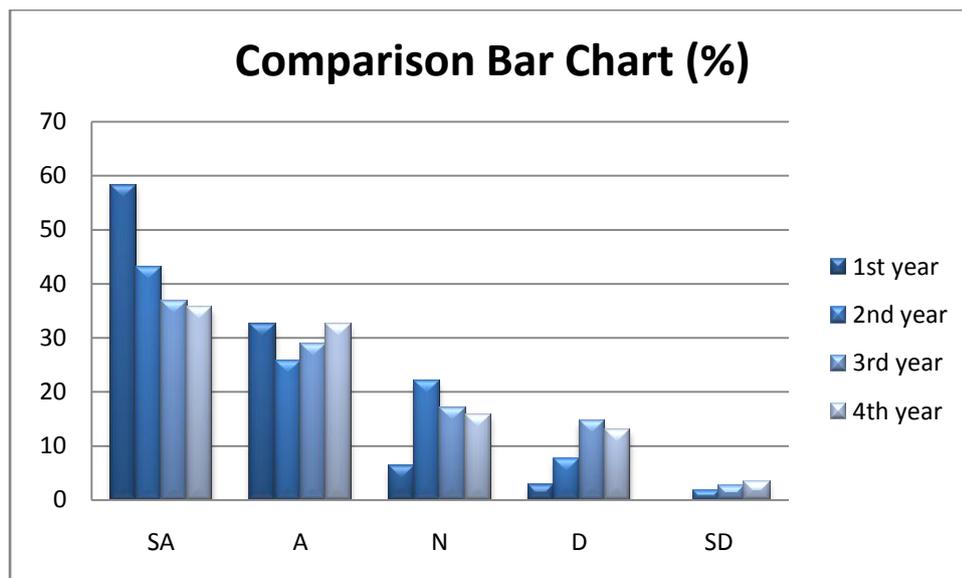


Figure 15: Research Question 4.3.a: Comparison across years of education for both cases

The graph further reinforce that the student’s education level is associated with their attitudes use of Arabic and English Bilingualism as a medium of learning. Students of 1st, 2nd, 3rd and 4th year have almost same opinion. Most of students tend to agree with the use of Arabic and English Bilingualism as a Medium of Instruction.

Table 4.31 for case study I students below shows that majority of all four years students tend to agree with the use of Arabic and English Bilingualism as Medium of Instruction, 1st and 2nd , year students tend to agree more than 3rd and 4th year.

	SA	A	N	D	SD
1st year	59.7	25.0	9.7	5.6	0.0
2nd year	48.2	15.1	25.5	9.2	2.0
3rd year	41.5	18.2	21.6	15.0	3.7
4th year	41.9	19.0	16.9	15.7	6.5

Table 4.31: Research Question 4.3.a: Comparison across years of education for case study I (%)

Table 4.32 for case study II students below shows that majority of all Four years students tend to agree with the use of Arabic and English Bilingualism as Medium of Instruction,. All Nasser International University students tend to agree more than

Al-Jabal Al-Garbi University students. In general both cases tend to agree with the using of Arabic and English Bilingualism as medium of instruction.

	SA	A	N	D	SD
1st year	56.9	40.3	2.8	0.0	0.0
2nd year	36.5	38.8	17.6	5.4	0.0
3rd year	31.8	40.8	11.6	14.4	1.4
4th year	29.0	46.0	14.5	10.1	0.4

Table 4.32: Research Question 4.3.a: Comparison across years of education for case study II (%)

4.2.4.3.b Analysis on the bases of gender

What is the relationship between students' attitudes toward language of instruction and students gender?

H₀: Do students with different gender have same attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different gender have different attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Male	696	455	149	128	20	1448
Female	643	371	129	79	42	1264
Total	1339	826	278	207	62	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which , if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	714.9233	441.021	148.431	110.522	33.1032	1448
Female	624.0767	384.979	129.569	96.4779	28.8968	1264
Total	1339	826	278	207	62	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 19.0886337$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 19.0886337$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different gender have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	48.1	31.4	10.3	8.8	1.4
Female	50.9	29.4	10.2	6.3	3.3

Table 4.33: Research Question 4.3.b: Comparison across gender for both cases (%)

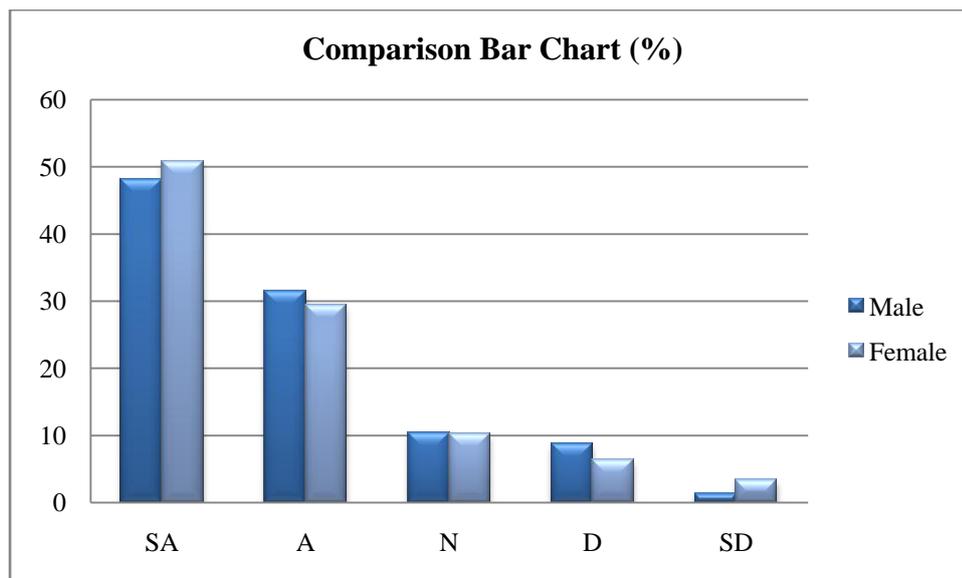


Figure 16: Research Question 4.3.b: Comparison across gender for both cases

Graph shows that students with different gender have almost same attitudes toward the Standard Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya. Both male and female students in both universities tend to agree more.

Table below for male and female case study I show that male and female students tend to agree with the using Standard Arabic and English Bilingualism as a Medium of Instruction. Female students tend to agree more than male students.

	SA	A	N	D	SD
Male	39.8	16.9	23.5	18.4	1.5
Female	50.0	19.3	18.2	7.6	4.9

Table 4.34: Research Question 4.3.b: Comparison across case study I male and female (%)

Table below for male and female case study II show that male and female students tend to agree with the using Standard Arabic and English Bilingualism as a Medium of Instruction. Female students tend to agree more than male students. Both groups of case study II students tend to agree more than case I students for the option.

	SA	A	N	D	SD
Male	33.2	40.6	14.0	11.0	1.3
Female	38.5	42.3	10.5	7.9	0.8

Table 4.35: Research Question 4.3.b: Comparison across case study II male and female (%)

4.2.4.3.c Analysis on the bases of students college of study

What is the relationship between students' attitudes toward language of instruction and students' college of study?

H_0 : *Do students with different college of study have same attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?*

H_1 : *Do students with different college of study have different attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?*

Data:

	SA	A	N	D	SD	Total
Science	682	501	229	139	57	1608
Engineering	417	287	229	166	5	1104
Total	1099	788	458	305	62	2712

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	651.6195	467.2212	271.5575	180.8407	36.76106	1608
Engineering	447.3805	320.7788	186.4425	124.1593	25.23894	1104
Total	1099	788	458	305	62	2712

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 77.01495$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 77.01495$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different college of study have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	42.4	31.1	14.2	8.7	3.6
Engineering	37.8	25.9	20.8	15	0.5

Table 4.36: Research Question 4.3.c: Comparison across science and engineering students for both cases (%)

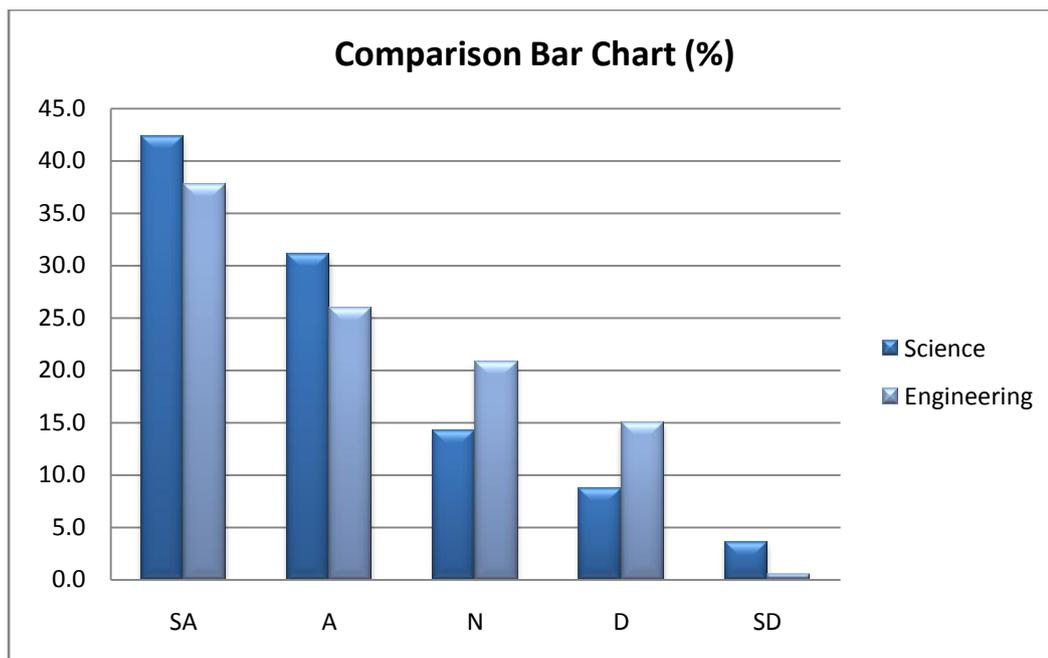


Figure 17: Research Question 4.3.c: Comparison across science and engineering for both cases

Graph shows that students with different college of study have almost same attitudes toward the Standard Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya. The both colleges have strong opinions; the only prominent feature in the graph depicts that science students tend to agree more.

Table 4.37 for case study I students below shows that majority of science and engineering students tend to agree more with the use of Standard Arabic and English Bilingualism as a Medium of Instruction in science and engineering education. Engineering students tend to agree more than science students.

	SA	A	N	D	SD
Science	46.7	20.9	17.5	9.7	5.2
Engineering	42.8	13.6	25.9	17.3	0.4

Table 4.37: Research Question 4.3.c: Comparison across case study I science and engineering students (%)

Table 4.38 for case study II students below shows that majority of science and engineering students tend to agree more with the option. Science students tend to agree more than engineering students. Both colleges of case study II students tend to agree more than relevant college in case I students. Overall both groups in both universities tend to agree with the use of Standard Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	37.1	43.8	10.3	7.4	1.5
Engineering	32.9	38.0	15.7	12.9	0.5

Table 4.38: Research Question 4.3.c: Comparison across case study II science and engineering (%)

4.2.4.3.d Analysis on the bases of students ethnic origin

What is the relationship between students' attitudes toward language of instruction and students ethnic origin?

H₀: Do students with different ethnic origin have same attitude toward Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do students with different ethnic origin have different attitude toward Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Arab	210	112	103	80	47	552
Berber	392	157	169	147	15	880
Total	602	269	272	227	62	1432

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Arab	232.055	103.692	104.849	87.502	23.899	552
Berber	369.944	165.307	167.150	139.497	38.100	880
Total	602	269	272	227	62	1432

$$\begin{aligned} \text{Now } \chi^2 &= \sum (o_i - e_i)^2 / e_i \\ &= 41.92855 \end{aligned}$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 41.92855$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that students with different ethnic origins have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Arab	38.0	20.3	18.7	14.5	8.5
Berber	44.5	17.8	19.2	16.7	1.7

Table 4.39: Research Question 4.3.d: Comparison across students' ethnic origin (%)

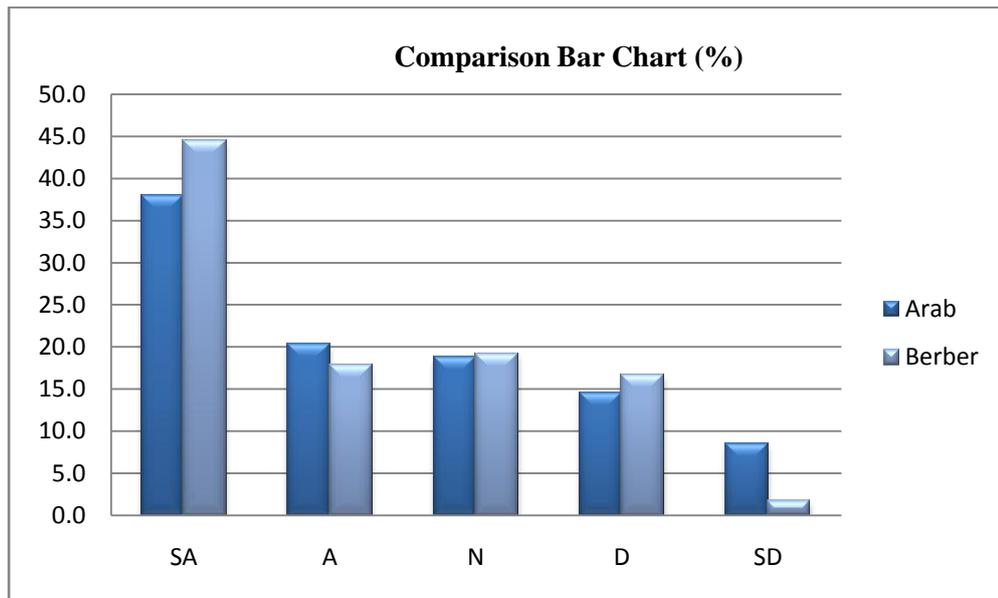


Figure 18: Research Question 4.3.a: Comparison across students' ethnic origin

The graph further clarifies that there is a slight difference in opinion of Arab and Berber respondents about using Arabic and English Bilingualism as a medium of instruction. Berber respondents tend to agree more than Arab respondents about the use of Arabic and English Bilingualism as medium instruction, Arab students disagreed more about the opinion. Majority of both groups tend to agree with the use of Arabic and English Bilingualism as a medium of instruction in Libyan science and engineering education.

4.3 Teaching Staff Data Analysis

4.3.1 Teaching Staff Data Analysis: Research Question 1

What are teaching staff's attitudes toward the use of English medium instruction in science and engineering education in Libya?

Items 45-52 were designed in the questionnaires to answer research question 1. Item contents are: 45 - I prefer English to be the medium of instruction for high engineering education. 46 - Given the choice, I would teach all my courses in English. 47 - I believe my result would be better if I taught in English. 48 - I believe that students' participation would be more effective if English were the medium of instruction. 49 - I believe the curriculum would be taught more efficiently if it were done through the medium of English. 50 - I believe that English is the best medium for dealing with modern sciences and engineering 51 - I believe that is possible to use English for teaching in high engineering education. 52 - The use of English as medium of instruction will promote the transfer of technology to Libya.

Table 4.40: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward English as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	8	9	8	3	2	30
45 ^b	%	26.7%	30.0%	26.7%	10.0%	6.7%	100.0%
	n	2	9	14	2	3	30
46	%	6.7%	30.0%	46.7%	6.7%	10.0%	100.0%
	n	2	6	14	6	2	30
47	%	6.7%	20.0%	46.7%	20.0%	6.7%	100.0%
	n	2	6	13	6	3	30
48	%	6.7%	20.0%	43.3%	20.0%	10.0%	100.0%
	n	7	5	12	3	3	30
49	%	23.3%	16.7%	40.0%	10.0%	10.0%	100.0%
	n	7	14	5	2	2	30
50	%	23.3%	46.7%	16.7%	6.7%	6.7%	100.0%
	n	11	11	5	1	2	30
51	%	36.7%	36.7%	16.7%	3.3%	6.7%	100.0%
	n	17	7	3	1	2	30
52	%	56.7%	23.3%	10.0%	3.3%	6.7%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Research question 2 asked, “What are teaching-staff attitudes toward the use of English as the language of instruction in higher engineering and science education in Libya?” It was answered by calculating the frequencies and distributions of responses of students for the eight items refereeing to the use of English as the language of instruction. Table 4.40 presents the result.

On item 45, which stated, “I prefer English to be the medium of instruction for high engineering education” a majority (56.7%) agreed or strongly agreed with the statement, while less than one-fifth (16.7%) either disagreed or strongly disagreed with it and more than one-fourth were neutral. Since more than half agreed or strongly agreed, the statement was in favor by teaching staff to use English as the medium of instruction.

On item 46, which stated, “Given the choice, I would teach all my courses in English” more than one-third (36.7%) agreed or strongly agreed with the statement, while a total of (16.7%) either disagreed or strongly disagreed with it, with a majority (46.7%) indicating neutrality between agreement and disagreement.

On item 47, which stated, “I believe my results would be better if I taught in English” more than one-fourth (26.7%) either agreed or strongly agreed with the statement, while an evenly smaller number (26.7%) either disagreed or strongly disagreed with it. And total of (46.7%) indicating neutrality. Teaching staff tended to split evenly about statement

On item 48, which stated, “I believe that students’ participation would be more effective if English were the medium of instruction” a smaller number (26.7%) either disagreed or strongly disagreed with the statement, while less than one-third (30%) either agreed or strongly agreed with it. with a total of (43.3%) indicating neutrality.

On item 49, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of English” a majority (40%) either agreed or strongly agreed with the statement, while more than one-fourth (20%) either disagreed or strongly disagreed with it. with a total of (40%) indicating neutrality.

On item 50, which stated, “I believe that English is the best medium for dealing with modern sciences and engineering” a large majority (70%) either agreed or strongly agreed with the statement, while a minor number of (13.4%) either disagreed or strongly disagreed with it.

On item 51, which stated, “I believe that it is possible to use English for teaching in high science and engineering education” a large majority (73.4%) either agreed or strongly agreed with the statement, while a smaller of (10%) either disagreed or strongly disagreed with it.

On item 52, which stated, “The use of English as medium of instruction will promote the transfer of technology to Libya” a strong majority (80%) either agreed or strongly agreed with the statement, while (10%) either disagreed or strongly disagreed with it.

On the whole, the answer to research question 1, in general, majority of Libyan teaching staff at Al-Jabal Al-Garbi University, science and engineering faculties wish English to be the medium of instruction and see the use of English as the exclusive language of instruction as an advantage. Teaching staffs depict that English could effectively handle modern science and engineering and transfer technology to Libya. A minority of more than one-fifth of the teaching staffs’ population were not in favor of using English as the medium of instruction.

Table 4.41: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward English as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
45 ^b	n	8	11	4	2	1	26
	%	30.8%	42.3%	15.4%	7.7%	3.8%	100.0%
46	n	3	10	10	1	2	26
	%	11.5%	38.5%	38.5%	3.8%	7.7%	100.0%
47	n	3	10	8	4	1	26
	%	11.5%	38.5%	30.8%	15.4%	3.8%	100.0%
48	n	3	9	6	5	3	26
	%	11.5%	34.6%	23.1%	19.2%	11.5%	100.0%
49	n	6	7	8	2	3	26
	%	23.1%	26.9%	30.8%	7.7%	11.5%	100.0%
50	n	7	14	1	2	2	26
	%	26.9%	53.8%	3.8%	7.7%	7.7%	100.0%
51	n	9	13	1	1	2	26
	%	34.6%	50.0%	3.8%	3.8%	7.7%	100.0%
52	n	14	8	1	1	2	26
	%	53.8%	30.8%	3.8%	3.8%	7.7%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

The data in Table 4.41 present the frequencies and distributions of teaching staffs' responses to the eight items about Standard Arabic as the language of instructions.

On item 45, which stated, "I prefer English to be the medium of instruction for high engineering education" a majority (73.1%) agreed or strongly agreed with the statement, while (11.5%) either disagreed or strongly disagreed with it and more than one-tenth were neutral. Since more than half agreed or strongly agreed, the statement was in favor by teaching staff to use English as the medium of instruction.

On item 46, which stated, “Given the choice, I would teach all my courses in English” half of the respondents (50%) agreed or strongly agreed with the statement, while a total of (11.5%) either disagreed or strongly disagreed with it, with a majority (38.5%) indicating neutrality between agreement and disagreement.

On item 47, which stated, “I believe my results would be better if I taught in English” half of the respondents (50%) either agreed or strongly agreed with the statement, while an evenly smaller number (19.2%) either disagreed or strongly disagreed with it. And total of (30.8%) indicating neutrality.

On item 48, which stated, “I believe that students’ participation would be more effective if English were the medium of instruction” (46.1%) either disagreed or strongly disagreed with the statement, while less than one-third (30.7%) either agreed or strongly agreed with it, with a total of (23.1%) indicating neutrality.

On item 49, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of English” a majority (50%) either agreed or strongly agreed with the statement, while less than one-fourth (19.3%) either disagreed or strongly disagreed with it, with a total of (30.8%) indicating neutrality.

On item 50, which stated, “I believe that English is the best medium for dealing with modern sciences and engineering” a large majority (80.7%) either agreed or strongly agreed with the statement, while a minor number of (15.4%) either disagreed or strongly disagreed with it.

On item 51, which stated, “I believe that it is possible to use English for teaching in high science and engineering education” a large majority (84.6%) either agreed or strongly agreed with the statement, while a smaller of (11.5%) either disagreed or strongly disagreed with it.

On item 52, which stated, “The use of English as medium of instruction will promote the transfer of technology to Libya” a strong majority (84.6%) either agreed or strongly agreed with the statement, while (11.5%) either disagreed or strongly disagreed with it.

The answer to research question 1, in general, majority of Libyan teaching staff at Nasser International University, science and engineering faculties wish English to be the medium of instruction and see the use of English as the exclusive language of instruction as an advantage but many of them were neutral if they used English as the medium of instruction. Teaching staffs thought that English could effectively handle modern science and engineering and transfer technology to Libya. A minority of the teaching staffs' population were not in favor of using English as the medium of instruction. It is interesting that a majority of teaching staffs in many questions did not choose the answer between agreement and disagreement.

Chi-square Analysis

H_0 : *Are teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases same?*

H_1 : *Are teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases different?*

Data

	SA	A	N	D	SD	Total
case 1	56	67	74	24	19	240
case 2	53	82	39	18	16	208
Total	109	149	113	42	35	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_j = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	58.39286	79.82143	60.53571	22.5	18.75	240
case 2	50.60714	69.17857	52.46429	19.5	16.25	208
Total	109	149	113	42	35	448

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 11.31967$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 11.31967$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases is different.

In response to item 45, 30.00% of case 1 agrees and 42.30% of case 2 agrees with the opinion. 30.00% of case 1 agrees while a majority of 46.70% have neutral view and 38.50% of case 2 agrees while 38.50% have neutral view in item 46. Item 47 got a neutral response in case 1 as 46.70% of the participants have neutral view with equal agreement and disagreement while in case 2 38.50% agree and 30.80% have neutral view. In item 48 43.30% of case 1 have neutral view while 34.60% of case 2 agrees with the opinion. In response to item 49 40.00% of case 1 and 30.80% of case 2 have neutral opinion while 23.30% of case 1 and 23.10% of case 2 strongly agree. Most participants agree with item 50 as 46.70% of case 1 and 53.80% of case 2 chooses “agree”. 36.70% of case 1 and 50.00% of case tend to agree with the view of item 51. 56.70% of case 1 and 53.80% of case 2 strongly agrees with the

opinion of item 52. Though there are similar tendencies but the percentages vary i.e. they are not exactly the same in any of the question.

	SA	A	N	D	SD
case 1	23.3	27.9	30.8	10.0	7.9
case 2	25.5	39.4	18.8	8.7	7.7

Table 4.42: Research Question 1: Comparison across teaching staff case 1 & 2 (%)

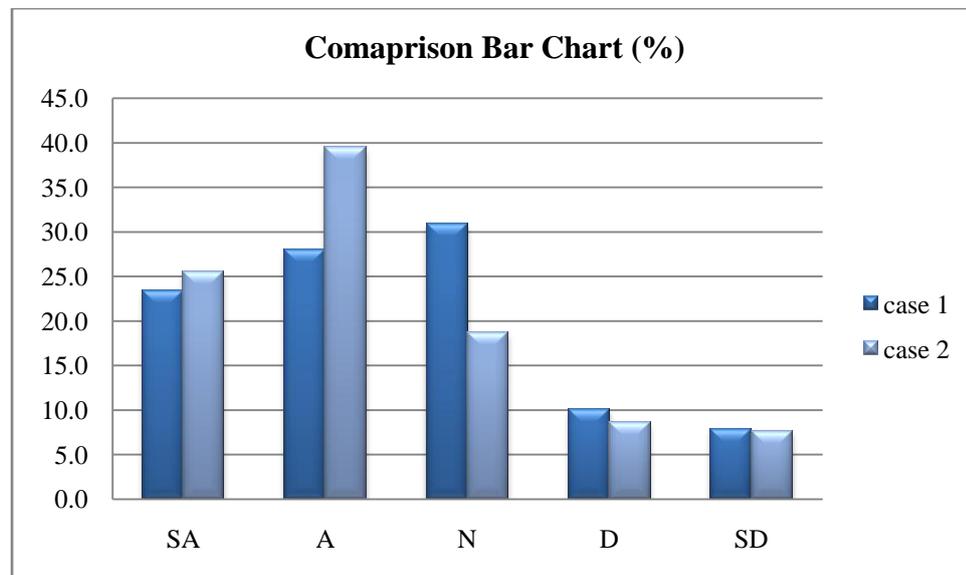


Figure 19: Research Question 1: Comparison across teaching staff case 1 & 2

The graph demonstrates the previous percentage calculations (table 4.13 and 4.14), that teaching staff of Nasser International University tend to agree more on the use of English as a language of instruction. Overall teaching staffs of both universities are either in favor of English or are neutral in their views.

4.3.2 Teaching Staff Data Analysis: Research Question 2

What are teaching staff's attitudes toward the use of Modern Standard Arabic in science and engineering education in Libya?

In order to answer research question 2, items 37- 44 were designed with the following content:

Item^b contents are: 37 - I prefer Arabic to be the medium of instruction for high engineering education. 38 - Given the choice, I would teach all my courses in Arabic. 39 - I believe my result would be better if I taught in Arabic. 40 - I believe that students' participation would be more effective if Arabic were the medium of instruction. 41 - I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic. 42 - I believe that Arabic is the best medium for dealing with modern sciences and engineering. 43 - I believe that it is possible to use Arabic for teaching in high engineering education. 44 - The use of Arabic as a medium of instruction will promote the transfer of technology to Libya.

Table 4.43: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Standard Arabic as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	3	4	6	10	7	30
37 ^b	%	10.0%	13.3%	20.0%	33.3%	23.3%	100.0%
	n	4	5	9	5	7	30
38	%	13.3%	16.7%	30.0%	16.7%	23.3%	100.0%
	n	5	9	4	8	4	30
39	%	16.7%	30.0%	13.3%	26.7%	13.3%	100.0%
	n	3	11	6	5	5	30
40	%	10.0%	36.7%	20.0%	16.7%	16.7%	100.0%
	n	2	6	7	9	6	30
41	%	6.7%	20.0%	23.3%	30.0%	20.0%	100.0%
	n	4	8	8	8	2	30
42	%	13.3%	26.7%	26.7%	26.7%	6.7%	100.0%
	n	2	9	7	8	4	30
43	%	6.7%	30.0%	23.3%	26.7%	13.3%	100.0%
	n	2	9	8	7	4	30
44	%	6.7%	30.0%	26.7%	23.3%	13.3%	100.0%

SA^a = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Teaching staff response to the Teaching Staffs Questionnaire will provide answers to the research questions that guide this study. The data in Table 4.43 present the frequencies and distributions of teaching staffs' responses to the eight items about Standard Arabic as the language of instructions.

On item 37, which stated, "I prefer Arabic to be the medium of instruction for high engineering education" less than one-fifth (23.3%) agreed or strongly agreed with the statement, while a majority (56.6%) either disagreed or strongly disagreed with it and one-fifth (20%) were neutral. Since more than half agreed or strongly agreed, the statement was generally not in favor by teaching staff of Standard Arabic as the medium of instruction.

On item 38, which stated, "Given the choice, I would teach all my courses in Arabic" less than one-third (30%) agreed or strongly agreed with the statement, while majority (40%) either disagreed or strongly disagreed with it, with (30%) indicating neutrality between agreement and disagreement.

On item 39, which stated, "I believe my result would be better if I taught in Arabic" a majority (46.7%) agreed or strongly agreed with the statement, while (40.6%) either disagreed or strongly disagreed with it. Teaching staff tended to split almost evenly about the statement, with slightly more favoring it than not.

On item 40, which stated, "I believe that students' participation would be more effective if Arabic were the medium of instruction" a majority (46.7%) agreed or strongly agreed with the statement, while one-third (33.4%) either disagreed or strongly disagreed with it.

On item 41, which stated, "I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic" more than one-fourth (26.7%) agreed or strongly agreed with the statement, while half (50%) either disagreed or strongly disagreed with it.

On item 42, which stated, "I believe that Arabic is the best medium for dealing with modern sciences and engineering" a majority (40%) agreed or strongly agreed with the statement, while one-third (33.4%) either disagreed or strongly disagreed with it.

On item 43, which stated, “I believe that it is possible to use Arabic for teaching in high science and engineering education” a total of (36.7%) agreed or strongly agreed with the statement, while a smaller (40%) either disagreed or strongly disagreed with it.

On item 44, which stated, “The use of Arabic as medium of instruction will promote the transfer of technology to Libya” more than one-third (36.7%) agreed or strongly agreed with the statement, while (36.6%) either disagreed or strongly disagreed with it. with (26.7%) indicating neutrality between agreement and disagreement. Teaching staff tended to split almost evenly about the use of Arabic to transfer technology to Libya, with more do not favoring it.

On the whole, the answer to research question 2, generally can be concluded, that the teaching staffs at Al-Jabal Al-Garbi University, science and engineering faculties are split almost evenly about the use of Standard Arabic as the language of instruction. According to questionnaire responses, there is a slight tendency to not favor the use of Standard Arabic as the language of instruction. One of the respondents mentioned that the use of Arabic is not believed to handle the transfer of technology.

Table 4.44: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Modern Standard Arabic as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	1	3	4	12	6	26
37 ^b	%	3.8%	11.5%	15.4%	46.2%	23.1%	100.0%
	n	2	3	7	8	6	26
38	%	7.7%	11.5%	26.9%	30.8%	23.1%	100.0%
	n	2	5	6	9	4	26
39	%	7.7%	19.2%	23.1%	34.6%	15.4%	100.0%
	n	1	7	5	8	5	26
40	%	3.8%	26.9%	19.2%	30.8%	19.2%	100.0%
	n	1	4	7	9	5	26
41	%	3.8%	15.4%	26.9%	34.6%	19.2%	100.0%
	n	3	6	7	8	2	26
42	%	11.5%	23.1%	26.9%	30.8%	7.7%	100.0%
	n	1	6	8	7	4	26
43	%	3.8%	23.1%	30.8%	26.9%	15.4%	100.0%
	n	1	5	8	9	3	26
44	%	3.8%	19.2%	30.8%	34.6%	11.5%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

On item 37, which stated, “I prefer Arabic to be the medium of instruction for high engineering education” less than one-fifth (15.3%) agreed or strongly agreed with the statement, while a majority (69.3%) either disagreed or strongly disagreed with it and less than one-fifth (15.4%) were neutral. Since more than half disagreed or strongly disagreed, the statement was generally not in favor by teaching staff of Standard Arabic as the medium of instruction.

On item 38, which stated, “Given the choice, I would teach all my courses in Arabic” less than one-fifth (19.2%) agreed or strongly agreed with the statement,

while majority (63.9%) either disagreed or strongly disagreed with it, with (26.9%) indicating neutrality between agreement and disagreement.

On item 39, which stated, “I believe my result would be better if I taught in Arabic” a majority (26.9%) agreed or strongly agreed with the statement, while (50%) either disagreed or strongly disagreed with it. Teaching staff tended to be disagreeing with the statement.

On item 40, which stated, “I believe that students’ participation would be more effective if Arabic were the medium of instruction” a majority (30.7%) agreed or strongly agreed with the statement, while (50.0%) either disagreed or strongly disagreed with it.

On item 41, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic” less than one-fifth (19.2%) agreed or strongly agreed with the statement, while more than half (53.8%) either disagreed or strongly disagreed with it.

On item 42, which stated, “I believe that Arabic is the best medium for dealing with modern sciences and engineering” a majority (34.6%) agreed or strongly agreed with the statement, while one-third (38.5%) either disagreed or strongly disagreed with it. The responses are almost evenly split.

On item 43, which stated, “I believe that it is possible to use Arabic for teaching in high science and engineering education” a total of (26.9%) agreed or strongly agreed with the statement, while (42.3%) either disagreed or strongly disagreed with it.

On item 44, which stated, “The use of Arabic as medium of instruction will promote the transfer of technology to Libya” less than one-third (23%) agreed or strongly agreed with the statement, while (46.1%) either disagreed or strongly disagreed with it, with (30.8%) indicating neutrality between agreement and disagreement.

The answer to research question 2, generally can be concluded, that the data from Nasser International University teachers, science and engineering faculties, Modern Standard Arabic as the language of instruction scale indicate that a substantial

majority of the teacher population do not prefer Modern Standard Arabic as a medium of instruction. According to questionnaire responses because its use is not believed to handle the transfer of technology.

Chi-square Analysis

H_0 : Are teaching staff attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases same?

H_1 : Are teaching staff attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases different?

Data

	SA	A	N	D	SD	Total
case 1	25	61	55	60	39	240
case 2	12	39	52	70	35	208
Total	37	100	107	130	74	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_j = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	19.82143	53.57143	57.32143	69.64286	39.64286	240
case 2	17.17857	46.42857	49.67857	60.35714	34.35714	208
Total	37	100	107	130	74	448

Now $\chi^2 = \sum (o_i - e_i)^2 / e_i$

$$= 8.233419$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 8.233419$ does not fall in the critical region, so we accept H_0 and reject H_1 and conclude that teaching staff attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases is same.

In response to item 37, 33.30% of case 1 and 46.20% of case 2 tend to disagree with the opinion. 23.30% of case 1 strongly disagrees and 30.80% of case 2 disagrees with the view of item 38. In response of item 39, 30.00% of case 1 agrees and 34.60% of case 2 disagrees with the opinion. 36.70% of case 1 tends to agree and 30.80% of case 2 tends to disagree with the opinion of item 40. In response to item 41 30.00% of case 1 and 34.60% of case 2 disagree with the view. In item 42 all agree, neutral and disagree has been chosen by 26.70% of participants of case 1 while 30.80% of case 2 disagree. 30.00% of case 1 agrees while 30.80% of case 2 has neutral opinion in item 43. 30.00% of case 1 agrees with the view and 34.60% of case 2 disagrees with the idea of item 44.

	SA	A	N	D	SD
case 1	10.4	25.4	22.9	25.0	16.3
case 2	5.8	18.8	25.0	33.7	16.8

Table 4.45: Research Question 2: Comparison across teaching staff case 1 & 2 (%)

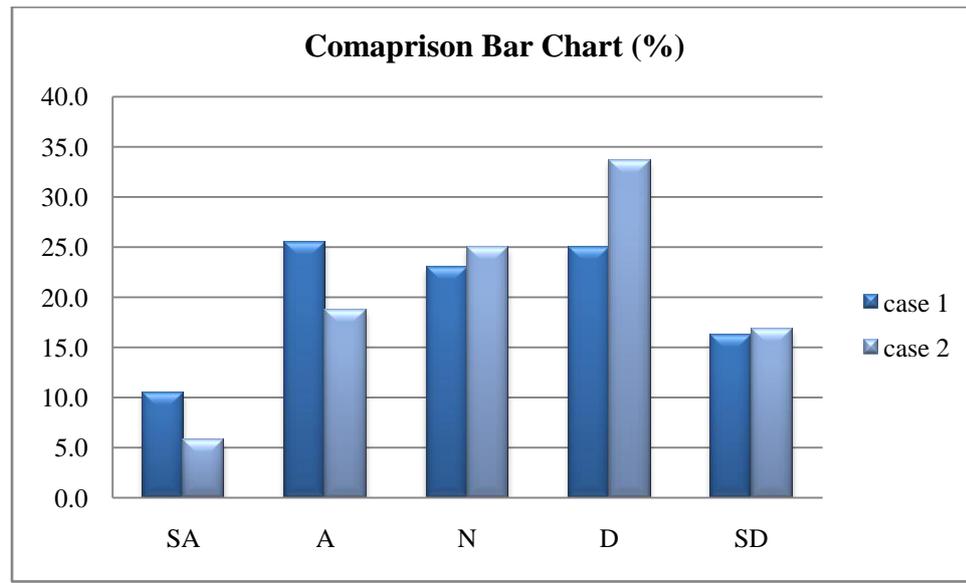


Figure 20: Research Question 2: Comparison across teaching staff case 1 & 2

The graph throws light on the findings that teaching staff of Al-Jabal Al-Garbi University tend to agree more on the use of Standard Arabic as a language of instruction (Here, the respondents are almost evenly distributed to agree or are neutral in their opinions) but teaching staffs at Nasser International University disagree with the option in majority.

4.3.3 Teaching Staff Data Analysis: Research Question 3

What are teaching staff's attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya?

Items 53-60 were designed to answer research question 3 which was based on using Standard Arabic and English bilingually as a Medium of Instruction.

Item^b contents are: 53 - I prefer Arabic-English bilingualism to be the medium of instruction at high engineering education. 54 - Given the choice, I would teach all my courses bilingually in Arabic and English. 55 - I believe my result would be better if I taught bilingually in Arabic and English. 56 - I believe that students' participation would be more effective if Arabic-English bilingualism were the medium of instruction. 57 - I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic and English bilingually. 58 - I believe that Arabic-English bilingualism is the best medium for dealing with modern sciences and engineering. 59 - I believe that is possible to use Arabic-English bilingualism for teaching in high engineering education. 60 - The use of Arabic-English bilingualism as medium of instruction will promote the transfer of technology to Libya.

Table 4.46: Case Study I Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Standard Arabic and English bilingually as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
	n	8	15	2	4	1	30
53 ^b	%	26.7%	50.0%	6.7%	13.3%	3.3%	100.0%
	n	7	13	4	5	1	30
54	%	23.3%	43.3%	13.3%	16.7%	3.3%	100.0%
	n	7	12	5	4	2	30
55	%	23.3%	40.0%	16.7%	13.3%	6.7%	100.0%
	n	7	12	6	3	2	30
56	%	23.3%	40.0%	20.0%	10.0%	6.7%	100.0%
	n	7	6	13	2	2	30
57	%	23.3%	20.0%	43.3%	6.7%	6.7%	100.0%
	n	7	8	6	7	2	30
58	%	23.3%	26.7%	20.0%	23.3%	6.7%	100.0%
	n	3	14	7	3	3	30
59	%	10.0%	46.7%	23.3%	10.0%	10.0%	100.0%
	n	4	14	7	2	3	30
60	%	13.3%	46.7%	23.3%	6.7%	10.0%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

Research question 3 asked, “What are teaching staff’ attitudes toward standard Arabic and English bilingually as the language of instruction in higher engineering and science education in Libya?” It was answered by calculating the frequencies and distributions of teaching staffs’ responses for the eight items refereeing to the use of standard Arabic and English bilingually as the language of instruction. The data are presented in Table 4.46.

On item 53, which stated, “I prefer Arabic and English bilingually to be the medium of instruction for higher science and engineering education” a strong majority (76.7%) agreed or strongly agreed with the statement, while smaller number (16.6%) either disagreed or strongly disagreed with it. Teaching staff were in favor of the use of Arabic-English bilingually as the medium of instruction.

On item 54, which stated, “Given the choice, I would study all my courses in Arabic-English bilingually” a large majority (66.6%) agreed or strongly agreed with the statement, while one-fifth (20%) either disagreed or strongly disagreed with it.

On item 55, which stated, “I believe my result would be better if I taught in Arabic-English bilingually” a large majority (63.3%) agreed or strongly agreed with the statement, while one-fifth (20%) either disagreed or strongly disagreed with it.

On item 56, which stated, “I believe that students’ participation would be more effective if Arabic-English bilingually were the medium of instruction” a large majority (63.3%) agreed or strongly agreed with the statement, while (16.7%) either disagreed or strongly disagreed with it. One-fifth (20%) were neutral.

On item 57, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic-English bilingually” More than one-third (43%) agreed or strongly agreed with the statement, while a smaller number (13.4%) either disagreed or strongly disagreed with it. More than one-third (43%) were neutral.

On item 58, which stated, “I believe that Arabic-English bilingually is the best medium for dealing with modern sciences and engineering” a half number (50%) agreed or strongly agreed with the statement, while (30%) either disagreed or strongly disagreed with it.

On item 59, which stated, “I believe that it is possible to use Arabic-English bilingually for teaching in high science and engineering education” a majority (56.7%) agreed or strongly agreed with the statement, while a total of (20%) either disagreed or strongly disagreed with it.

On item 60, which stated, “The use of Arabic-English bilingually as medium of instruction will promote the transfer of technology to Libya” a large majority (60%) agreed or strongly agreed with the statement, while a small minority (16.7%) either disagreed or strongly disagreed with it. More than one-fifth (23.3%) were neutral.

On the whole, the answer to research question 3 is that a substantial majority of the Libyan teaching staff at Al-Jabal Al-Garbi University, science and engineering faculties prefer to use Arabic-English bilingually as medium of instruction. They believe that the use of bilingualism would help instruction, produce better results among the students, and would serve student learners more efficiently. They also think that the use of Arabic-English bilingually as medium of instruction would result in technological transfer to Libya.

Table 4.47: Case Study II Frequencies and Distributions of Teaching Staffs Respondents on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction

Item		SA ^a	A	N	D	SD	Total
53 ^b	n	7	15	2	1	1	26
	%	26.9%	57.7%	7.7%	3.8%	3.8%	100.0%
54	n	6	14	4	1	1	26
	%	23.1%	53.8%	15.4%	3.8%	3.8%	100.0%
55	n	6	13	4	2	1	26
	%	23.1%	50.0%	15.4%	7.7%	3.8%	100.0%
56	n	6	10	7	1	2	26
	%	23.1%	38.5%	26.9%	3.8%	7.7%	100.0%
57	n	6	11	3	4	2	26
	%	23.1%	42.3%	11.5%	15.4%	7.7%	100.0%
58	n	4	12	4	4	2	26
	%	15.4%	46.2%	15.4%	15.4%	7.7%	100.0%
59	n	5	11	5	1	4	26
	%	19.2%	42.3%	19.2%	3.8%	15.4%	100.0%
60	%	19.2%	42.3%	19.2%	3.8%	15.4%	100.0%

SA^a= Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree

The responses of teaching staffs of Nasser International University are analysed below:

On item 53, which stated, “I prefer Arabic and English bilingually to be the medium of instruction for higher science and engineering education” a strong majority (84.6%) agreed or strongly agreed with the statement, while smaller number (7.6%) either disagreed or strongly disagreed with it. Teaching staff were in favor of the use of Arabic-English bilingually as the medium of instruction.

On item 54, which stated, “Given the choice, I would study all my courses in Arabic-English bilingually” a large majority (76.8%) agreed or strongly agreed with the statement, while less than one-tenth (7.6%) either disagreed or strongly disagreed with it.

On item 55, which stated, “I believe my result would be better if I taught in Arabic-English bilingually” a large majority (76.9%) agreed or strongly agreed with the statement, while one-tenth (11.5%) either disagreed or strongly disagreed with it.

On item 56, which stated, “I believe that students’ participation would be more effective if Arabic-English bilingually were the medium of instruction” a large majority (73.1%) agreed or strongly agreed with the statement, while (11.5%) either disagreed or strongly disagreed with it. Less than one-fifth (15.4%) were neutral.

On item 57, which stated, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic-English bilingually” a majority (61.6%) agreed or strongly agreed with the statement, while a smaller number (11.5%) either disagreed or strongly disagreed with it. More than one-fourth (26.9%) were neutral.

On item 58, which stated, “I believe that Arabic-English bilingually is the best medium for dealing with modern sciences and engineering” more than half number of respondents (65.4%) agreed or strongly agreed with the statement, while (23.1%) either disagreed or strongly disagreed with it.

On item 59, which stated, “I believe that it is possible to use Arabic-English bilingually for teaching in high science and engineering education” a majority (61.6%) agreed or strongly agreed with the statement, while a total of (23.1%) either disagreed or strongly disagreed with it.

On item 60, which stated, “The use of Arabic-English bilingually as medium of instruction will promote the transfer of technology to Libya” a large majority (61.5%) agreed or strongly agreed with the statement, while a small minority (19.2%) either disagreed or strongly disagreed and also were neutral with it.

On the whole, the answer to research question three is that a substantial majority of the Libyan teaching staff at Nasser International University, science and engineering faculties prefer to use Arabic-English bilingually as medium of instruction. They believe that the use of bilingualism would help instruction, produce better results among the students, and would serve student learners more efficiently.

Chi-square Analysis

H_0 : Are teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases same?

H_1 : Are teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases different?

Data

	SA	A	N	D	SD	Total
case 1	50	94	50	30	16	240
case 2	46	100	32	15	15	208
Total	96	194	82	45	31	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
case 1	51.42857	103.9286	43.92857	24.10714	16.60714	240
case 2	44.57143	90.07143	38.07143	20.89286	14.39286	208
Total	96	194	82	45	31	448

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 7.086159$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (4)

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 7.086159$ does not fall in the critical region, so we accept H_0 and reject H_1 and conclude that teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases is same.

In response to item 53, 50.00% of case 1 and 57.70% of case 2 has agreed to the view. 43.30% of case 1 and 53.80% of case 2 has chosen “agree” in response to item 54. Most of the participants agree with view of item 55 as 40.00% of case 1 and 53.80% of case 2 agrees. 40.00% of case 1 and 50.00% of case 2 has agreed with the opinion of item 56. In response to item 57 43.30% have neutral opinion while 38.50% of case 2 agrees. 26.70% of case 1 and 42.30% of case 2 agrees with the view of item 58. In reply to item 59, 46.70% of case 1 and 46.20% of case 2 agrees. A majority i.e. 46.70% of case 1 and 42.30% of case 2 agrees with the idea of item 60.

	SA	A	N	D	SD
case 1	20.8	39.2	20.8	12.5	6.7
case 2	22.1	48.1	15.4	7.2	7.2

Table 4.48: Research Question 3: Comparison across teaching staff case 1 & 2 (%)

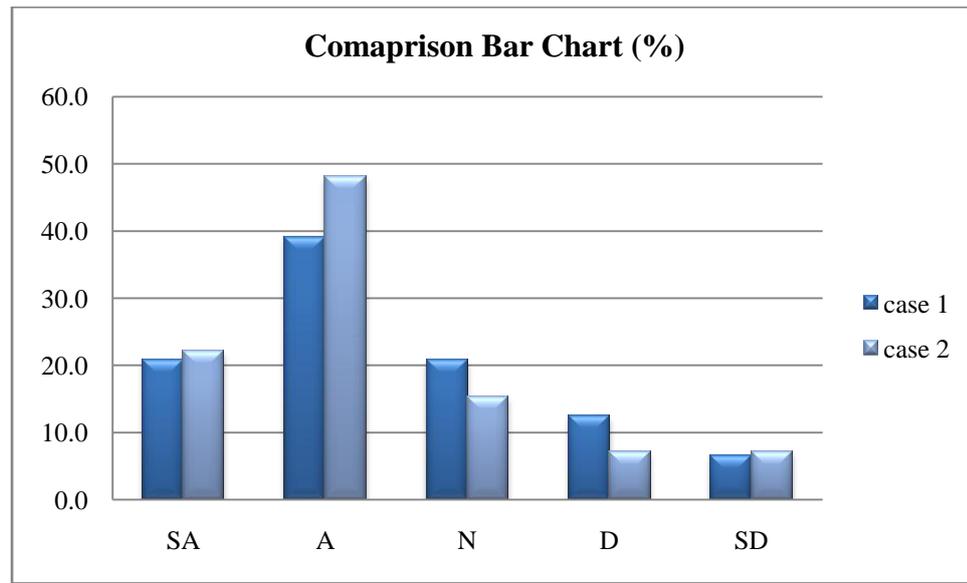


Figure 21: Research Question 3: Comparison across teaching staff case 1 & 2

The graph explains the previous percentage calculations for case study I and case study II tables above, that teaching staff of Al-Jabal Al-Garbi University tend to agree more on the use of Arabic English Bilingualism.

4.3.4 Teaching Staff Data Analysis: Research Question 4

What is the relationship between attitudes toward language of instruction and teaching staffs background variables such as education, gender and college of teaching?

Research Question 4.1

What are teaching staffs' attitudes toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

4.3.4.1.a Analysis on the bases of education

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staffs' education?

H_0 : Do teaching staffs with different education have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staffs with different education have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Master	36	55	71	96	46	304
Doctorate	1	44	36	35	28	144
Total	37	99	107	131	74	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(2-1)(5-1)$, i.e. 4d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Masters	25.1071	67.1786	72.6071	88.8929	50.2143	304
Doctorate	11.8929	31.8214	34.3929	42.1071	23.7857	144
Total	37	99	107	131	74	448

Now $\chi^2 = \sum (o_i - e_i)^2 / e_i$
 $= 24.55046696$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 24.55046696$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different education have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Master	11.8	18.1	23.4	31.6	15.1
Doctorate	0.7	30.6	25.0	24.3	19.4

Table 4.49: Research Question 4.1.a: Comparison across teaching staff's education(%)

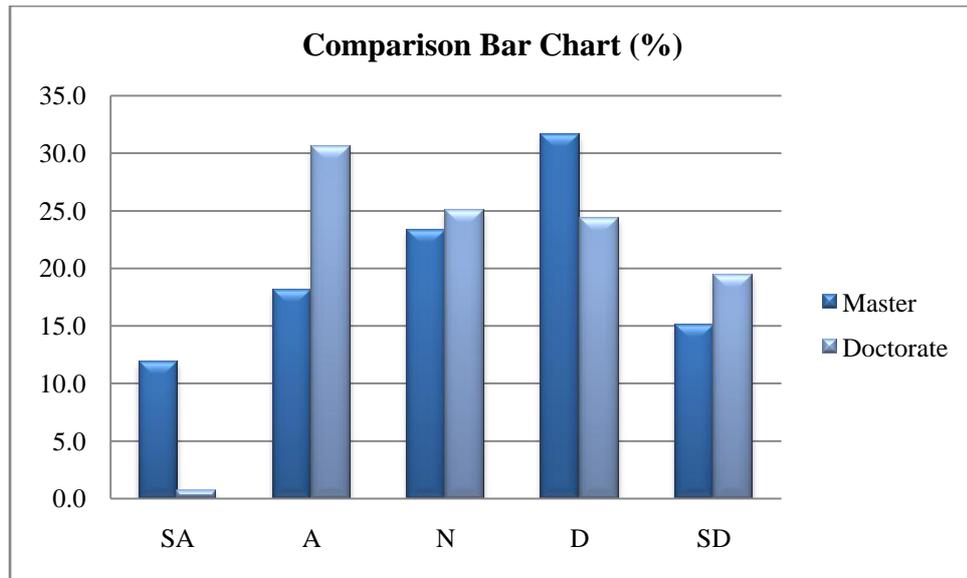


Figure 22: Research Question 4.1.a: Comparison across teaching staff's education

The graph shows that the doctorate teaching staffs prefer the use of standard Arabic as a medium of instruction. While a major percentage is either disagreeing or neutral.

4.3.4.1.b Analysis on the bases of gender

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staffs' gender?

H_0 : Do teaching staffs with different gender have same attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staffs with different gender have different attitude toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Male	35	58	94	110	63	360
Female	2	42	13	20	11	88
Total	37	100	107	130	74	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(5-1)$, i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	29.7321	80.3571	85.9821	104.464	59.4643	360
Female	7.26786	19.6429	21.0179	25.5357	14.5357	88
Total	37	100	107	130	74	448

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 42.78828904$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 42.78828904$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different gender have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	9.7	16.1	26.1	30.6	17.5
Female	2.3	47.7	14.8	22.7	12.5

Table 4.50: Research Question 4.1.b: Comparison across gender for both cases (%)

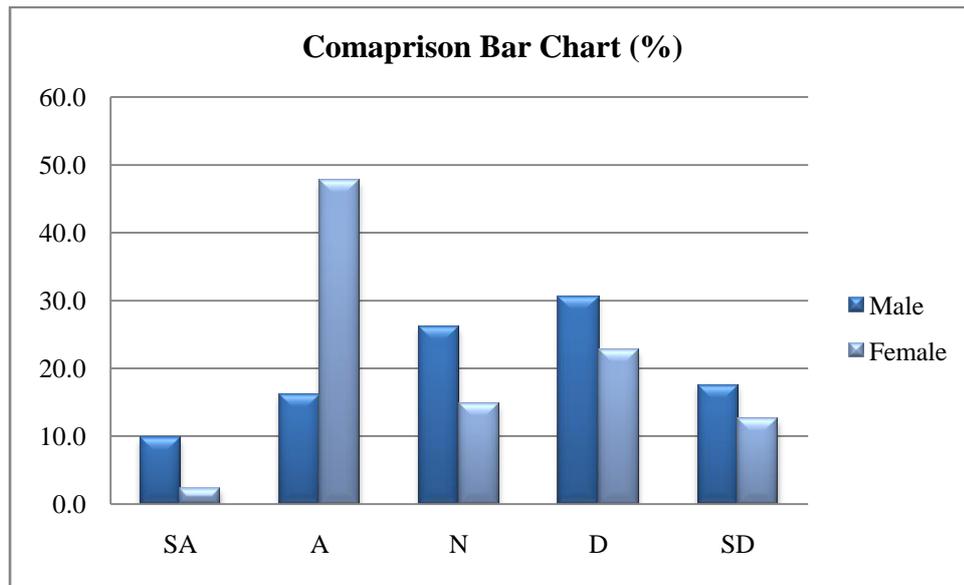


Figure 23: Research Question 4.1.b: Comparison across teaching staff's gender for both cases

Graph shows that teaching staffs with different gender have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Female teaching staffs agree more on the use of Arabic as a medium of instruction. Male teaching staffs disagree.

Table below for case study I teaching staffs shows that male teaching staffs tend to disagree with the using Standard Arabic as medium of instruction. On other hand, female teaching staffs tend to agree more than male. Both groups have different opinions.

	SA	A	N	D	SD
Male	12.5	19.3	24.5	27.1	16.7
Female	2.1	50.0	16.7	16.7	14.6

Table 4.51: Research Question 4.1.b: Comparison across case study I male and female (%)

Table below for case study II teaching staffs shows that male teaching staffs tend to disagree more than female teaching staffs with the using Standard Arabic as medium of instruction. On other hand, female teaching staffs tend to agree more than male. In two colleges' female teaching staffs tend to agree more than male teaching staffs for using Standard Arabic as medium of instruction, and female case I agree more than female case II, while male teaching staffs disagree more in both cases, and male case II disagree more than male case I.

	SA	A	N	D	SD
Male	6.5	12.5	28.0	34.5	18.5
Female	2.5	45.0	12.5	30.0	10.0

Table 4.52: Research Question 4.1.b: Comparison across case study II male and female (%)

4.3.4.1.c Analysis on the bases of teaching staff's college of teaching

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staff college of teaching?

H₀: Do teaching staff with different college of teaching have same attitude toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

H₁: Do teaching staff with different college of teaching have different attitude toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

Data:

	SA	A	N	D	SD	Total
Science	20	75	66	71	32	264
Engineering	17	24	41	60	42	184
Total	37	99	107	131	74	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	21.80357	58.33929	63.05357	77.19643	43.60714	264
Engineering	15.19643	40.66071	43.94643	53.80357	30.39286	184
Total	37	99	107	131	74	448

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 21.01656$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (4)

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 21.01656$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staff with different college of teaching have different attitudes toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	7.6	28.4	25	26.9	12.1
Engineering	9.2	13	22.3	32.6	22.9

Table 4.53: Research Question 4.1.c: Comparison across teaching staff's college of teaching for both cases (%)

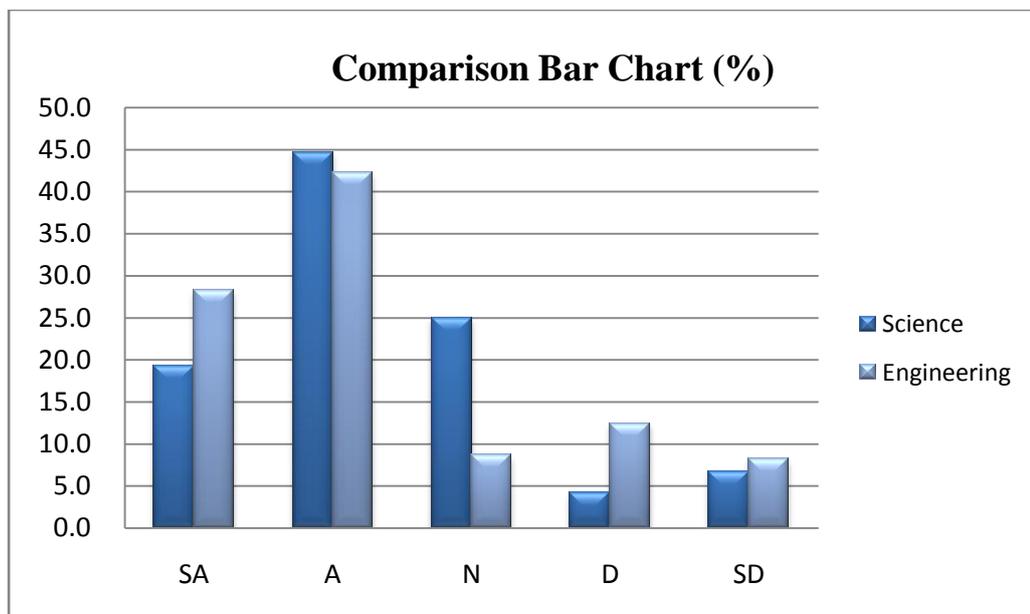


Figure 24: Research Question 4.1.c: Comparison across teaching staff's college of teaching for both cases

The graph further clarifies that there is a difference in opinion of science and engineering teaching staff toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Engineering teaching staff tends to disagree more, over all, both of the teaching staff colleges tend to disagree with the opinion.

Table below for case study I teaching staffs shows that above half engineering teaching staffs tend to disagree with the use of Standard Arabic. While science teaching staffs tend to agree more with the option.

	SA	A	N	D	SD
Science	9.7	30.6	25.0	22.2	12.5
Engineering	11.5	16.7	19.8	30.2	21.9

Table 4.54: Research Question 4.1.c: Comparison across case study I science and engineering teaching staff (%)

Table below for case study II teaching staffs shows that majority of science and engineering teaching staffs tend to disagree with the using of Standard Arabic. Engineering teaching staffs tend to disagree more than science teaching staffs. Both colleges of case study II teaching staffs tend to disagree more than case I teaching staffs colleges for using Standard Arabic as medium of instruction

	SA	A	N	D	SD
Science	5.0	25.8	25.0	32.5	11.7
Engineering	6.8	9.1	25.0	35.2	23.9

Table 4.55: Research Question 4.1.c: Comparison across case study II science and engineering teaching staff (%)

Research Question 4.2

What are teaching staffs' attitudes toward English as a Medium of Instruction in science and engineering education in Libya?

4.2.4.2.a Analysis on the bases of education

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staffs' education?

H₀: Do teaching staffs with different education have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staffs with different education have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Masters	67	106	68	30	33	304
Doctorate	42	43	45	12	2	144
Total	109	149	113	42	35	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(2-1)(5-1)$, i.e. 4d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Masters	73.9643	101.107	76.6786	28.5	23.75	304
Doctorate	35.0357	47.8929	36.3214	13.5	11.25	144
Total	109	149	113	42	35	448

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 17.28641623$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (4)

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 17.28641623$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different education have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Masters	22.0	34.9	22.4	9.9	10.9
Doctorate	29.2	29.9	31.3	8.3	1.4

Table 4.56: Research Question 4.2.a: Comparison across education (%)

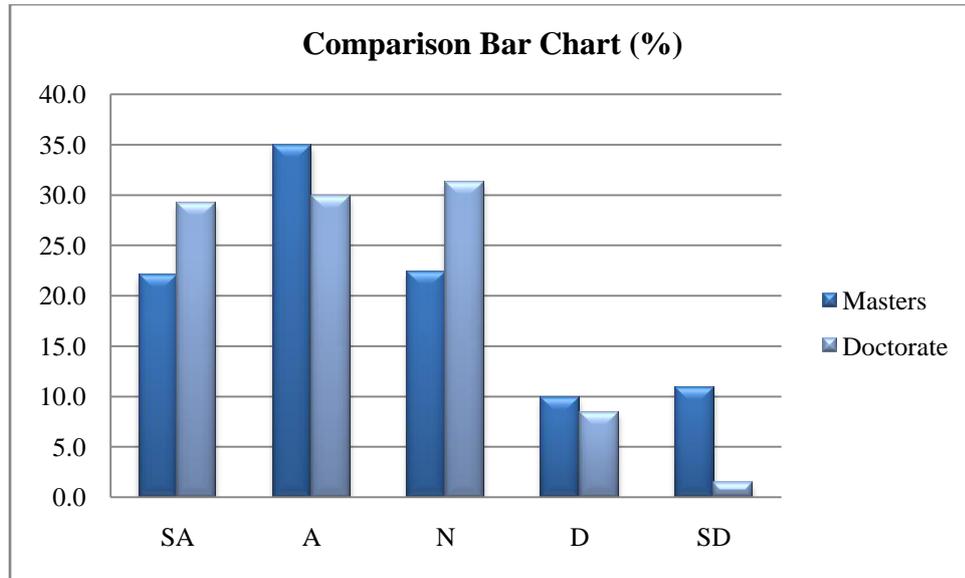


Figure 25: Research Question 4.2.a: Comparison across teaching staff's education

It is evident from the graph that teaching staffs with different education have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. The teaching staffs are either in agreement or are neutral to English as a medium of instruction.

4.3.4.2.b Analysis on the bases of gender

What are teaching staffs' attitudes toward English as a Medium of Instruction in science and engineering education in Libya?

H_0 : Do teaching staffs with different gender have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staffs with different gender have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Male	101	117	83	26	33	360
Female	8	32	30	16	2	88
Total	109	149	113	42	35	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which , if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	87.5893	119.732	90.8036	33.75	28.125	360
Female	21.4107	29.2679	22.1964	8.25	6.875	88
Total	109	149	113	42	35	448

Now $\chi^2 = \sum (o_i - e_i)^2 / e_i$
 $= 27.54643697$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 27.54643697$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different gender have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	28.1	32.5	23.1	7.2	9.2
Female	9.1	36.4	34.1	18.2	2.3

Table 4.57: Research Question 4.2.b: Comparison across gender (%)

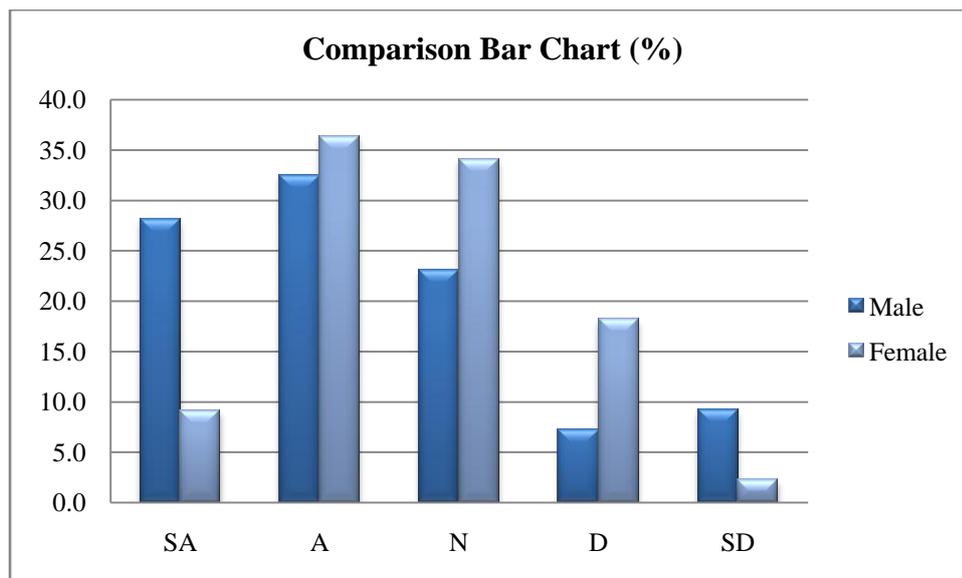


Figure 26: Research Question 4.2.b: Comparison across teaching staff's gender for both cases

The graph depicts that male and female teaching staffs are both in favor of English as a medium on instruction that teaching staffs with different gender have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. However, almost one third of female teaching staffs have neutral opinion.

Table below for case study I teaching staffs shows that male and female teaching staffs tend to agree with the using English as medium of instruction. Male teaching staffs tend to agree more than female.

	SA	A	N	D	SD
Male	26.6	26.0	29.7	8.3	9.4
Female	10.4	35.4	35.4	16.7	2.1

Table 4.58: Research Question 4.2.b: Comparison across case study I male and female teaching staffs (%)

Table below for case study II teaching staffs shows that male and female teaching staffs tend to agree with the option, while female teaching staffs disagree more than male. Both cases tend to agree with using English as medium of instruction. In two colleges' female teaching staffs tend to disagree more than male teaching staffs.

Male case I agree more than male case II, while female teaching staffs case II disagree more than case I.

	SA	A	N	D	SD
Male	29.8	39.9	15.5	6.0	8.9
Female	7.5	37.5	32.5	20.0	2.5

Table 4.59: Research Question 4.2.b: Comparison across case study II male and female teaching staffs (%)

4.3.4.2.c Analysis on the bases of teaching staff's college of teaching

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staff college of teaching?

H_0 : Do teaching staff with different college of teaching have same attitude toward English as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staff with different college of teaching have different attitude toward English as a Medium of Instruction in science and engineering education in Libya?

Data:

	SA	A	N	D	SD	Total
Science	47	101	73	28	15	264
Engineering	62	48	40	14	20	184
Total	109	149	113	42	35	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	64.232	87.803	66.589	24.75	20.625	264
Engineering	44.767	61.196	46.410	17.25	14.375	184
Total	109	149	113	42	35	448

Now
$$\chi^2 = \sum (o_i - e_i)^2/e_i$$

$$= 22.36205$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 22.36205$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staff with different college of teaching have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	17.8	38.2	27.7	10.6	5.7
Engineering	33.7	26.1	21.7	7.6	10.9

Table 4.60: Research Question 4.2.c: Comparison across teaching staff's college of teaching for both cases (%)

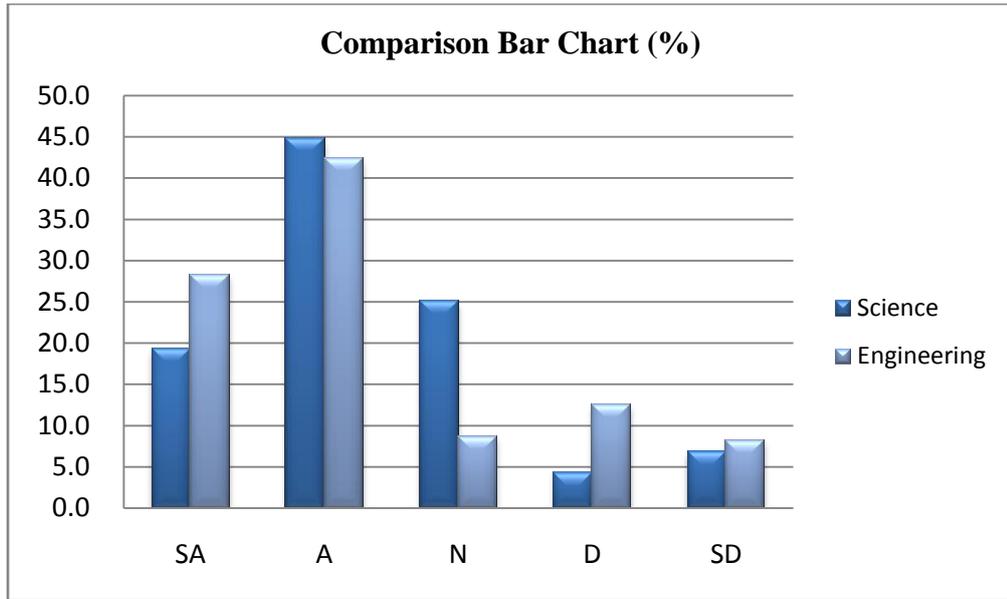


Figure 27: Research Question 4.2.c: Comparison across teaching staff's college of teaching for both cases

The graph further clarifies that there is a difference in opinion of science and engineering teaching staff toward English as a Medium of Instruction in science and engineering education in Libya. Engineering teaching staff tends to agree more, over all, both of the teaching staff colleges tend to agree with the opinion.

Table below for case study I teaching staffs shows that majority of science and engineering teaching staffs tend to agree with the using of English as a Medium of Instruction. Both teaching staffs tend to have similar agreement with the option

	SA	A	N	D	SD
Science	18.8	32.6	31.9	11.1	5.6
Engineering	30.2	20.8	29.2	8.3	11.5

Table 4.61: Research Question 4.2.c: Comparison across case study I science and engineering teaching staff (%)

Table below for case study II teaching staffs shows that majority of science and engineering teaching staffs tend to agree with the using of English as a Medium of Instruction. Engineering teaching staffs tend to agree more than science teaching staffs. Both teaching staffs colleges of case study II tend to agree more than case I

teaching staffs for using English as a Medium of Instruction as medium of instruction. Overall, both universities tend to agree with the option.

	SA	A	N	D	SD
Science	16.7	45.0	22.5	10.0	5.8
Engineering	37.5	31.8	13.6	6.8	10.2

Table 4.62: Research Question 4.2.c: Comparison across case study II science and engineering teaching staff (%)

Research Question 4.3

What are teaching staffs' attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

4.3.4.3.a Analysis on the bases of education

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staffs' education?

H₀: Do teaching staffs with different education have same attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₁: Do teaching staffs with different education have different attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Masters	66	119	56	30	33	304
Doctorate	37	77	26	4	0	144
Total	103	196	82	34	33	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with $(2-1)(5-1)$, i.e. 4d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Masters	69.8929	133	55.6429	23.0714	22.3929	304
Doctorate	33.1071	63	26.3571	10.9286	10.6071	144
Total	103	196	82	34	33	448

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 27.3714047$$

The critical region is $\chi^2 \geq \chi^2_{0.05, (4)}$

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 27.3714047$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different education have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Masters	21.7	39.1	18.4	9.9	10.9
Doctorate	25.7	53.5	18.1	2.8	0.0

Table 4.63: Research Question 4.3.a: Comparison across education (%)

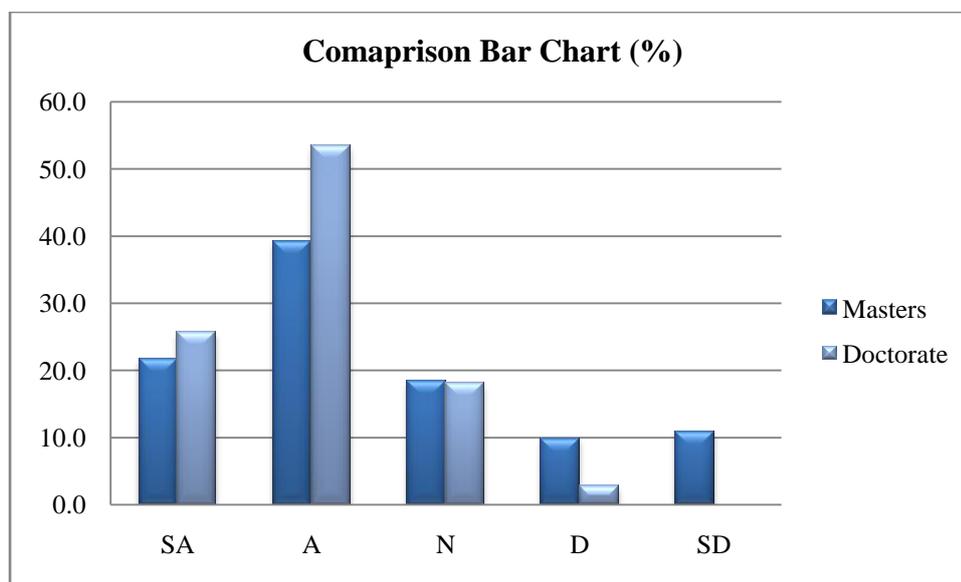


Figure 28: Research Question 4.3.a: Comparison across teaching staff's education

Graphs show that Nasser International University teaching staffs' with different education have more positive attitude towards English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

4.3.4.3.b Analysis on the bases of gender

What are teaching staffs' attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H₀: Do teaching staffs with different gender have same attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staffs with different gender have different attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

Data

	SA	A	N	D	SD	Total
Male	94	150	42	43	31	360
Female	2	44	40	2	0	88
Total	96	194	82	45	31	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Male	77.14286	155.893	65.8929	36.1607	24.9107	360
Female	18.85714	38.1071	16.1071	8.83929	6.08929	88
Total	96	194	82	45	31	448

Now
$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 78.15556835$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (4)

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 78.15556835$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staffs with different gender have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Male	26.1	41.7	11.7	11.9	8.6
Female	2.3	50.0	45.5	2.3	0.0

Table 4.64: Research Question 4.3.b: Comparison across gender for both cases (%)

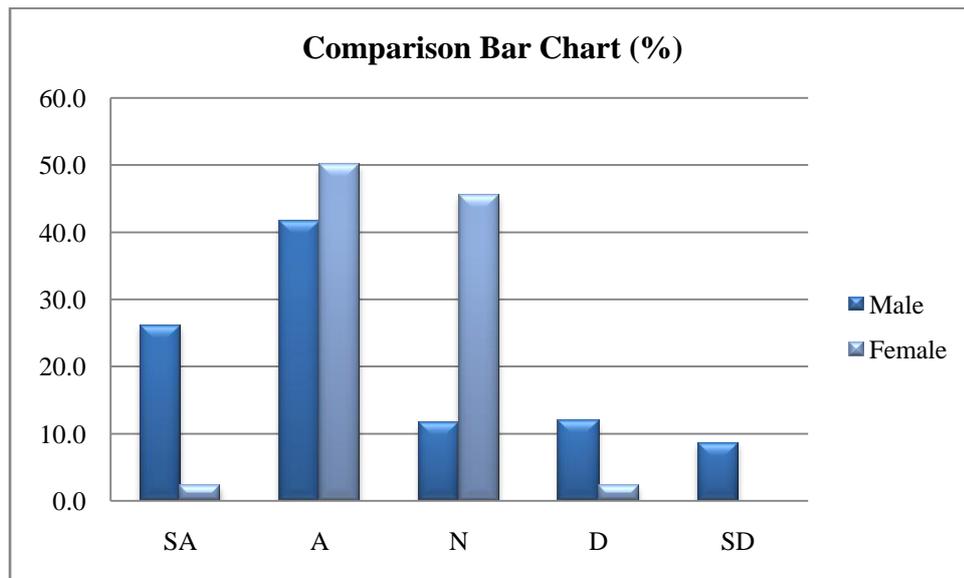


Figure 29: Research Question 4.3.b: Comparison across teaching staff's gender for both cases

Graph shows that female teaching staffs have more agreement towards English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya. It can easily concluded that the teacher of both gender tend to agree on the use of English Arabic Bilingualism as a medium of instruction.

Table below for case study I teaching staffs attitudes toward Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya shows that male teaching staffs tend to agree more than female teaching staff with using the option. On other hand, 50% of female teaching staffs tended to split evenly about the agreement and disagreement.

	SA	A	N	D	SD
Male	25.5	37.5	13.5	15.1	8.3
Female	2.1	45.8	50.0	2.1	0.0

Table 4.65: Research Question 4.3.b: Comparison across case study I male and female teaching staff (%)

Table below for case study II teaching staffs shows that both male and female teaching staffs tend to agree more with the using Arabic and English Bilingualism as medium of instruction. Male teaching staffs tend to agree more than female. In two cases female teaching staffs tend to agree less than male teaching staffs for using Arabic and English Bilingualism as medium of instruction. On other hand male case II agree more than male case I, and female teaching staffs case II agree more than case I, in general both cases agree more.

	SA	A	N	D	SD
Male	26.8	46.4	9.5	8.3	8.9
Female	2.5	55.0	40.0	2.5	0.0

Table 4.66: Research Question 4.3.b: Comparison across case study II male and female teaching staff (%)

4.3.4.3.c Analysis on the bases of teaching staff's college of teaching

What is the relationship between teaching staffs' attitudes toward language of instruction and teaching staff college of teaching?

H₀: Do teaching staff with different college of teaching have same attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

H_1 : Do teaching staff with different college of teaching have different attitude toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

Data:

	SA	A	N	D	SD	Total
Science	51	118	66	11	18	264
Engineering	52	78	16	23	15	184
Total	103	196	82	34	33	448

The significance level is set at $\alpha = 0.05$

The test statistic to be used is

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

Where the summation is all over the 10 cells of the table and which, if H_0 is true, has an approximate χ^2 -distribution with (5-1), i.e. 4 d.f.

Computations

We calculate the expected frequencies under H_0 , for each cell by the formula

$$e_{ij} = (\text{Row Total})(\text{Column Total})/n$$

Expected Values

	SA	A	N	D	SD	Total
Science	60.696	115.5	48.321	20.035	19.446	264
Engineering	42.303	80.5	33.678	13.964	13.553	184
Total	103	196	82	34	33	448

Now

$$\chi^2 = \sum (o_i - e_i)^2 / e_i$$

$$= 29.83443933$$

The critical region is $\chi^2 \geq \chi^2_{0.05}$, (4)

$$\chi^2 \geq 9.49$$

Conclusion

Since the calculated value of $\chi^2 = 29.83443933$ falls in the critical region, so we reject H_0 and accept H_1 and conclude that teaching staff with different college of teaching have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya.

	SA	A	N	D	SD
Science	19.3	44.7	25	4.2	6.8
Engineering	28.3	42.3	8.7	12.5	8.2

Table 4.67: Research Question 4.3.c: Comparison across teaching staff's college of teaching for both cases (%)

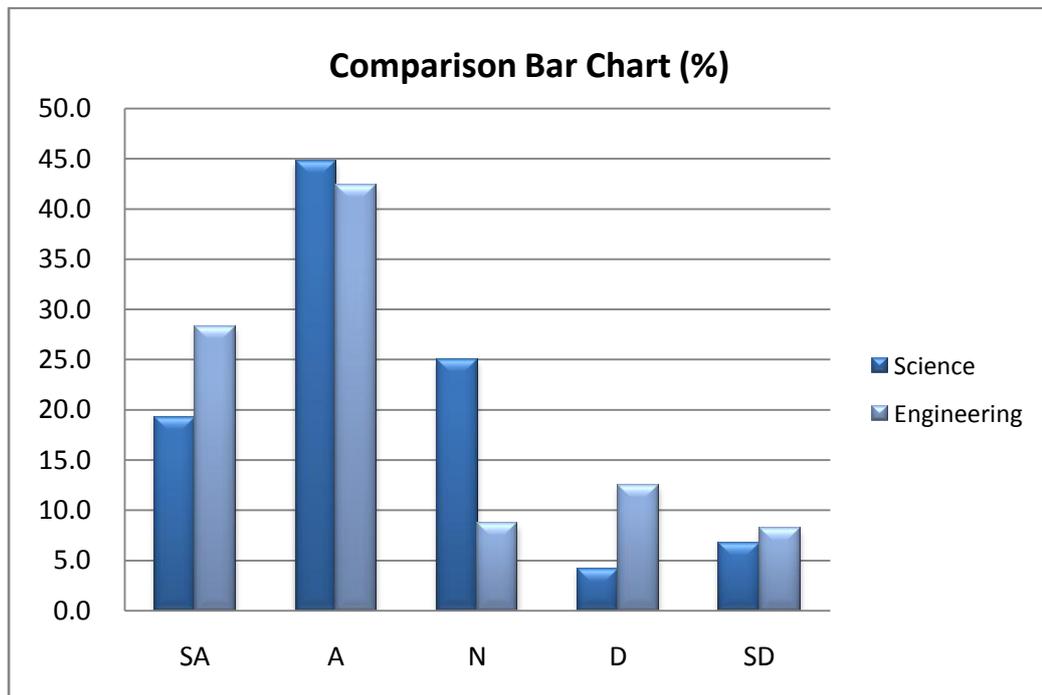


Figure 30: Research Question 4.3.c: Comparison across teaching staff's college of teaching for both cases

The graph further clarifies that there is a difference in opinion of science and engineering teaching staff toward Arabic and English Bilingualism as a Medium of

Instruction in science and engineering education in Libya. Engineering teaching staff tends to agree more, over all, majority of teaching staff from both universities tend to agree with the opinion.

Table below for case study I teaching staffs shows that majority of science and engineering teaching staffs tend to agree with the using of Arabic and English Bilingualism as a Medium of Instruction. Engineering teaching staffs tend to agree more than science teaching staffs.

	SA	A	N	D	SD
Science	19.4	42.4	29.2	2.8	6.3
Engineering	31.3	36.5	7.3	15.6	9.4

Table 4.68: Research Question 4.3.c: Comparison across case study I science and engineering teaching staff (%)

Table below for case study II teaching staffs shows that majority of science and engineering teaching staffs tend to agree with the using of Arabic and English Bilingualism as a Medium of Instruction. Engineering teaching staffs tend to agree more than science teaching staffs with the option. Both colleges in both universities tend to agree more for using Arabic and English Bilingualism as a Medium of Instruction in science and engineering education in Libya

	SA	A	N	D	SD
Science	19.2	47.5	20.0	5.8	7.5
Engineering	25.0	48.9	10.2	9.1	6.8

Table 4.69: Research Question 4.3.c: Comparison across case study II science and engineering teaching staff (%)

4.3.5 Teaching Staff Data Analysis: Research Question 5

What is the impact of language of instruction on quality of science and engineering education in Libya?

4.3.5.1 English

4.3.5.1.1 Language Proficiency

English's Language proficiency is low for all the students for both the universities.

4.3.5.1.1.1 Case Study 1

According to all the teaching staffs of Case 1 students find English hard and thus do not like to use English in their exams. *“As we don't use English in our college for teaching, but from my experience on students, they don't like to use English because they find it hard to understand in science classes, especially in exams, which want someone has good understanding in exam's time”*, commented by Teacher 1 Case 1. Teacher 2 Case 1 stated, *“Students found science classes hard to understand in English, especially were exams have limited time”*. Teacher 3 Case 1 mentioned, *“As I use very little of English, but Students didn't like that as they found my engineering classes hard to understand...and asked to translate most of the questions”*. *“Students are afraid of using English,”* stated by Teacher 5 Case 1.

4.3.5.1.1.2 Case Study 2

On the other hand, Teaching staffs of case 2 have slightly different view, according to three of them students like using English but they find it hard to deal with EMI during exams. Teacher 1 Case 2 reported, *“Students like to study in English, and they like to use English in science and engineering, but they find it harder in exams”*. Teacher 2 Case 2 stated, *“Students prepares themselves to join classes carefully, and because all computer languages are in English, students tries to understand and works hard to learn”*. Teacher 4 Case 2 said that *“Students like to communicate in English at classes specially in engineering classes that have Maths terms and they prefer it better, in exam time students like to explain questions if it is in English in more details”*.

4.3.5.1.2 Impact

Use of English has bad impacts on students' scores and overall performance. It has been reported by three teaching staffs of case 1 and one teacher of case 2. All the

Teaching staffs of both the universities stated that use of English medium instruction lowers the performance of students in exams and lower the previous good grades.

4.3.5.1.2.1 Case Study 1

Teacher 3 Case 1 stated, *“As I tried to do some tests in English, students were very bad and asked to translate most of the questions”* and Teacher 5 Case 1 also reported *“Bad impact”*.

Teacher 3 Case 1 reported, *“This is the big problem faced by most of teaching staff who tried to use English in engineering teaching, that’s why most of students don’t like to use it as they afraid to fail if the EMI is the instruction of teaching”*. Teacher 4 Case 1 also has similar views, *“Unfortunately, this is the true that use of English medium instruction lowers the performance of students in exams”*. Teacher 5 Case 1 has said, *“Yes, it does”*.

4.3.5.1.2.2 Case Study 2

Teacher 5 Case 2 stated, *“First and second years did badly in exams and tests”*.

“Yes, English lowers students’ grads and their performance in exams”, reported by Teacher 1 Case 2. Teacher 3 Case 2 also reported *“Yes”*. Three of them have slightly different view as reported by Teacher 2 Case 2 *“Yes, it lowers in some subjects, but not in all areas”*, Teacher 4 Case 2 *“Yes, in some subjects, but not in all. Subjects that related to Maths don’t affect students’ performance”* and *“Mostly yes, in first and second years,”* mentioned by Teacher 5 Case 2.

4.3.5.1.3 Stage that language should starts

4.3.5.1.3.1 Case Study 1

Keeping in view the importance of EMI two of the teaching staffs of Case 1 suggested starting EMI as early as possible. Teacher 2 Case 1 reported, *“As students have to choose their fields from secondary school, so EMI should start in secondary school than students can find their self’s good in using EMP”*. Teacher 5 Case 1 also

stated same, *“Implement EMI as soon as possible to improve the education system and students English language as well”*.

4.3.5.1.3.2 Case Study 2

Three teaching staffs of Case 2 also talked about EMI. Teacher 1 Case 2 said, *“Start teaching English from primary school”*. Teacher 4 Case 2 stated, *“Implement EMI in all postgraduate studies in Libya to have local teaching staffs who can use EMI in university level”*. Teacher 5 Case 2 said, *“Support institutions that implement EMI and give them more funds and scholarships for students and teaching staff”*.

4.3.5.1.4 Job opportunity

Almost all of the participants agreed that to interact with the world and get benefits one has to be proficient in English. According to participants, knowing English is an asset for all those who want to excel in their professional carriers.

4.3.5.1.4.1 Case Study 1

“If they have graduated and studied in English the future is open for them in Libya and over the world”, mentioned by Teacher 1 Case 1. Teacher 3 Case 1 stated, *“Students who have better English in their specialized fields can get good job and may they can get more opportunity to have grants from government to study abroad”*. Teacher 5 Case 1 reported, *“Qualifications in science and engineering with English is open for good future”*.

4.3.5.1.4 .2 Case Study 2

Teacher 1 Case 2 stated, *“They can get good jobs if they are good in English”*. *“Students who finish in computer science with good English can work anywhere over the world and can be paid well”*, mentioned by Teacher 2 Case 2 and *“they still have more opportunity in labour markets”*, stated by Teacher 3 Case 2. Teacher 4 Case 2 also has similar views, *“they have good opportunities for good job and to get technical training programs abroad”*.

4.3.5.1.5 Culture

However, students like English as a language but they have reservations for western culture. Three teaching staffs out of 10 talked about Culture.

4.3.5.1.5.1 Case Study 1

Teacher 2 Case 1 commented, “*Students like English language in general, but they don’t like the western culture*”. Teacher 3 Case 1 stated, “*Most of students don’t like western culture, but they like to use English to improve their language as they have very little of English as a language*”.

4.3.5.1.5.2 Case Study 2

Teacher 3 Case 2 mentioned, “*Students enjoy learning in English with reserve*”.

Language	Themes	Case1	Case2
English	Language proficiency	Students find English hard and thus students do not like to use English in exams	On the other hand, case 2 have slightly different view, according to three of teachers ,students like using English but they find it hard to deal in during exams
	Impact	Use of English has bad impacts on students’ scores and overall performance. It has been reported by three teachers of case 1 and one teacher of case 2. All the Teachers of both the universities stated that use of English medium instruction lowers the performance of students in exams and lower the previous good grades	
	Stage that English Should start	Keeping in view the importance of EMI two of the teachers suggested starting EMI as early as possible	Three teachers of also talked about EMI. Teacher Start teaching English from primary school
	Job Opportunity	Almost all of the participants agreed that to interact with the world and get benefits one has to be proficient in English. According to participants, knowing English is an asset for all those who want to excel in their professional carriers.	
	Culture	However, students like English as a language but they have reservations for western culture. Three teachers out of 10 talked about Culture.	

Table 4.70: Students Themes on English Medium Instruction

4.3.5.2 Arabic

4.3.5.2.1 Language proficiency

4.3.5.2.1.1 Case Study 1

Almost all of the participants of the study agreed that students like Arabic very much and have high proficiency levels of Arabic Language. Teacher 1 Case 1 stated, *“When we use Arabic as a language of teaching, students can understand the classes and interact with teaching staffs”*. Teacher 3 Case 1 commented, *“Most of students in my college like to use Arabic, as they find it easy to understand and to learn”*. *“Students don’t find any difficulty in using Arabic and they didn’t find any change from previous school levels, they don’t have to work hard to understand or do more extra practice to understand the classes and exams”*, mentioned by Teacher 4 Case 1.

4.3.5.2.1.2 Case Study 2

Teacher 1 Case 2 mentioned, *“Students can understand more in Arabic”*. Teacher 3 Case 2 stated, *“They can connect and discuss with teaching staffs”*. Teacher 4 Case 2 said, *“Students can interact and have more discussion during class time”*.

4.3.5.2.2 Impact

Most of the teaching staffs of both the universities have mentioned that Arabic has good impacts on the students’ grades.

4.3.5.2.2.1 Case Study 1

Teacher 1 Case 1 stated, *“The students get good marks”*. Teacher 2 Case1 said, *“Students can understand the classes easy when delivered in Arabic, and can have better marks than any other Language of instruction”*. Teacher 4 Case 1 reported, *“Students can understand the classes easy when delivered in Arabic, and can have better marks than any other Language of instruction”*.

4.3.5.2.2.2 Case Study 2

Teacher 1 Case 2 said, *“The students got good grades and can understand more in Arabic and did much better than English in Exams”*. Teacher 3 Case 2 mentioned, *“Students get good marks in exams when using Arabic”*. *“Students have good performance and they will do better in exams as they prefer to answer in Arabic and write technical terms in English and do well in exams”*, stated by Teacher 4 Case 2.

4.3.5.2.3 Job opportunity

Use of Arabic as a medium of instruction is an obstacle in way of getting good jobs.

4.3.5.2.3.1 Case Study 1

Teacher 2 Case 1 reported, *“Students will not get good opportunity to find good job”*. Teacher 4 Case 1 said, *“studying Arabic will be a disadvantage after they graduates”*. *“Arabic limits the opportunity to find good job and most of science and engineering graduates work as a teaching staffs in primary and secondary schools”*, mentioned by Teacher 3 Case 1.

4.3.5.2.3.2 Case Study 2

Teacher 1 Case 2 mentioned, *“They can’t find good job after finishing study”*. Teacher 3 Case 2 stated, *“Students who study in Arabic have limited their opportunity to find a job”*. *“Most of students work as teaching staffs or in local organisations after they graduate”*, mentioned by Teacher 5 Case 2.

4.3.5.2.4 Resources

Most of the latest academic resources like books and journals are not in Arabic language, which is drawback of Arabic Medium Instruction. Two teaching staffs of Case 1 and one of Case2 mentioned this problem.

4.3.5.2.4.1 Case Study 1

Teacher 1 Case 1 stated, *“Arabic references don’t cover all area of studying especially up to date works”*. Teacher 5 Case 1 reported, *“Students know that*

Arabic limits their knowledge in science and engineering because of the lack of references and materials in Arabic”.

4.3.5.2.4.2 Case Study 2

Teacher 2 Case 2 said, *“Teaching in Arabic doesn’t cover all the curriculum of the subject, as many up to date references weren’t translated”.*

Language	Themes	Case1	Case2
Arabic	Language proficiency	Almost all of the participants of the study agreed that students like Arabic and have high proficiency levels of Arabic Language. Teacher 1 Case 1 stated, <i>“When we use Arabic as a language of teaching, students can understand the classes and interact with teachers”.</i>	
	Impact	Most of the teachers of both the universities have mentioned that Arabic has good impacts on the students’ grades.	
	Job Opportunity	Uses of Arabic as a medium of instruction reduce the opportunity of getting good jobs. <i>“Students will not get good opportunity to find good job”.</i>	
	Resources	Most of the latest academic resources like books and journals are not in Arabic language, which is drawback of Arabic Medium Instruction. Two teachers of Case 1 and one of Case2 mentioned this problem. <i>“Teaching in Arabic doesn’t cover all the curriculum of the subject, as many up to date references weren’t translated”.</i>	

Table 4.71: Students Themes on Modern Standard Arabic

4.3.5.3 Arabic-English Bilingualism

4.3.5.3.1 Language proficiency

Students like Arabic-English Bilingualism more than Arabic or English alone.

4.3.5.3.1.1 Case Study 1

Teacher 2 Case 1 said, *“It is good to use Arabic/English in teaching for students and teaching staffs as well”.* *“I think the impact of students when lectures are*

delivered in Arabic/English in teaching science and engineering will improve by the time if the college implement it in classes”, stated by Teacher 3 Case 1. Teacher 4 Case 1 reported, “Students will like it more if it is started step by step and not in all classes at the same time”.

4.3.5.3.1.2 Case Study 2

Teacher 1 Case 2 mentioned, *“It is better than English only, and students can understand in English and Arabic as well”.* Teacher 3 Case 2 commented, *“Here students can explain topics and ask questions in Arabic if they couldn’t tell it in English, and can answer and mix Arabic with English in exams”.* *“Students have good performance as they can ask and questions using Arabic and English especially in exam where time is limited”, reported by Teacher 5 Case 1.*

4.3.5.3.2 Impact

All teaching staffs think that Arabic-English Bilingualism will have good impacts on students’ scores.

4.3.5.3.2.1 Case Study 1

Teacher 1 Case 1 said, *“Using two languages in teaching can give students better performance in classes”.* Teacher 3 Case 1 commented, *“I think situation will improve by the time if the college implement it in classes, as many students find it hard in first year, but by second and third year they will like it and they will use it very easily, in forth year they will think that they are using just Arabic”.* *“They may have good performance in classes and exams”, reported by Teacher 4 Case 1.*

4.3.5.3.2.2 Case Study 2

Teacher 1 Case 2 stated, *“Students do well in exams”.* *“Students understand the topic better if it is explained in Arabic/English and saves time for the teacher”, reported by Teacher 2 Case 2.* Teacher 4 Case 2 mentioned, *“Students have good performance and they will do better in exams as they prefer to answer in Arabic and write technical terms in English and do well in exams”.*

4.3.5.3.3 Job opportunity

Most of the participants of both the universities stated that students would be able to avail both local and international Job Opportunities if they have studied in Arabic-English Bilingualism.

4.3.5.3.3.1 Case Study 1

“They havemore opportunity to get some jobs in engineering companies that use Arabic and English language”, reported by Teacher 1 Case 1. Teacher 2 Case 1 said, *“This type of teaching gives students more chance to find good jobs in some oil and technology companies”*. Teacher 4 Case 1 mentioned, *“This will give them good opportunity to get good jobs in Libya or other Arab gulf countries”*.

4.3.5.3.3.2 Case Study 2

Teacher 1 Case 2 reported, *“Students find good jobs if they studying in Arabic/English”*. Teacher 2 Case 2 mentioned, *“Graduates with some English have more chance to get good jobs”*. Teacher 5 Case 2 stated, *“More options to work with local and mixed companies and institutions”*.

Language	Themes	Case1	Case2
Arabic/ English Bilingualism	Language proficiency	Students like Arabic/English Bilingualism more than Arabic only or English only. Case1 <i>“Students will like it more if it is started step by step and not in all classes at the same time”</i> . Case2 <i>“Here students can explain topics and ask questions in Arabic if they couldn’t tell it in English, and can answer and mix Arabic with English in exams”</i>	
	Impact	All teachers think that Arabic-English Bilingualism will have good impacts on students’ scores.	
	Job Opportunity	Most of the participants of both the universities stated that students would be able to avail both local and international Job Opportunities if they have studied in Arabic-English Bilingualism.	

Table 4.72: Students Themes on Arabic/English Bilingualism

4.3.5.4 Results

Findings of the Interviews revealed that teaching staffs of both the cases have almost similar views with slight variations regarding all the three medium of instructions.

According to participants of both cases, English would have bad impact on the students' academic performance for this reason Participants of case 1 think that students do not like English i.e. "*students don't like to use English because they find it hard especially in exams*" Case 1 Teacher 1. According to respondents of Case 2 students like English despite their poor performance e.g. "*Students like to study in English but they find it harder in exams*" Case 2 Teacher 1, as they know that, English is the only gateway for going Global.

Participants of both cases stated though students like Arabic and it is easy for them to study in Arabic i.e. "*Most of students in my college like to use Arabic*" Case 1 Teacher 3 and "*Students can perform well*" Case 2 Teacher 2. All participants mentioned that use of Arabic results in lack of the job opportunities i.e. "*Arabic limits the opportunity to find good job*" Case 1 Teacher 3. In addition, the lack of academic materials and resources is an issue of Arabic Medium Instruction e.g., "*Arabic doesn't cover all the curriculum of the subject, as many up to date references weren't translated*" Case 2 Teacher 2.

Arabic-English Bilingualism seems to be the best solution for taking first step towards globalization. Many participants of both cases suggested Arabic-English Bilingualism as a first step towards globalization i.e. "*Students will like it more if it is started step by step and not in all classes at the same time*" Case 1 Teacher 4.

CHAPTER - 5

5. DISCUSSION

The purpose of this study was to examine students and teaching staffs' attitudes toward the use of the language of instruction in two different science and engineering universities in Libya. Al-Jabal Al-Garbi University and Nasser International University were adopted as a case study; three types of instructions were available for the study: English only, Modern Standard Arabic only or English/Modern Standard Arabic bilingually. The research leads to the following analysis and discussion:

5.1 Research Question 1

First Research Question that has been inquired in the study is: What are attitudes of students\teaching staff towards the use of English medium instruction in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 1

- a. *Are students' attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases same?*
- b. *Are teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases same?*

Students' attitude toward the use of English medium instruction in science and engineering education in Libya is positive i.e. most of the students prefer English as the medium of instruction. Results show that English is recognized by students as important and necessary for a number of reasons. According to interviewed teaching staffs this is because of English being the language in which most science and engineering books are written, most textbooks are written, and in which most of their teaching staffs are versed, several researchers have indicated similar as noted in the literature review (Alptekin and Alptekin, 1984; Kachru, 1992; Kramsch, 1993; McKay, 2002; Al-Jarf, 2004; Ahmed, 2010).

5.2 Research Question 1: Students

In item 46 “I prefer English to be the medium of instruction for higher science engineering education” there is clear difference of views between both cases. Most participants i.e. 59.2% of case 1 disagree or strongly disagree while 57.6% of case 2 agree or strongly agree with the view. Students of case 1 have not preferred English medium instruction because standard Arabic is there medium of instruction while students of case 2 who are already using English as there medium of instruction preferred English.

In item 47 “Given the choice, I would study all my courses in English” there are alike results in responses between students of both cases. Most of the participants of both cases disagree or strongly disagree with the opinion. But there is a slight difference among percentages such as 60.3% of case 1 and 48.1% of case 2 disagree or strongly disagree with the view which creates the difference among both cases. Though students of both universities do not want to study all courses in English but it is interesting to note that students of case 2 who have already preferred English are reluctant to study all the courses in English. In contrast a greater disagreement of case 1 is unsurprising as they have already disagreed to prefer English by taking admission in a university with Arabic as a medium of education. Probably because the item talks about all courses, and Libyan under graduate students have to study some Art and Political course at all disciplines, like Arabic language, Islamic studies, political studies, research methods, etc. So it is clear that students don't like to study Arabic language or Islamic studies by English medium of instruction.

There is clear difference of views between both cases in item 48 “I believe my results would be better if I studied in English”. Here slight majority i.e. 45.8% of case 1 disagree or strongly disagree while 41.2% of case 2 agrees or strongly agrees with the opinion. Moreover, in item 48, 39.1% of case 1 and 33.1% of case 2 opted for neutral option which shows students are either confused or have not understand the question. It is also possible that participants agree to statement to some extent but not fully so they opted for neutral option. May be results of students in some subjects, if studied in English, get improved and not in all subjects and this became the reason behind choosing neutral option.

Item 49 “I believe that students’ participation would be more effective if English was the medium of instruction” there is clear difference of views between both cases. Majority of case 1 i.e. 53% preferred to either disagree or strongly disagree with statement while most respondents of case 2 i.e. 55% choose to agree or strongly agree with the view. The students of Arabic medium instruction have again reinforced their reluctance for use of English. Probably, students of case 1 have preferred Arabic because it is their native language and naturally they could easily communicate and participate in this language. Whereas English medium of instruction of participants of case 2 might have made them enable to communicate and contribute in English. Moreover English is the language of modern science and technology so it is also possible that students find it most appropriate to study and discuss science in English.

There is clear difference of views between both cases in item 50 “I believe the curriculum would be taught more efficiently if it was done through the medium of English”. Majority (50.8%) of case 1 preferred to disagree or strongly disagree with statement but after this 26.8% of case 1 chose to agree. Similarly most respondents of case 2 (50.6%) choose to agree with the view while 33.8% of case 2 opted to disagree. This opposition of views shows the difference in approach towards English as medium of instruction. Though plurality of participants in case 1 is disagreeing but a considerable number is also agreeing and this results into somehow conflicting finding. It is probable that participants of case 1 are considering efficiency as good grades and disapproving the use of English. On the other hand may be participants of case 2 are well aware of the importance of English medium instruction for science and engineering and thus favouring English.

Item 51 “I believe that English is the best medium for dealing with modern sciences and engineering” got almost similar positive tendencies such that most participants of both cases prefer to agree with the statement. But more participants i.e. 78.1% of case 2 opted strongly agree or agree than 71% participants of case 1. This slight difference is a hint of disinclination of participants of case 1 for studying English. Perhaps the reason for this subtle disagreement is participants’ ignorance or favouritism for Arabic.

Item 52 “I believe that it is possible to use English for teaching in high engineering education” got almost similar positive tendencies such that participants of both cases prefer to agree with the statement. But fewer participants i.e. 67% of case 1 opted strongly agree or agree than participants i.e. 77.5% of case 2. Here again participants of case 2 are more in favour of English than case 1. May be background of participants and their current medium of education is affecting their decisions.

Item 53 “The use of English as medium of instruction will promote the transfer of technology to Libya” got approximately parallel results such that participants of both cases prefer to agree with the statement. However more participants of case 2 opted strongly agree or agree than participants of case 1 do. There is a difference of 7.9% among percentages (for agree or strongly agree) between both cases. Some of participants are still reluctant towards English maybe because they have not yet realized the importance of English for technology.

Concluding above analysis of individual items, it could be said that there is difference of opinion among participants of both cases. There are alike inclinations in responses of some items by students but not in all items. Most of the participants of both cases disagree or strongly disagree in item 47 but majority of both cases agree or strongly agree in responses of item 51, 52 and 53, but answers are not exactly the same. These items have showed slight variations across both the cases in terms of percentages, which have subtly participated in the rejection of hypothesis in Chi-Square Analysis that participants of both cases have different attitudes towards English as medium of instruction.

In item 46, 48, 49 and 50 there is clear difference of views between both cases. Results of case 1 are totally opposite of case 2. Participants of case 1 have opted for disagree or strongly disagree whereas on the contrary participants of case 2 choose agree or strongly agree.

These differences cause the rejection of hypothesis in Chi-Square Analysis. By noting the above it could be concluded that student’ attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases is somehow dissimilar which could also be seen from above mentioned individual analysis of questions. Students of case 2 i.e. Nasser International

University tend to agree more on the use of English as a language of instruction when compared to attitudes of case 1 i.e. Al-Jabal Al-Garbi University.

The current institute and more importantly current medium of instruction are definitely affecting the views of participants. Students of Arabic medium instruction from Al-Jabal Al-Garbi University have shown disapproval for English medium instruction where as students of English medium instruction from Nasser International University have shown approval for English medium instruction.

Maybe the reason for disapproval of English medium by students of case 1 is their disliking for western culture which has also been reported by some interviewee. Other than this their extreme love for their native language could also be considered as one of the reason. Another important reason could be good grades, as they could not get good grades in English medium instruction so they disagree with the usage of English. It is also possible that they fear the unknown; it is also possible that they are presuming that English is difficult language and they could never learn it.

Similarly there could be number of reasons for students of case 2 to approve the use of English medium instruction. They are already using English so they do not fear the unknown; they know that English is not a difficult language. Maybe usage of English itself has given them the realization of importance of English. By using English they might have became aware of the huge amount of resources like books, articles and researches that could help them in studying science and engineering. Apart from this all this English is language of science and engineering and all the modern theories and terminologies of science are in English language so this could also be the reason for approval of English by students of case 2.

There are certain other factors that affect the views of student which would be discussed in detail Research Question 4.

5.1.2 Research Question 1: Teaching Staff

Teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases is subtly different. Differences of each item individually are explained below.

Item 45 “I prefer English to be the medium of instruction for high engineering education” have similar positive tendencies with differences of percentages between both cases. Majority i.e. 56.7% of case 1 while 73.1% of case 2 chooses to agree or strongly agree with the statement. Here again participants of case 1 have less liking for English as medium of instruction. But in contrast to students’ total opposing answers teaching staffs have just difference of 16.4%. Reason for this could be the Education of the teaching staffs; teaching staffs of case 2 who are teaching in an English medium institute are definitely well versed in English and this is affecting their views.

Item 46 “Given the choice, I would teach all my courses in English” has an anomaly that 46.7% of case 1 has chosen the neutral option which shows that participants are neither favouring nor disapproving the English medium of instruction. After this 36.7% of case 1 and 50% of case 2 either agree or strongly agree with the idea that they wanted to teach all their courses in English. Again participants of case 2 prefer English more than participants of case 1. Here though many teaching staffs agree but not all reason for this could be the courses like Basic Arabic and Islamic studies which are mandatory for undergraduate students of Libya. Arabic is the best medium of instruction for these types of courses.

Item 47 “I believe my results would be better if I taught in English” has a glitch that 46.7% of case 1 and 30.8% of case 2 has chosen the neutral option. Again participants are neither agreeing nor disagreeing. After this equal 26.7% of case 1 agree or strongly agree and 26.7% of case 1 disagree or strongly disagree. No results could be drawn for this question alone. 50% of case 2 either agree or strongly agree with the idea that English could improve the results. Maybe participants of case 2 have seen the improvement in results of their students and that is why they are saying this.

Item 48 “I believe that students’ participation would be more effective if English was the medium of instruction” have clear differences of views among both cases. Plurality of case 1 i.e. 43.3% choose neutral option which again shows that participants are neither agreeing nor disagreeing with the view. After this 30% of case 1 either disagree or strongly disagree while 46.1% of case 2 agree or strongly agree with the idea that EMI could improve students’ participation. Maybe

participants of case 1 are of view that how could students participate in a language that is not their own. While participants of case 2 have different students that know the language and this might have lead them to the approval.

Item 49 “I believe the curriculum would be taught more efficiently if it were done through the medium of English” has subtle differences among both cases. Many participants of both cases choose to remain neutral i.e. 40% of case 1 and 30.8% of case 2 selected neutral option. However plurality of both cases approves the idea but there is a difference of percentages among both cases i.e. 40% of case 1 and 50% of case 2 agree or strongly agree with the idea. Participants of both cases agree and it could be because of the fact that English is the language of science and engineering and most of the curriculum is also in English. Hence curriculum could be taught more efficiently if it is in English.

Item 50, has similar positive tendency with difference of percentages between both cases. 70% of case 1 and 80.7% of case 2 opted to agree or strongly agree with the idea that they believe that English is the best medium for dealing with modern sciences and engineering. Most of the books, articles and researches related to science and engineering are written in English. This might have made the teaching staffs to choose agree.

Item 51 “I believe that it is possible to use English for teaching in high engineering education” has similar positive tendency with difference of percentages between both cases. 73.4% of case 1 and 84.6% of case 2 opted to agree or strongly agree with the idea. Usually higher engineering education professionals are required to work professional either in a multinational environment or in some foreign countries so it is much better for them that they study in English. This could be the reason for major agreement.

Item 52 has similar positive tendency with difference of percentages between both cases. 80% of case 1 and 84.6% of case 2 opted to agree or strongly agree with the idea that the use of English as medium of instruction will promote the transfer of technology to Libya. English is the language of both technology and communication and without this tool one cannot work with technology especially

the transference of technology cannot happen without it. This might have lead the teaching staffs of both cases to agree with the statement.

Teaching staffs of both cases have fewer differences among views regarding using English as medium of instruction. Except for the item 47 and 48 all other items have similar majorities such as both cases have preferred same option. Either majority of both cases agree or strongly agree with the idea that English should be the medium of instruction for teaching science and technology. There is subtle difference of percentages among both cases.

Above-mentioned statistics are the reason for rejection of hypothesis in Chi-square analysis and leads to the conclusion that teaching staff attitudes toward the use of English medium instruction in science and engineering education in Libya in both the cases is to some extent different. Where case 2 prefers English with huge majority there many participants of case 1 have opted the neutral option meaning that they neither agree nor disagree with the view. It has also been shown that teaching staff of Nasser International University tend to agree more on the use of English as a language of instruction. However, the teaching staffs at both universities like English as a medium of instruction, this finding is similar for teaching staff in other studies (Taha, 1990; Al-Jarf, 2004). But the teaching staffs at Al-Jabal Al-Garbi University are somehow reluctant to fully agree or disagree with the use of English as many of respondents chose the neutral option.

Most of the teaching staffs who have participated in the survey are highly qualified and educated. Their knowledge and experience might have made importance of English medium instruction clear to them and thus they have favoured it in most of the questions. Subtle differences of views could be accounted on the basis of students they teach. Capabilities of students they teach might have affected the views of teaching staffs which could be the reason for subtle variations. Apart from this may be teaching staffs of case 2 have themselves completed their education in some English medium institute which is affecting their views.

5.1.3 Comparison between Students and Teaching Staff

5.1.3.1 Case 1

There are also some differences in the views of teaching staffs and students in case 1.

In response to the first item, “I prefer English to be the medium of instruction for higher science engineering education.” of Research Question 1 majority of teaching staffs i.e. 56.7% agree with the view in contrast, 59.2% of students tend to disagree with the idea.

In reply to second item “Given the choice, I would study/teach all my courses in English.” majority of students i.e. 60.3%; disagree with the idea whereas majority of teaching staffs i.e. 46.7% have a neutral view and rest i.e. 36.7% agree with the view.

Responses of third item “I believe my result would be better if I studied/taught in English” have shown different results. 45.8% of students choosing agree or strongly agree while majority of teaching staffs i.e. 46.7% preferring neutral option.

In response to fourth item, “I believe that students’ participation would be more effective if English was the medium of instruction” 43.3% of teaching staffs have neutral view while 53% of students preferred to disagree or strongly disagree.

In response to fifth item, “I believe the curriculum would be taught more efficiently if it were done through the medium of English” 40% of teaching staffs have neutral view and 40% agree or strongly agree while 50.8% of students preferred to disagree or strongly disagree.

Replies of sixth item “I believe that English is the best medium for dealing with modern sciences and engineering” have similar results with both agreeing with the statement. 71% of students and 70% of teaching staffs agree or strongly agree with the notion.

In seventh item “I believe that it is possible to use English for teaching in high engineering education” majority of both teaching staffs and students, agree or

strongly agree with opinion with slight difference of percentage i.e. 73.4% and 67% respectively.

In eighth item “The use of English as medium of instruction will promote the transfer of technology to Libya”, most of both i.e. 80% teaching staffs and 71.5% of students strongly agree or agree with idea.

Students of case 1 have shown major disagreement with the concept that English should be the medium of instruction. It seems that they fear the unknown they have previously decided to study in Arabic medium instruction and are still not realizing the importance of English medium instruction. Contrary to them teaching staffs approve the idea and responded positively. The difference in education and experience could be the reason behind these differences in views. Another reason for teaching staffs’ approval for English medium instruction could be the global importance of English not only for education but specifically for science and engineering education. May be students are focusing on short term goals like going for the easy way or scoring more marks and disapproving the English, as shown by Al-Jarf, (2008).

5.1.3.2 Case 2

Responses of case 2 also showed some subtle variations. In first item of Research Question 1 though majority agree with the notion but there is difference of percentages. 73.1% of teaching staffs strongly agree or agree with the idea while only 57.6% students tend to agree that they prefer English to be the medium of instruction for higher science engineering education.

In second item majority of teaching staffs i.e. 50%, either agree or strongly agree but 48.1% of students tend to disagree or strongly disagree with the opinion that given the choice, they would study or teach all their courses in English.

In third item, there is a tendency towards agreement that they believe their result would be better if they studied or taught in English. 41.2% of students while 50% of teaching staffs either agree or strongly agree with the idea.

In response to fourth, there are differences of percentages between views of teaching staffs and students. Here in fourth item they believe that students' participation would be more effective if English was the medium of instruction and 46.1% of teaching staffs while 50% of students gave a positive response.

In response to fifth, there is almost equal positive result. Here in this item majority of students i.e. 50.6% tend to agree whereas 50% of teaching staffs gave positive response that they believe the curriculum would be taught more efficiently if it was done through the medium of English.

In sixth item, majority of results are tending towards agreement that they believe that English is the best medium for dealing with modern sciences and engineering. 78.1% of students and 80.7% of teaching staffs opted either to agree or strongly agree.

In seventh item, majority such as 77.5% of students and 84.6% of teaching staffs believe that it is possible to use English for teaching in high engineering education.

In eighth item, there are slight differences of percentages between views of teaching staffs and students. 79.4% of students and 84.6% of the teaching staffs either agree or strongly agree with the idea that the use of English as medium of instruction will promote the transfer of technology to Libya.

All of the questions in this section got a major positive response and both teaching staffs and students tend to agree or strongly agree with the idea that English should be the medium of instruction except the second question. However there is difference of percentages among teaching staffs and students, more teaching staffs tend to agree or strongly agree than students in almost all items. The experience and education could be accountable for these differences in views. Both students and Teaching staffs of case 2 have already preferred English medium instruction by taking admission or joining the Nasser International University and they seem satisfied with their decision. They have more preference for English because they are already using English medium instruction and they do not fear the unknown.

5.2 Research Question 2

Second Research Question that has been inquired in the study is: What are attitudes of students\teaching staff towards the use of Modern Standard Arabic medium instruction in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 2

- a. *Are students' attitudes toward the use of Modern Standard Arabic medium instruction in science and engineering education in Libya in both the cases same?*
- b. *Are teaching staff attitudes toward the use of Modern Standard Arabic medium instruction in science and engineering education in Libya in both the cases same?*

Students' attitude toward the use of Arabic medium instruction in science and engineering education in Libya is mix i.e. most of the students of case 1 prefer Arabic as the medium of instruction while students of case 2 negate the use of Arabic for science and engineering education. There exist variations across both the cases along with same majorities in few responses but answers are not exactly the same.

Whereas teaching staff attitudes toward the use of Standard Arabic medium instruction in science and engineering education in Libya in both the cases is very slightly different. Majority of respondents are almost evenly distributed to agree or strongly agree in their opinions but there are differences of percentages among both cases.

It could be interpreted from results that Arabic is recognized by students as an easy medium of instruction and there could be a number of reasons for this. According to interviewed teaching staffs this Arabic being the native language of most of the students could be one of the many reasons. Though it is preferred by the students but there are too many ifs and buts attached with it which are going to be explored in Research Question 4 and 5.

5.2.1 Research Question 2: Students

In item 38 “I prefer Arabic to be the medium of instruction for higher science engineering education” there is clear difference of views between both cases. Most participants i.e. 71.9% of case 2 disagree or strongly disagree while 60.3% of case 1 agree or strongly agree with the view. Students of case 2 have not preferred Arabic medium instruction because English is there medium of instruction while students of case 1 who are already using Arabic as there medium of instruction preferred Arabic.

In item 39 “Given the choice, I would study all my courses in Arabic” there has been an anomaly that most participants of case 1 such as 44.1% chose the neutral option which shows that students neither agree nor disagree with the view. After this most of the participants of both cases disagree or strongly disagree with the opinion. But there is a difference among percentages such as 39.6% of case 1 and 83.7% of case 2 disagree or strongly disagree with the view. Though students of both universities do not want to study all courses in Arabic but it is surprising to note that students of case 1 who have already preferred Arabic are reluctant to study all the courses in Arabic. In contrast a greater disagreement of case 2 is unsurprising as they have already disagreed to prefer Arabic. Probably the students of case 1 want to study some courses like Arabic and Islamic studies in Arabic and other courses in English and this might have made them to choose neutral option.

There is clear difference of views between both cases in item 40 “I believe my results would be better if I studied in Arabic”. Here plurality i.e. 48% of case 1 agree or strongly agree while majority i.e. 60.1% of case 2 disagrees or strongly disagrees with the opinion. Maybe students of case 1 find Arabic as an easy medium of instruction for understanding concepts of science and engineering and thus they have preferred it. On the other hand students of case 2 might have disagreed because of lack of scientific works that are either originally published in Arabic or translated in Arabic.

Item 41 “I believe that students’ participation would be more effective if Arabic was the medium of instruction” there is clear difference of views between both cases. Majority of case 1 i.e. 52.5% preferred either agree or strongly agree with statement

while most respondents of case 2 i.e. 54.4% choose to disagree or strongly disagree with the view. The students of English medium instruction have again reinforced their reluctance for use of Arabic. Students of case 1 might have favoured Arabic because one can most easily communicate in ones native language than any other language, while students of case 2 might have disagreed because Arabic is not the language of science and engineering and could become a hindrance in discussion topics related to science and engineering.

There is clear difference of views between both cases in item 42 “I believe the curriculum would be taught more efficiently if it was done through the medium of Arabic”. Slight majority (43%) of case 1 preferred to agree or strongly agree with statement while most respondents of case 2 (62.5%) choose to disagree or strongly disagree with the view. This total opposition of views shows the difference in approach towards Arabic as medium of instruction. Mostly scientific work which could be the curriculum of science and engineering is originally published in English and could only be best taught in its own language. This might be the reason for disapproval of participants of case 2. On the contrary students of case 1 might have thinking in terms of good grades and hence approves of Arabic curriculum.

Item 43 “I believe that Arabic is the best medium for dealing with modern sciences and engineering” mainly got negative responses such that most participants of both cases prefer to disagree with the statement. But more participants i.e. 67.5% of case 2 opted strongly agree or agree than 41.4% participants of case 1. This percentage difference is a proof of disinclination of participants of case 2 for studying Arabic. Participants of both cases have disagreed which could be based on their awareness regarding importance of modern and up-to-date scientific discoveries.

Item 44 “I believe that it is possible to use Arabic for teaching in high engineering education” has an anomaly that majority i.e. 38.5% of case 1 opted for neutral option meaning that students neither want to agree nor disagree with the view. After this i.e. 35.2% of case 1 opted strongly agree or agree while 63.2% of participants of case 2 either strongly disagree or disagree. Here participants of case 1 are confused and participants of case 2 clearly disagreed. Maybe participants of case 1 are realizing the importance of English for higher education and at same time afraid of poor grades which might have led them into the state of confusion.

Item 45 “The use of Arabic as medium of instruction will promote the transfer of technology to Libya” got almost unparalleled results such that participants of case 1 prefer to agree with the statement while case 2 prefer to disagree. Plurality i.e. 45.8% of case 1 agrees or strongly agrees while majority i.e. 71.9% of case 2 disagree or strongly disagree. Maybe participants of case 1 are giving undue favour to their native language by agreeing while participants of case 2 are disapproving it. Most of modern day technology which is already in English language could not be transferred in another language i.e. Arabic. This might be the reason for disagreement of case 2’s participants.

Concluding above analysis of individual items it could be said that there is difference of opinion among participants of both cases. There are alike inclinations in responses of some items by students. Most of the participants of both cases disagree or strongly disagree in item 39 and 43, but answers are not exactly the same. These items have showed slight variations across both the cases in terms of percentages, which have subtly participated in the rejection of hypothesis in Chi-Square Analysis.

In item 38, 40, 41, 42, 44 and 45 there is clear difference of views between both cases. Results of case 1 are totally opposite of case 2. Participants of case 1 have opted for agree or strongly agree and favoured Arabic whereas on the contrary participants of case 2 choose to disagree or strongly disagree and have disapproved Arabic as language of science and engineering.

These major differences cause the rejection of hypothesis in Chi-Square Analysis. By noting the above it could be concluded that student’ attitudes toward the use of Arabic medium instruction in science and engineering education in Libya in both the cases is significantly different which could also be seen from above mentioned individual analysis of questions. Students of case 1 i.e. Al-Jabal Al-Garbi University tend to agree on the use of Arabic as a language of instruction when compared to attitudes of case 2 i.e. Nasser International University; they have disagreed.

The current institute and more importantly current medium of instruction are definitely affecting the views of participants. Students of Arabic medium instruction

from Al-Jabal Al-Garbi University have shown approval for Arabic medium instruction where as students of English medium instruction from Nasser International University have shown disapproval for Arabic medium instruction. There are certain other factors that affect the views of student which would be discussed in detail Research Question 4.

Arabic being native language is considerably easy language for students of case 1. They have previously preferred Arabic over English by joining the Al-Jabal Al-Garbi University and might still have the same approach. They are reluctant to use any other option than Arabic and favouring it. Contrarily students of case 2 seem well aware of the fact that Arabic could not fulfil all their academic needs for studying science and engineering. Many researchers like (Ennaji, 1991; Al-Muhandes and Al-Hajj Bakri, 1998; Al-Muhaideb, 1998; Abu-Arafa, and Hassein, 1998; Farghaly and Shaalan, 2009) find similar limitations for Arabic medium of instruction.

5.2.2 Research Question 2: Teaching Staff

Teaching staff attitudes toward the use of Arabic medium instruction in science and engineering education in Libya in both the cases is different. Differences of each item individually are explained below.

Item 37 “I prefer Arabic to be the medium of instruction for high engineering education” have similar negative results with differences of percentages between both cases. Majority i.e. 56.6% of case 1 and 69.3% of case 2 chooses to disagree or strongly disagree with the statement. Here participants of case 1 have less liking for Arabic as medium of instruction. But in contrast to students’ total opposing answers teaching staffs have just difference of 12.7%. Teaching staffs’ education and experience might have participated in the shaping their views. It is also possible that teaching staffs might have answered by keeping the capabilities of their students in their mind.

Item 38 “Given the choice, I would teach all my courses in Arabic” got disapproval from participants of both cases. Plurality i.e. 40% of case 1 and 53.9% of case 2 either disagree or strongly disagree with the idea that they wanted to teach all their

courses in Arabic. Again participants of case 2 disapprove Arabic more than participants of case 1. Most of the courses are related to science and engineering and it is difficult to teach science and engineering in any other language than English, this could be the reason for the disagreement. At the same time some of the courses like Arabic and Islamiat are best taught in Arabic and this could be the reason behind plurality and not majority.

Item 39 “I believe my results would be better if I taught in Arabic” got opposite results such as case 1 agrees while case 2 disagrees. Plurality i.e. 46.7% of case 1 agree or strongly agree while 50% of case 2 either disagree or strongly disagree with the idea that Arabic could improve the results. Teaching staffs of case 1 might have agreed on the basis of their personal experience. It is also possible that teaching staffs of case 2 are presuming and disagreeing on the thought that students cannot perform well in language that is not the language of science.

Item 40 “I believe that students’ participation would be more effective if Arabic was the medium of instruction” have clear differences of views among both cases. Plurality of case 1 i.e. 46.7% either agree or strongly agree while 50% of case 2 disagree or strongly disagree with the idea that Arabic medium of instruction could improve students’ participation. It is possible that teaching staffs of both cases might have stated their answers on the basis of their personal experiences and as they both have different students so their experience is also different.

Item 41 “I believe the curriculum would be taught more efficiently if it was done through the medium of Arabic” has subtle differences among both cases. Majority of both cases disapproves the idea but there is a difference of percentages among both cases i.e. 50% of case 1 and 53.8% of case 2 disagree or strongly disagree with the idea. Arabic is not the language of science and engineering and thus no books or literature is originally published in Arabic. Translations are seldom match the quality of original work this might have lead to the disagreement by the teaching staffs of both cases.

Item 42, has clear difference of views between both cases. Plurality i.e. 40% of case 1 opted to agree or strongly agree while 38.5% of case 2 opted to disagree or strongly disagree with the idea that they believe that Arabic is the best medium for

dealing with modern sciences and engineering. In this age of globalization every new discovery is shared on the internet the moment it got discovered and this communication is usually done in lingua franca “English” thus English is the only language that could deal modern science and engineering this could also be the reason for disapproval of Arabic for science.

Item 43 “I believe that is possible to use Arabic for teaching in high engineering education” has alike negative results with difference of percentages between both cases. 73.4% of case 1 and 84.6% of case 2 opted to agree or strongly agree with the idea. Higher education often requires multinational or international correspondence which is not possible without international language. This might be the reason behind major disagreement in this question.

Item 44, has an anomaly that equal number of participants i.e. 36.7% and 36.6% agree or strongly agree and disagree and strongly disagree with the statement. 46.1% of case 2 opted to disagree or strongly disagree with the idea that the use of Arabic as medium of instruction will promote the transfer of technology to Libya. Here again international transference of technology is not possible in a language which is not its language so this could be the reason behind disagreement of participants of case 2.

Teaching staffs of both cases have fewer differences among views regarding using Arabic as medium of instruction. Item 39, 40, 42 and 44 have opposite results such as participants of case1 preferred to agree while participants of case 2 preferred to disagree. But there is very minor difference in number of participants agreeing and disagreeing in case 1.

Except for above mentioned items all other items have similar majorities such as both cases have preferred same option. Either majority of both cases disagree or strongly disagree with the idea that Arabic should be the medium of instruction for teaching science and technology. There is subtle difference of percentages among both cases.

Above-mentioned statistics are the reason for rejection of hypothesis in Chi-square analysis and leads to the conclusion that teaching staff attitudes toward the use of

Arabic medium instruction in science and engineering education in Libya in both the cases is subtly dissimilar. Where case 2 criticizes Arabic with majority there many participants of case 1 prefer it in many respects. It has also been shown that teaching staff of Nasser International University tend to disagree more on the use of Arabic as a language of instruction. However, the teaching staffs at both universities overall, dislike Arabic as a medium of instruction. But the teaching staffs at Al-Jabal Al-Garbi University are somehow confused as there is a minute difference among agreeing and disagreeing.

Teaching staffs views are the representation of the students they teach hence different students resulted into different opinions. Teaching staffs' personal education and experiences might have also contributed towards their views. Teaching staffs of case 2 have more experience of English language teaching. They might have themselves got some education in English medium of instruction thus they have showed total disagreement towards Arabic medium of instruction.

Probably, some teaching staff of case 1 did their postgraduate studies in Arabic speaking countries or in other Eastern European countries and they like to defend themselves. They have preferred Arabic as medium of instruction may be because they do not want to lose their good and prestigious job.

5.2.3 Comparison between Students and Teaching Staff

5.2.3.1 Case 1

There are also some differences in the views of teaching staffs and students in case 1.

In response to the first item, "I prefer Arabic to be the medium of instruction for higher science engineering education." of Research Question 2 majority of teaching staffs i.e. 60.3% agree with the view in contrast, 56.6% of students tend to disagree with the idea.

In reply to second item "Given the choice, I would study/teach all my courses in Arabic" majority of students i.e. 44.1%, have a neutral view after that 39.6% of students and 40% of teaching staffs disagree or strongly disagree with the idea.

Responses of third item “I believe my result would be better if I studied/taught in Arabic” have shown alike results. 48% of students choose agree or strongly agree and majority of teaching staffs i.e. 46.7% prefer the same.

In response to fourth item, “I believe that students’ participation would be more effective if Arabic was the medium of instruction” 46.7% of teaching staffs and 52.5% of students preferred to agree or strongly agree.

In response to fifth item, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic” 43% of students agree or strongly agree while 50% of teaching staffs preferred to disagree or strongly disagree.

Replies of sixth item “I believe that Arabic is the best medium for dealing with modern sciences and engineering” have opposite results with students disagreeing and teaching staffs agreeing with the statement. 41.4% of students disagree or strongly disagree and 40% of teaching staffs agree or strongly agree with the notion.

In seventh item “I believe that it is possible to use Arabic for teaching in high engineering education” has an abnormality that majority of students have opted for neutral option. After this majority of students i.e. 35.2% agree or strongly agree with opinion while majority of teaching staffs i.e. 40% disagree or strongly disagree.

In eighth item “The use of Arabic as medium of instruction will promote the transfer of technology to Libya”, most of both i.e. 36.7% teaching staffs and 45.8% of students strongly agree or agree with idea.

Students of case 1 have shown major agreement with the concept that Arabic should be the medium of instruction but contrary to them teaching staffs disapprove the idea and responded negatively. The difference in education and experience could be the reason behind these differences in views. Students’ short term approaches for passing out with good marks and desire for better understanding of the content could also be the reason of these differences. Other determiners that could affect the views of students and teaching staffs are explained in Research Question 4.2.

5.2.3.2 Case 2

Responses of case 2 also showed some subtle variations. In first item of Research Question 2 though majority disagree with the notion but there is difference of percentages. 69.3% of teaching staffs strongly disagree or disagree with the idea while 71.9% students tend to disagree that they prefer Arabic to be the medium of instruction for higher science engineering education.

In second item majority of teaching staffs i.e. 53.9%, either disagree or strongly disagree but 83.7% of students tend to disagree or strongly disagree with the opinion that given the choice, they would study or teach all their courses in Arabic.

In third item, there is a tendency towards disagreement that they believe their result would be better if they studied or taught in Arabic. 60.1% of students while 50% of teaching staffs either disagree or strongly disagree with the idea.

In response to fourth, there are differences of percentages between views of teaching staffs and students. Here in fourth item that they believe that students' participation would be more effective if Arabic was the medium of instruction and 50% of teaching staffs while 54.4% of students gave a negative response.

In response to fifth, there is major disagreement. Here in this item majority of students i.e. 62.5% tend to disagree and 53.8% of teaching staffs gave negative response that they do not believe that the curriculum would be taught more efficiently if it was done through the medium of Arabic.

In sixth item, majority of results are tending towards disagreement that they believe that Arabic is not the best medium for dealing with modern sciences and engineering. 67.5% of students and 38.5% of teaching staffs opted either to disagree or strongly disagree.

In seventh item, majority such as 63.2% of students and 42.3% of teaching staffs believe that it is not possible to use Arabic for teaching in high engineering education.

In eighth item, there are differences of percentages between views of teaching staffs and students. 71.9% of students and 46.1% of the teaching staffs either disagree or strongly disagree with the idea that the use of Arabic as medium of instruction will not promote the transfer of technology to Libya.

All of the questions in this section got a major negative response and both teaching staffs and students tend to disagree or strongly disagree with the idea and stated that Arabic should not be the medium of instruction. However there is difference of percentages among teaching staffs and students, more students tend to disagree or strongly disagree than teaching staffs in almost all items. The experience and education could be responsible for these subtle differences in views. Individuals at Nasser International University are already utilizing English as their medium of instruction and this has made them conscious of the needs of the global village, our world. Hence, they have disapproved the idea of Arabic medium of instruction for science and engineering education. Similar restraints for MSA are found by many researchers like Al-Jarf (2008) and Tamtam et al (2010).

5.3 Research Question 3

Third Research Question that has been inquired in the study is: What are attitudes of students\teaching staff towards the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya?

Following Hypothesis have been made for Research Question 3

- a. *Are students' attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases same?*
- b. *Are teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases same?*

Students' attitude toward the use of English and Arabic medium instruction bilingually in science and engineering education in Libya is positive i.e. most of the students have preferred English and Arabic bilingually as the medium of instruction. Though there is overall agreement throughout the section but

respondents of case 1 tend to agree strongly with the opinions and participants of case 2 have kept subtlety by choosing “agree” instead of “strongly agree”, students of Al-Jabal Al-Garbi University tend to strongly agree on the use of English and Arabic medium instruction bilingually, while students of Nasser International University tend to agree towards it.

The teaching staff attitudes toward the use of English medium instruction and Modern Standard Arabic bilingually in science and engineering education in Libya in both the cases are almost similar. Majority of respondents tend to agree more on the use of Arabic English Bilingualism.

5.3.1 Research Question 3: Students

There has been major agreement in almost all items from participants of both cases towards Arabic and English bilingually

In item 54 “I prefer Arabic and English bilingually to be the medium of instruction for higher science engineering education” there is subtle difference of views between both cases. Most participants i.e. 55.3% of case 1 and 72.6% of case 2 agree or strongly agree with the view. Students of case 1 have not preferred Arabic and English bilingually medium instruction much because standard Arabic there medium of instruction while students of case 2 who are already using English as there medium of instruction preferred Arabic and English bilingually. Moreover, in item 54, 30.7% of case 1 and 19.4% of case 2 opted for neutral option which shows students are either confused or have not understand the question.

In item 55 “Given the choice, I would study all my courses in Arabic and English bilingually” there are alike results between students of both cases. Most of the participants of both cases agree or strongly agree with the opinion. But there is a slight difference among percentages such as 66.5% of case 1 and 71.9% of case 2 agree or strongly agree with the view which creates the difference among both cases. Students of case 1 still seem reluctant for English even if it is supported by Arabic. Whereas students of case 2 might have faced some difficulties in studying all courses in English so they have preferred bilingualism.

There is difference of views between both cases in item 56 “I believe my results would be better if I studied in Arabic and English bilingually”. Here 54.7% of case 1 disagree or strongly disagree while 71.9% of case 2 agrees or strongly agrees with the opinion. May be Getting good grades is the sole aim of students of case 1 and they are not ready to put them at stake so they disagree with bilingualism. Participants of case 2 might have agreed because use of Arabic could help them understand the topics in a better way and thus resulting into good grades, same results found by Arkin (2013).

Item 57 “I believe that students’ participation would be more effective if Arabic and English bilingually was the medium of instruction” there is difference of views between both cases. Majority of case 1 i.e. 62% preferred to either agree or strongly agree with statement and most respondents of case 2 i.e. 76.9% choose to agree or strongly agree with the view. The students of Arabic medium instruction have again reinforced their reluctance for use of English-Arabic bilingualism. Students can best communicate in their native language and use basic terminologies of science in English and this might be the reason for their agreement.

There is subtle difference of views between both cases in item 58 “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic and English bilingually”. Majority (71.5%) of case 1 preferred to agree or strongly agree with statement and even more respondents of case 2 (82.5%) choose to agree with the view. This slight variation of views shows the subtle difference in approach towards Arabic and English bilingually as medium of instruction. As most of the books and scientific works are published in English and teaching staffs have to explain these concepts in Arabic so that students comprehend them. This might be the reason for approval.

Item 59 “I believe that Arabic and English bilingually is the best medium for dealing with modern sciences and engineering” got almost similar positive tendencies such that most participants of both cases prefer to agree with the statement. But more participants i.e. 78.2% of case 2 opted strongly agree or agree while 65.3% participants of case 1. This slight difference is a hint of reluctance of participants of case 1 for studying English-Arabic bilingualism. English is the language of modern science and as most student native Arabic speakers so science

and engineering could be best dealt in English-Arabic bilingualism. This may have resulted in approval from participants of both cases.

Item 60 “I believe that it is possible to use Arabic and English bilingually for teaching in high engineering education” got almost similar positive tendencies such that participants of both cases prefer to agree with the statement. But fewer participants i.e. 68.1% of case 1 opted strongly agree or agree than participants i.e. 80.7% of case 2. Here again participants of case 2 are more in favour of Arabic and English bilingually than case 1. Probably students of case 2 have facing some problems in studying only English thus they are continuously favouring bilingualism with huge majorities.

Item 61 “The use of Arabic and English bilingually as medium of instruction will promote the transfer of technology to Libya” got positive results such that participants of both cases prefer to agree with the statement. However more participants of case 2 opted strongly agree or agree than participants of case 1 do. There is a difference of 13.8% among percentages (for agree or strongly agree) between both cases. Though English is language of technology but to comprehend it and use it properly one needs to take help of native language and this might have resulted in support for English-Arabic bilingualism.

Concluding above analysis of individual items it could be said that there is subtle difference of opinion among participants of both cases. There are alike inclinations in responses of all items by students. Majority of both cases agree or strongly agree in responses of all item, but answers are not exactly the same. These items have showed slight variations across both the cases in terms of percentages, which have subtly participated in the rejection of hypothesis in Chi-Square Analysis that participants of both cases have different attitudes towards Arabic and English bilingualism..

By concluding it could be said that student’ attitudes toward the use of Arabic and English bilingually medium instruction in science and engineering education in Libya in both the cases is slightly different which could also be seen from above mentioned individual analysis of each question. Students of case 2 i.e. Nasser International University tend to agree more on the use of Arabic and English

bilingually as a language of instruction when compared to attitudes of case 1 i.e. Al-Jabal Al-Garbi University.

The current institute and more importantly current medium of instruction are definitely affecting the views of participants. Students of Arabic medium instruction from Al-Jabal Al-Garbi University have shown slight reluctance, only in terms of few percentages, for Arabic and English bilingually medium instruction where as students of English medium instruction from Nasser International University have shown more approval for Arabic and English bilingually medium instruction. There are certain other factors that affect the views of student which would be discussed in detail Research Question 4.

This is the only case where majority of students of both cases agreed at same points. The results are according to expectations because students will be studying in English but they also have Arabic which could help them to comprehend the topic and content. Though majority of both cases opted to agree but still there is considerable number of participants of case 1 who have not favoured Arabic and English bilingually. In some responses, there are about 20-30% of participants of case 1, which have opted for neutral option, which is not at all insignificant. Advantages of bilingualism have been pointed out by many researchers like (Tamer, 2006; Lee and Van Patten; 2003).

5.3.2 Research Question 3: Teaching Staff

Teaching staff attitudes toward the use of Arabic and English bilingually medium instruction in science and engineering education in Libya in both the cases is different. Differences of each item individually are explained below.

Item 53 “I prefer Arabic and English bilingually to be the medium of instruction for high engineering education” have similar positive results with differences of percentages between both cases. Majority of participants i.e. 76.7% of case 1 while 84.6% of case 2 chooses to agree or strongly agree with the statement. Here again participants of case 1 have less liking for Arabic and English bilingually as medium of instruction. Teaching staffs might have answered by keeping their students’

capacities in view and thus have shown some reluctance towards Arabic and English bilingualism.

Item 54 “Given the choice, I would teach all my courses in Arabic and English bilingually” got approval from both cases. 66.6% of case 1 and 76.9% of case 2 either agree or strongly agree with the idea that they wanted to teach all their courses in Arabic and English bilingually. Again participants of case 2 prefer Arabic and English bilingually more than participants of case 1. Teaching staffs might have preferred bilingualism because some courses like sciences and engineering need English medium instruction and some courses like Islamic studies need Arabic medium instruction.

Item 55 “I believe my results would be better if I taught in Arabic and English bilingually” got positive response from both cases. 63.3% of case 1 and 76.9% of case 2 either agree or strongly agree with the idea that Arabic and English bilingually could improve the results. Teaching staffs might have thought that students need Arabic to completely understand the topic and English is the language of science. Hence one cannot get good grades without understanding and knowing the topic so it might have resulted in agreement.

Item 56 “I believe that students’ participation would be more effective if Arabic and English bilingually was the medium of instruction” have subtle differences of views among both cases. Majority of case 1 i.e. 63.3% and 73.1% of case 2 agree or strongly agree with the idea that Arabic and English bilingually could improve students’ participation. It is possible that some students are well versed in English and others are not and thus if they get the liberation to participate they could perform better.

Item 57 “I believe the curriculum would be taught more efficiently if it were done through the medium of English-Arabic bilingualism” has an anomaly that 43.3% of case 1 has chosen the neutral option. However majority of both cases approves the idea but there is a difference of percentages among both cases i.e. 43.3% of case 1 and 61.6% of case 2 agree or strongly agree with the idea. As usually syllabus is in English and because of Arabic background of students teaching staffs might have

found it appropriate that curriculum would be taught more efficiently if it were done through the medium of English-Arabic bilingualism.

Item 58, has similar positive tendency with difference of percentages between both cases. 50% of case 1 and 65.4% of case 2 opted to agree or strongly agree with the idea that they believe that Arabic and English bilingually is the best medium for dealing with modern sciences and engineering. Realization that English is the language of modern science and engineering might have compelled the teaching staffs to agree with the opinion.

Item 59 “I believe that is possible to use Arabic and English bilingually for teaching in high engineering education” has similar positive tendency with difference of percentages between both cases. 56.7% of case 1 and 61.6% of case 2 opted to agree or strongly agree with the idea. With Arabic being native language of students and English being the only international language teaching staffs might have found Arabic-English bilingualism the appropriate medium for higher education.

Item 60 has similar positive tendency with difference of percentages between both cases. 60% of case 1 and 61.5% of case 2 opted to agree or strongly agree with the idea that the use of Arabic and English bilingually as medium of instruction will promote the transfer of technology to Libya. It is possible that teaching staffs have found Arabic-English bilingualism most appropriate for transference of technology to Libya for Libyans, who are native speakers of Arabic language, to understand the technology whose language is English.

Teaching staffs of both cases have fewer differences among views regarding using Arabic and English bilingually as medium of instruction. All items have similar majorities such as both cases have preferred same option. Majority of both cases either agree or strongly agree with the idea that Arabic and English bilingually should be the medium of instruction for teaching science and technology or vice versa. There is subtle difference of percentages among both cases.

Above-mentioned statistics are the reason for rejection of hypothesis in Chi-square analysis and leads to the conclusion that teaching staff attitudes toward the use of Arabic and English bilingually medium instruction in science and engineering

education in Libya in both the cases is different. Where case 2 prefers Arabic and English bilingually with huge majority there are participants of case 1 who are confused and have opted the neutral option. It has also been shown that teaching staff of Nasser International University tend to agree more on the use of Arabic and English bilingually as a language of instruction. However, the teaching staffs at both universities like Arabic and English bilingually as a medium of instruction, this finding is similar for teaching staff in other studies like (Jusuf, 2001; Chamot and El-Dinary, 1999). But the teaching staffs at Al-Jabal Al-Garbi University are somewhat reluctant.

5.3.3 Comparison between Students and Teaching Staff

5.3.3.1 Case 1

There are also some differences in the views of teaching staffs and students in case 1.

In response to the first item, “I prefer Arabic and English bilingually to be the medium of instruction for higher science engineering education” of Research Question 3 majority of teaching staffs i.e. 76.7% agree or strongly agree with the view similarly, 55.3% of students tend to agree or strongly agree with the idea.

In reply to second item “Given the choice, I would study/teach all my courses in Arabic and English bilingually” majority of students i.e. 66.5% and majority of teaching staffs i.e. 66.6% agree or strongly agree with the view.

Responses of third item “I believe my result would be better if I studied/taught in English-Arabic bilingualism” have shown similar results. 54.7% of students choose agree or strongly agree and majority of teaching staffs i.e. 63.3% prefer agree or strongly agree.

In response to fourth item, “I believe that students’ participation would be more effective if Arabic and English bilingually was the medium of instruction” 62% of students and 63.3% of teaching staffs gave a positive response.

In response to fifth item, “I believe the curriculum would be taught more efficiently if it were done through the medium of Arabic and English bilingually” 43.3% of teaching staffs have neutral view and 43.3% have opted strongly agree or agree while 71.5% of students preferred to agree or strongly agree.

Replies of sixth item “I believe that Arabic and English bilingually is the best medium for dealing with modern sciences and engineering” 50% of teaching staffs agree or strongly agree while 65.3% of students preferred to agree or strongly agree.

In seventh item “I believe that it is possible to use Arabic and English bilingually for teaching in high engineering education” have similar results with both agreeing with the statement. 68.1% of students and 56.7% of teaching staffs agree or strongly agree with the notion.

In eighth item “The use of Arabic and English bilingually as medium of instruction will promote the transfer of technology to Libya”, most of both i.e. 60% teaching staffs and 63.7% of students strongly agree or agree with idea.

In first four items, teaching staffs of case 1 agreed more to the use of Arabic and English bilingually than students of case 1. In last four items students have shown more agreement than teaching staffs with the concept that Arabic and English bilingually should be the medium of instruction. The difference in education and experience could be the reason behind these differences in views. Overall both are agreeing more on bilingualism than any single language but there reasons for choosing it could be different. Students might have preferred it because it is easier for them to study bilingually than to study only in English. Whereas, teaching staffs might have preferred it because it is better to study bilingually than to study only Arabic. Researches by (Jusuf, 2001; and Crawford, 2002) have also preferred bilingualism.

5.3.3.2 Case 2

Responses of case 2 also showed some subtle variations. In first item of Research Question 3 though majority agree with the notion but there is difference of percentages. 84.6% of teaching staffs strongly agree or agree with the idea while

only 72.6% students tend to agree that they prefer Arabic and English bilingually to be the medium of instruction for higher science engineering education.

In second item majority of both students and teaching staffs either agree or strongly agree. 71.9% of students and 76.9% tend to agree or strongly agree with the opinion that given the choice, they would study or teach all their courses in Arabic and English bilingually.

In third item, there is a tendency towards agreement that they believe their result would be better if they studied or taught in Arabic and English bilingually. 71.9% of students while 76.9% of teaching staffs either agree or strongly agree with the idea.

In response to fourth, there are differences of percentages between views of teaching staffs and students. Here in fourth item they believe that students' participation would be more effective if Arabic and English bilingually was the medium of instruction 73.1% of teaching staffs while 76.9% of students gave a positive response.

In response to fifth, there is positive result from both cases. Here in this item majority of students i.e. 82.5% and 61.6% of teaching staffs gave positive response that they believe the curriculum would be taught more efficiently if it was done through the medium of Arabic and English bilingually.

In sixth item, majority of results are tending towards agreement that they believe that Arabic and English bilingually is the best medium for dealing with modern sciences and engineering. 78.2% of students and 65.4% of teaching staffs opted either to agree or strongly agree.

In seventh item, majority such as 80.7% of students and 61.6% of teaching staffs believe that it is possible to use Arabic and English bilingually for teaching in high engineering education.

In eighth item, there are slight differences of percentages between views of teaching staffs and students. 77.5% of students and 61.5% of the teaching staffs either agree or strongly agree with the idea that the use of Arabic and English bilingually as medium of instruction will promote the transfer of technology to Libya.

All of the questions in this section got a major positive response and both teaching staffs and students tend to agree or strongly agree with the idea that Arabic and English bilingually should be the medium of instruction. However there is difference of percentages among teaching staffs and students, more teaching staffs tend to agree or strongly agree than students in first three items where case is opposite in rest of the questions. The experience and education could be rationale for these differences in views. Arabic and English bilingualism is the first step that could be taken towards going global in science and engineering education in Libya and this could be the reason for its getting major approval from both students and teaching staffs. Bostwick, (2003) and Thomas and Collier, (2002) have noted similar benefits for adopting bilingualism.

5.4 Research Question 4

Research Question 4 was focused on the relationship between attitudes toward language of instruction and students background variables such as education, gender, students' college of study and students ethnic origin (Case 1 only). It was further divided into three main questions. It has explored student's attitudes towards Standard Arabic, English and Arabic-English Bilingualism as a Medium of Instruction in science and engineering education in Libya.

5.4.1 Research Question 4.1

What are students'/teaching staffs' attitudes toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya?

5.4.1.1 Education

During the analysis on the bases of education it has been concluded that students' education level is associated with their attitudes hence students with different education have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Students of 2nd and 3rd year have almost same and a neutral opinion but students of 1st and 4th year tend to disagree more with the use of Standard Arabic as Medium of Instruction. Though more education brings more realization but results here seems contradictory to this. 1st year students who have least educational experience and 4th year students who

have reached higher level of education both disagreed while middle levels are agreeing with the use of Arabic medium of instruction. It is possible that students of first year who belong to the newest generation are aware of the needs of the future and have thus disapproves of Arabic. Students of fourth year are thinking about their jobs and professional life in which acquisition of English is required and this might have made them to disapprove Arabic. Probably students of second and third year are thinking of getting good grades and get promotion to the next year and this might be the reason behind their approval of Arabic.

During analysis on the bases of education it has been found that teacher's education level is associated with their attitudes. Teaching staffs with different education have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Teaching staffs with Masters Degree tend to disagree with the opinion but teaching staffs with Doctorate Degree have mix views. Here again more qualified ones such as teaching staffs with Doctorate Degree have both agreed and disagreed. Disagreement of teaching staffs is justifiable as they might have seen the future of students globally and one cannot go global without knowing English. Some the Doctorates are agreeing with the use of Arabic probably because they themselves did their postgraduate studies in Arabic speaking countries or in other Eastern European countries and they like to defend themselves and Arabic as medium of instruction. It is also probable that they don't want to lose their good will and prestigious job.

5.4.1.2 Gender

During the analysis on the bases of gender it has been concluded students with different gender have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya but, there is only a slight difference in opinion of male and female respondents. A majority of both the genders tends to disagree with the opinion but males tend to disagree more than the females.

In analysis on the bases of gender it has been concluded that teaching staffs' gender is associated with their attitudes. Teaching staffs with different gender have different attitudes toward the Standard Arabic as a Medium of Instruction in science

and engineering education in Libya. Male teaching staffs tend to disagree with the opinion but female teaching staffs tend to agree.

In both students and teaching staffs male participants more strongly condemn the use of Arabic medium instruction than female participants. There could be multiple reasons for agreement of females; it could be their love or liking for their native language, their understanding of students' abilities or their reluctant nature for exploring new world or might be something else.

Maybe, males are looking for jobs with good payment like in some oil company most of which are located in Libyan desert and female couldn't work their (at outstations). Cultural and social reasons might have also affected the results.

5.4.1.3 College of Study

During the analysis on the bases of students' college of study it has been conclude that students with different college of study have different attitudes toward Modern Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Over all, both of the colleges tend to disagree with the opinion but Engineering students tend to disagree more. Engineering is totally professional education and in professional world one has to correspond more than anyone else with all types of national and international organizations and individuals. In that professional world one cannot survive with language as a barrier.

By analysing data on the bases of college of teaching it has been found that teacher's college of teaching is associated with their attitudes. Teaching staffs with different college of teaching have different attitudes toward the Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Where engineering teaching staff tends to strongly disagree science teaching staff disagree and vice versa. Over all, both of the teaching staff colleges tend to disagree with the opinion. Here again engineering teaching staffs being more aware of the needs of this professional world tend to strongly disagree in contrast to science teaching staffs.

Likely male students are more than female in engineering education and they want to get good job, as Libya has oil resources thus more engineers in many oil sectors

are required. So, engineering teaching staffs are more in favour of English than Arabic.

5.4.1.4 Ethnic Origin

During analysis on the bases of students' ethnic origin of case 1 it has been concluded that students with different ethnic origins have different attitudes toward Standard Arabic as a Medium of Instruction in science and engineering education in Libya. Berber students split almost evenly about the use of Standard Arabic, while Arab students favour using Standard Arabic more and agreed more than Berber students. Berber students tend to disagree with the opinion more than Arab students. Arabic is native language of Arab students so it is obvious that they favour it more. While even Arabic is second language for Berber students so they could face difficulties in using Arabic too. Their disapproval for Arabic language is unsurprising.

Maybe, cultural differences display the language differences between Berber and Arab students. The Berber students were much likely to disapprove Arabic than Arab students who tend to favour Modern Standard Arabic, this may related to the conflicts over language usage since Arab invasion of Eighth Century and their language was isolated by the regime.

5.4.2 Research Question 4.2

What are students'/teaching staffs' attitudes toward English as a Medium of Instruction in science and engineering education in Libya?

5.4.2.1 Education

In analysis on the bases of education it has been concluded that the student's education level is associated with their attitudes. Students with different education have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Students of 1st and 2nd year tends to agree more than students of 3rd and 4th year, also more than 20% of 1st and 4th year students have a neutral opinion towards English as Medium of Instruction. Though education itself brings enlightenment and awareness but here it is somewhat opposite. Less

educated ones prefer English medium instruction more than the others. It could be said that the students of 3rd and 4th years are more mature and hence do not want to jump directly towards the English. Or it could be interpreted oppositely as being the newer generation students of 1st and 2nd years are well aware of the concept of going global.

During analysis on the bases of education it has been found that teacher's education level is associated with their attitudes. Teaching staffs with different education have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Teaching staffs with Masters Degree tend to strongly agree with the opinion but majority of teaching staffs with Doctorate Degree have opted "neutral". Here again teaching staffs with Doctorate Degree have maintained their subtlety; they have neither fully rejected the Arabic nor fully approved the English. Their education is definitely playing part in their decisions. Probably because there is variety of courses and Libyan under graduate students have to study some Art and Political course at all disciplines, like Arabic language, Islamic studies, political studies, research methods, etc. This could be the reason for their refrain from English as medium of instruction.

5.4.2.2 Gender

During analysis on the bases of gender it has been proven that in both cases I and II there is a subtle difference between male and female students in their attitudes toward English as the language of instruction, with females more favourably disposed to English than male students. There is very slight difference of only 1.4% among both genders. So, it could be stated that though gender affects the views of participants but it is not most affecting factor.

In analysis on the bases of gender it has been concluded that teacher's gender is associated with their attitudes. Teaching staffs with different gender have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Male Teaching staffs strongly agree with the opinion but female teaching staffs have a neutral opinion after a majority of agreement. So here again it has been seen that male teaching staffs are favouring English and not any other language (Arabic). In a country like Libya it is more likely that males go for

professional carrier especially in some multinational. Hence males do need to know the international language of communication and this could be the reason for their choices. Moreover females also have maintained subtlety which shows that they are also conscious of the need of English.

5.4.2.3 College of Study

Analysis on the bases of students' college of study proved that students with different college of study have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Though there are similar tendencies of agreement and disagreement but there is a slight difference in opinion of science and engineering students. When the colleges combined together in both universities, majority of science students tend to strongly agree with the opinion while majority of engineering students tend to agree more that English should be Medium of Instruction. It is possible that Science students are more in favour of English medium of instruction because they have to study a vast literature on sciences that is available in English language. To fulfil this need they also require acquisition of English language.

During analysis on the bases of teaching staff's college of teaching it has been noted that teaching staff with different college of teaching have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. There is a difference in opinion of science and engineering teaching staff toward English as a Medium of Instruction in science and engineering education in Libya. Engineering teaching staff tends to agree more, over all, both of the teaching staff colleges tend to agree with the opinion. Here again engineering teaching staffs are supporting usage of English language may be because they know that ultimately their students have to work in oil companies or industries similar to it. For this students should be well versed in English so that they can communicate and deal with all types of professionals across the world.

5.4.2.4 Ethnic Origin

In case 1 analysis on the bases of students' ethnic origin showed that students with different ethnic origins have different attitudes toward English as a Medium of

Instruction in science and engineering education in Libya. Despite of similar tendencies there is a slight difference in opinion of Arab and Berber participants about using English as Medium of Instruction. Arab students tend to disagree more than Berber students about the use of English Medium Instruction, while Berber students favour using English Medium Instruction more and agreed more than Arab students. Berbers are already putting more efforts in studying Arabic because it is not their native language. Perhaps Berber favoured English only over any other option because there were no options for them to take Berber language and they received all previous education in Arabic. So, if they have to study in a second language then why not a language which is international language of the world.

5.4.3 Research Question 4.3

What are students'/teaching staffs' attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya?

5.4.3.1 Education

During analysis on the bases of education it has been found that student's education level is associated with their attitudes. Students with different education have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya. Students of 1st, 2nd, 3rd and 4th year have almost same opinion. Most of students tend to agree with the use of Arabic and English Bilingualism as a Medium of Instruction but majority of students of 1st year tends to strongly agree. Arabic-English bilingualism has got the major approval throughout the study maybe because it is the middle path. Difficulties of English language are reduced and at the same time students also get the chance to explore the world. This might have led them to accept Arabic-English bilingualism. Probably students of first year are favouring it most because they are newest to the university. They have minimal acquisition of English and could not jump directly to English may be this is the reason for them to accept bilingualism.

During analysis on the bases of education it has been concluded that teacher's education level is associated with their attitudes. Teaching staffs with different

education have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya. More than 50% of teaching staffs with Masters Degree agree but less than 40% of teaching staffs with Doctorate Degree tend to agree with the opinion. May be teaching staffs with Doctorate Degree are in favour of English only because ultimately if you are going for further studies then you have to adopt English only. May be bilingualism is useful at undergraduate level but after that one have to use English only.

5.4.3.2 Gender

In analysis on the bases of gender it has been concluded that student's gender is associated with their attitudes. Though there were no significant gender differences on attitudes toward bilingualism but most males opted for strongly agree while most females opted agree. Here again one can attribute this result to the professional future of the students. It is more likely that males are going to pursue their carriers and for this they need to know the English language. But, for a good job one also requires a sound academic qualification with good grades and for this students have to take help of Arabic. This might have resulted in males choosing "strongly agree".

By analysing data on the bases of gender it has been concluded that teacher's gender is associated with their attitudes. Teaching staffs with different gender have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya. Male Teaching staffs strongly agree with the opinion but half of the female agree with the view and rest have neutral views. Here again male teaching staffs are favouring bilingualism and reason could be same as students. But, female teaching staffs have opted for neutral option this shows that they are somewhat reluctant to fully express their views. Cultural and social norms could be the reason behind their reluctance.

5.4.3.3 College of Study

During analysis on the bases of students' college of study it has been proved that students with different college of study have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Both colleges have strong positive opinions; the only prominent feature is that science students

tend to strongly agree while engineering students tend to agree. Probably, science students want to get good grades by understanding the concept and topic in Arabic. Along with this they might also wanted to explore the new findings of science and read as much as possible scientific literature thus they have preferred bilingualism.

In analysis on the bases of teaching staff's college of teaching it has been noted that teaching staff with different college of teaching have different attitudes toward English and Arabic Bilingualism as a Medium of Instruction in science and engineering education in Libya. Where engineering teaching staff tends to strongly agree science teaching staff agree and vice versa. Over all, both of the teaching staff colleges tend to agree with the opinion. Engineering teaching staffs by knowing the needs of practical world of engineers might have supported bilingualism. Engineers could work in Libya also as there are many good industries in Libya like Oil companies. To communicate with local workers engineer must know their language and they could also work in some foreign country and their knowledge of English can help them there.

5.4.3.4 Ethnic Origin

Analysis on the bases of students' ethnic origin of case1 concluded that students with different ethnic origins have different attitudes toward English as a Medium of Instruction in science and engineering education in Libya. Majority of both groups tend to agree with the use of Arabic and English Bilingualism as a medium of instruction in Libyan science and engineering education. Still, there is a slight difference in opinion of Arab and Berber respondents. Berber respondents tend to agree more than Arab respondents, Arab students disagreed more about the opinion.

The Berber students were much likely to favour Arabic/English bilingualism than Arab students who tend to favour Modern Standard Arabic, this may related to the conflicts over language usage since Arab invasion of Eighth Century and their language was isolated by the regime. Perhaps Berber favoured Arabic/English over any other option was because there were no options for them to take Berber language and they received all previous education in Arabic.

5.5 Research Question 5

5.5.1 English

English is the international language of world and hence one could not neglect its importance. Participants of the survey are also well aware of its importance but they also have few concerns related to it.

According to all the teaching staffs of Case 1 students find English hard and thus do not like to use English in their exams. One of them has mentioned that students don't like to use English because they find it hard to understand in science classes, especially in exams. It has also been stated that students found science classes hard to understand in English, especially where exams have limited time. Another teacher has mentioned that students didn't even like minimal use of English and ask to translate most of the questions and they are afraid of using English.

On the other hand, Teaching staffs of case 2 have slightly different view, according to few of them students like using English but they find it hard to deal with EMI during exams. On the contrary it has also been reported that students tries to understand and works hard to learn because all computer languages are in English. It has also been mentioned that sometimes students even like to communicate in English especially in engineering classes but in exams students like to explain questions in more details if it is in English.

Teaching staffs have reported that the use of English has bad impacts on students' scores and overall performance. All the Teaching staffs of both the universities stated that use of English medium instruction lowers the performance of students in exams and lower the previous good grades.

It has been stated by teaching staffs of case 1 that students perform very badly and ask to translate most of the questions if they were in English and this result in overall bad impact.

Teaching staffs reported that this is the big problem faced by most of teaching staff who tried to use English in engineering teaching, that's why most of students don't like to use it as they afraid to fail if the EMI is the instruction of teaching.

Unfortunately, this is true that use of English medium instruction lowers the performance of students in exams one of the interviewee reported.

Keeping in view the importance of EMI teaching staffs of Case 1 suggested starting EMI as early as possible. Teaching staffs also stated that government should implement EMI as soon as possible to improve the education system and students English language as well.

Almost all of the participants agreed that to interact with the world and get benefits one has to be proficient in English. According to participants, knowing English is an asset for all those who want to excel in their professional carriers. It has been reported that if students have graduated and studied in English the future is open for them in Libya and over the world and they would also have good opportunities for good job and to get technical training programs abroad.

However, students like English as a language but they have reservations for western culture. Teaching staffs commented that students like English language in general, but they don't like the western culture, but they like to use English to improve their professional capabilities. Though no question related to western culture was asked in the interview but respondents still mentioned their reservations for western culture.

According to teaching staffs English's Language proficiency is low for all the students for both the universities. Despite this interviewed teaching staffs think that students of Case 2 like using English but they find it hard to deal with EMI. Use of English has bad impacts on students' scores and overall performance and lowers the performance of students in exams and the previous good grades, keeping in view the importance of EMI it has been suggested that EMI should start as early as possible. Almost all of the participants agreed that to interact with the world and excel in professional carriers one has to be proficient in English. Students like English as a language but they have reservations for western culture. This is similar to other studies by (Al-Hajj Eissa and Al-Mutawa, 1988; Al-Sebaee, 1995).

5.5.2 Arabic

Arabic is the mother tongue of almost all of the students in both the universities and the official language in Libya, students usually found Arabic very easy to understand various concepts of Engineering and Science.

Almost all of the participants of the study agreed that students like Arabic very much and have high proficiency levels of Arabic Language. Respondents stated that use of Arabic as a language of teaching, make students understand the classes and interact with teaching staffs in a much better way. Another teacher commented that Most of students in my college like to use Arabic, as they find it easy to understand and to learn, they don't have to work hard to understand or do more extra practice to understand the classes and exams. Interviewee reported that students can connect and discuss with teaching staffs in a much better way in Arabic.

Most of the teaching staffs of both the universities have mentioned that Arabic has good impacts on the students' grades. It has been reported that students can understand the classes easy when delivered in Arabic, and can have better marks than any other Language of instruction, as found by Arkin (2013).

Use of Arabic as a medium of instruction is an obstacle in way of getting good jobs. Respondents were aware of the fact that students will not get good opportunity to find good job and studying Arabic will be a disadvantage after they graduates. It has been mentioned that most of science and engineering graduates who have studied in Arabic medium of instruction work as a teaching staffs in primary and secondary schools or in local organisations after they graduates.

Most of the latest academic resources like books and journals are not in Arabic language, which is drawback of Arabic Medium Instruction. One teacher stated that Arabic references don't cover all area of studying especially up to date works. Apart from this teaching in Arabic doesn't cover all the curriculum of the subject, as many up to date references weren't translated. This result goes in line with that of Al-Asal, and Smadi, (2011).

Almost all of the participants of the study agreed that students like Arabic very much and have high proficiency levels of Arabic Language. Most of the teaching

staffs of both the universities have mentioned that Arabic has good impacts on the students' grades but use of Arabic as a medium of instruction is an obstacle in way of getting good jobs. Most of the latest academic resources like books and journals are not in Arabic language, which is also a drawback of Arabic Medium Instruction.

5.5.3 Arabic-English Bilingualism

Arabic is the mother tongue and English is the Lingua Franca and combination of both can improve the current situation. Almost all the respondents agreed that Arabic-English Bilingualism is the best way to solve the problem faced by students.

Interviewees have reported that students like Arabic-English Bilingualism than Arabic or English alone. It is good to use Arabic/English in teaching for students and teaching staffs as well. It has been reported that the performance of students when lectures are delivered in Arabic/English in teaching science and engineering is better. Another respondent reported that students will like it more if it is started step by step and not in all classes at the same time.

All teaching staffs think that Arabic-English Bilingualism will have good impacts on students' scores. It has been noted that using two languages in teaching can give students better performance in classes. Situation will improve gradually by the time if the college implement it in steps, as many students find it hard in first year, but by second and third year they start liking it and would be able to use it very easily, in fourth year. Students could understand the topic in a much better way if it is explained in Arabic/English and saves time of the teaching staffs.

Most of the participants of both the universities stated that students would be able to avail both local and international Job Opportunities if they have studied in Arabic-English Bilingualism.

They have more opportunity to get some jobs in engineering companies that use Arabic and English language both, reported one of the respondents. This type of teaching gives students more chance to find good jobs in locally and internationally.

Students like Arabic-English Bilingualism than Arabic or English alone. Almost all teaching staffs think that Arabic-English Bilingualism will have good impacts on

students' scores. Most of the participants of both the universities stated that students would be able to avail both local and international Job Opportunities if they have studied in Arabic-English Bilingualism.

However, students find Arabic, the easiest medium of instruction and gain good marks but in the present age, no one can survive without knowing English. It is also impossible to take a jump from Standard Arabic to Complete English, as it is better to move step-by-step then to jump and fall. Thus, it has been concluded that at higher levels of education, Arabic-English Bilingualism should be implemented initially and then English Medium Instruction should be introduced. Government should also start EMI from Primary level so that the new generations do not find English difficult when they reach Universities.

5.6 Findings

The main findings of this research are as follow

5.6.1 English

- a. Students are reluctant to use English language as medium of instruction but teaching staffs have favoured it.
- b. Participants of case 2 who are already using English as medium of instruction favoured English more than participants of case 2.
- c. Participants from engineering college have approved the usage of EMI more than participants of Science College.
- d. Male participants have favoured the English language more than females.

5.6.2 Arabic

- a. Students of case 1 who are already studying in Arabic medium favoured Arabic medium Instruction.
- b. Mostly teaching staffs disagreed with the usage of Arabic Medium of Instruction for science and engineering education.
- c. Some females have preferred Arabic language but they have also recognized the importance of English.

- d. Participants from Engineering College showed more reluctance for Arabic than participants of Science College.
- e. Berber students also disliked the use of Arabic.

5.6.3 English-Arabic Bilingualism

- a. English-Arabic Bilingualism got major approval from almost all types of participants in almost all respects.
- b. Participants of case 2 have favoured English-Arabic Bilingualism more than the participants of case 1.
- c. Males have preferred the English-Arabic Bilingualism more than females.
- d. Berbers also opted to strongly agree with the usage of English-Arabic Bilingualism.
- e. Students of science college and teaching staffs of engineering college also favoured English-Arabic Bilingualism.

5.6.4 General Findings

- a. Most students like Arabic/English bilingualism as medium of instruction.
- b. Students have positive attitude towards use of English but they also like Arabic.
- c. Finding suggests that government have to take steps towards internationalization and provide more materials to support science and engineering education.
- d. Finding suggests that participants preferred Arabic in exams because of limited time and to get good grades, and English could be used in some subjects and not all.
- e. Students like to have preliminary courses and trainings to support Language of instruction before entering higher education.
- f. Finding suggests that higher education have to support teaching staffs' foreign language program by providing training courses for teaching staffs.

CHAPTER - 6

6. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The purpose of this study was to examine students' and teaching staffs' attitudes toward the use of the language of instruction in two different science and engineering universities in Libya. Al-Jabal Al-Garbi University and Nasser International University were adopted as a case study; three types of instructions were available for the study: English only, Modern Standard Arabic only or English/Modern Standard Arabic bilingually. The research leads to the following results:

The data from this study showed that the students at Al-Jabal Al-Garbi University are ambivalent about the English only policy. In the survey, students preferred it least among two other alternatives: Modern Standard Arabic only, or Modern standard Arabic/English bilingualism. The students tend to be strongly in favour of the use of Modern standard Arabic/English bilingualism. In the comments allowed at the end of the survey, students clearly indicated that they were not hostile to the use of English as instructional language. However, the most common response by teaching staff was in favour of English only, followed by slightly fewer bilingual response. The most common option favoured over all was Modern Standard Arabic/English bilingualism. The responded data showed that students would like to have Modern Standard Arabic as a language of instruction, since it is the national language. English was recognised as important and necessary for a number of reasons, such as its being the language in which most science and engineering literature is written, like most textbooks and journals, most data published online, and in which only some of their teaching staff are versed. Students tended to think that Modern standard Arabic/English bilingualism would lead to a greater probability of technology transfer than English only or Modern Standard Arabic only. Some advocated bilingual training begins earlier in Libyan's educational experience, which would help develop greater fluency at the college level.

The comprehensive statistical analysis showed that male participants have favoured the English language more than females. Participants from engineering college have approved the usage of English more than participants of Science College. Most teaching staff disagreed with the usage of Arabic Medium of Instruction for science and engineering education, some females have preferred Arabic language but they have also recognized the importance of English. Participants from engineering college showed more reluctance for Arabic than participants of science college, Berber students also not preferred the use of Arabic. Males have preferred the use of English-Arabic Bilingualism more than females. Berber students also opted to strongly agree with the usage of English-Arabic Bilingualism, students of science college and teaching staff of engineering college also favoured English-Arabic Bilingualism more than other groups.

The major reason students stated for rejecting Modern Standard Arabic as a singular language of instruction was their feeling that in its contemporary state, it was not capable of handling science and engineering technologies because of lack of materials, text books, journals in Arabic and the job opportunity, like evident from many other studies, (Al-Jarf, 2008; Tamtam et al., 2011). This finding is similar for teaching staff in many studies, (e.g. Taha, 1990; Al-Jarf, 2004), the latter of which cited science teaching staffs' resentment toward Arabization of science teaching. The teaching staffs thought that Arabization tend to lower quality of teaching.

Students who rejected English tended to adopt a nationalistic attitude toward Arabic, stating that other countries like Japan, China, Korea, Turkey and many non English countries translated science and engineering technologies into their national languages, so why should Libya not do so? This finding is similar for students for study in Saudi Arabia by Al-Jarf (2004). The students who feel that Modern Standard Arabic should be the language of instruction may be allowing ideology to obscure issues of how technology would be transfer. Libya has isolated English for many years, and adopted English language very late and this creates major issues related to EMI. Most of the students feel that using English is against their religion or culture as mentioned by teaching staff in interview.

Students at Al-Nasser University have a modern take on the use of English as a medium of instruction. The results of this study were that students view

Arabic/English bilingualism as an appropriate compromise between Arabization and realities of global economy. On one hand, Arabic and English bilingualism appeals to nationalistic pride and identity, while other hand, English is highly practical for providing access to current technical information and knowledge. Al-Jarf (2008) and Tamtam et al (2010), indicated that Arabization created contradictions between nationalistic pride and job opportunities for engineering and sciences graduates. The use of Arabic/English bilingualism provides a possible solution to that problem.

It is fair to conclude that students in Libya will have to broaden their views regarding the use of English Language. It is not only limited to the student life. It has an overall effect on the life of individual. Eventually the students with better knowledge of English will have better job opportunities and will be able to become more active member of society. The national progress in Libya is directly related to its skilled task force. One of the major understandings of the researcher while conducting the study reveals that students are not provided with any incentive to take interest in English language e.g. there are no special scholarships for students who have done their graduation with EMI. Many of the institutions offer least to none assistance or help in this regard. So, if government can contribute some grants or scholarships for the students who are interested in learning English or even make the subject necessary in initial education stages, this will help in developing a positive attitude towards English medium instruction in students.

6.2 Study Contributions

The following contributions have been identified by the researcher:

1. There has been little or no significant research conducted on language of instruction for science and engineering education in Arab World. This study has showed the need for this kind of research in the Libyan science and engineering education context. As during Literature Review very minimal literature has been found that addresses this topic.
2. This study has explored the engineering education that is currently using EMI in Libya, this study can give some suggestions about most appropriate teaching

techniques that can enhance quality and improve Libyan science and engineering education when using EMI.

3. The study threw light on “what’s going on” about language of instruction in Libya, where the students are non-native, especially in terms of difficulties faced by students and teaching staff in classes while studying science and engineering in Arabic or English, such as limited proficiency of English, inability to communicate globally, lack of materials and Arabic references etc.

4. This study contributed in understanding of Libyan science and engineering education difficulties for implementing EMI to improve education systems. The solutions have been proposed to the current problems by interviewed teaching staff such as starting English in some classes and not all, adopting bilingualism instead of complete English etc.

5. This study has contributed to the knowledge with the comprehensive statistical analysis on the relationship between language of instruction and students/teaching staff variables and has compared the results between each group.

6. It is hoped that this research will help the higher education commission to pay more attention towards language planning for science and engineering education.

6.4 Limitations of the Study

Following limitations have been identified by researcher in the conduction of the study:

The study is limited to a two different universities of Libya. This makes it difficult to generalize the results on all the Libyan universities.

Teaching staff conceptions of Language of instructions explored in this study might have been influenced by the description given about these principles and practices and university policies but it is possible that the agreement or disagreement of some teaching staff with these statements did not reflect their conceptual thoughts and understanding of these principles and practices.

As the study is limited to two universities only, involving more teaching staff and students from other regions would have increased the possibility for generalizing the results of this study. However, this was not possible due to the time and money constraint. Collecting data from multiple sources would allow triangulation, and thus benefit overall results of this study.

The researcher advocates the implementation of English Medium or English Arabic Bilingualism in the present situation in Libya. This belief might have unconsciously influenced the interpretation of the findings of this study or the development of its conclusions.

Finally, as the investigator of the current study, my interpretation of data might differ from what the respondents actually thought during the process of note taking, coding or translating interviews. Attending to some of these limitations in the study would make it possible to conduct a more reliable larger-scale study in the future.

6.4 Recommendations for Further Studies

In the conduction of the present study, it became quite evident that there were many areas relevant to medium of Education and teaching in Libyan context which remained unanswered. These could potentially serve as research questions for further related studies. Some of these recommended questions are given below:

1. A large scale study on government level should be conducted on college students. They could be given extra courses in developing English language skills and then their marks in university exams can be evaluated.
2. An investigation on the application of modern English curriculum devised in 2000 by the Libyan government can be made in order to find out some solutions for poor performance in English?
3. A large scale study is required to find the factors which negatively influence the students' perception towards English as a medium of instruction. It will be considered helpful to pinpoint the hidden issues faced by teaching staff.

6.5 Implications of the Study

As seen in the study, a number of restraints have made it difficult for English to be integrated into Science and Engineering classrooms in Libya. One of the main reasons is that students lack the time and energy to devise materials and activities due to their heavy workload and sheer lack of English in background school education. Thus, the first implication of the study is that students should be provided some basic course in English as a part of their engineering or science program. They should be provided with basic skills to write and do research on their own to broaden their perspective and approach towards English.

Another implication of the study is that English teaching in Libya needs to be better planned. This study has shown that English is one of the core subjects which needs attention in schools so that students getting out of schools have roots and basic understanding of the language. This being the case, students learning English for many years at school cannot communicate effectively and efficiently with English speakers which is a major requirement in practical life and jobs.

As revealed by this study, attention should be shifted towards all language skills such as writing, listening, speaking, and reading. For that purpose, more research should be conducted on how to assess learners' language skills in the Libya prior to admission in universities.

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Appendix A:

Student Questionnaire Form

I. Part 1: General Information

1. College:.....

2. Please classify your age

19-20 years []

21-22 years []

23-24 years []

25-more years []

3. Gender?

Male []

Female []

4. Ethnicity?

Arabic []

Berber []

5. Native language?

Arabic []

Berber []

6. What is your qualification? Please tick as appropriate.

A certificate from a high school, which specializes in:

Science [] Engineering []

7. How long have you studied English before entering college?

3-5 years []

6-7 years []

8 - more []

8. What semester or year are you in?

Semester []

Year []

- Foreign language skills:

9. Have you ever studied in foreign language other than English language?

Yes []

No []

If your answer is yes, what language / s and / specify your language level proficiency below.

10. Language 1: Very good Good Poor

11. Language 2: Very good Good Poor

- What is your level of English proficiency in their language skills, for each sign the boxes below?

Language skills	Fluent	Very good	Good	Fair	Poor
12. Reading					
13. Listening					
14. Writing					
15. Speaking					

- Language usage:

10. In the following table for the courses you studied in high school, specify the rate of language used in class by checking a box.

subjects	Only Arabic	Usually Arabic	Partly Arabic	Arabic and English	Usually English
16. Sciences					
17. Engineering					

- In the following table for the courses you are studying, specify the rate of language used in class by checking a box.

subjects	Only	Usually	Partly	Arabic and	Usually

	Arabic	Arabic	Arabic	English	English
18. Sciences					
19. Engineering					

12. In the following table for the courses you are studying, specify the rate of language used in tests and examinations by checking a box.

subjects	Only Arabic	Usually Arabic	Partly Arabic	Arabic and English	Usually English
20. Sciences					
21. Engineering					

Part 2: Foreign Language

The following statements are about "foreign language" and "English as a foreign language". Carefully read each statement and answer by circling the appropriate number to the right of statement using coding system below. Please do not leave unanswered statement.

(1) Strongly agree (2) Agree (3) Neutral (4) Disagree (5) Strongly Disagree

Foreign language and English as a foreign language	S.A	A	N	D	S.D
22. I believe that learning a foreign language is necessary for everyone in Libya.	1	2	3	4	5
23. I believe that learning English is necessary for everyone in Libya.	1	2	3	4	5
24. I believe that learning a foreign language is necessary for me.	1	2	3	4	5
25. I believe that learning English is necessary for me.	1	2	3	4	5
26. I am glad to speak English.	1	2	3	4	5
27. I feel that speaking English	1	2	3	4	5

give you some prestige in society.					
28. I want to learn English very well.	1	2	3	4	5
29. I think English is a nice language.	1	2	3	4	5
30. The use of English in Libya has a positive affect on culture.	1	2	3	4	5
31. I believe that knowing English will bring advantage to me in the future.	1	2	3	4	5
32. A foreign language other than English should be compulsory at university level.	1	2	3	4	5
33. English should be taught as a compulsory course at stage 5 and 6 of primary education.	1	2	3	4	5
34. English should be taught as a compulsory course at stage 4 to 6 of primary education.	1	2	3	4	5
35. English should be taught as a compulsory foreign language course at secondary education.	1	2	3	4	5
36. Foreign language instruction should be offered at tertiary institutions.	1	2	3	4	5
37. The use of English in Libya has a positive affect on Arabic.	1	2	3	4	5

I would welcome any additional comments that you might want to add.

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Part 3: language of instruction

1. General Attitudes

The following statements are to measure your general attitude of language or languages you would like for instruction in your class. Please answer every question by circling the appropriate number to the right of statement using coding system below. Please do not leave unanswered statement.

(1) Strongly agree (2) Agree (3) Neutral (4) Disagree (5) Strongly Disagree

Students attitudes to language of instruction		S.A	A	N	D	S.D
38.	I prefer Arabic to be the medium of instruction for high engineering education	1	2	3	4	5
39.	Given the choice, I would study all my courses in Arabic.	1	2	3	4	5
40.	I believe my result would be better if I studied in Arabic.	1	2	3	4	5
41.	I believe that students' participation would be more effective if Arabic were the medium of instruction.	1	2	3	4	5
42.	I believe the curriculum would provide the learner more efficiently if it were in Arabic.	1	2	3	4	5
43.	I believe that Arabic is able of handling modern sciences and engineering.	1	2	3	4	5
44.	I believe that is possible to use Arabic for teaching in high engineering education.	1	2	3	4	5

45. The use of Arabic as medium of instruction will promote the transfer of technology to Libya. 1 2 3 4 5
46. I prefer English to be the medium of instruction for high engineering education. 1 2 3 4 5
47. Given the choice, I would study all my courses in English. 1 2 3 4 5
48. I believe my result would be better if I studied in English. 1 2 3 4 5
49. I believe that students' participation would be more effective if English were the medium of instruction. 1 2 3 4 5
50. I believe the curriculum would provide the learner more efficiently if it were in English. 1 2 3 4 5
51. I believe that English is able of handling modern sciences and engineering. 1 2 3 4 5
52. I believe that is possible to use English for teaching in high engineering education. 1 2 3 4 5
53. The use of English as medium of instruction will promote the transfer of technology to Libya. 1 2 3 4 5
54. I prefer Arabic-English bilingualism to be the medium of instruction at high engineering education. 1 2 3 4 5
55. Given the choice, I would study all my courses bilingually in Arabic and English. 1 2 3 4 5
56. I believe my result would be better if I studied bilingually in Arabic and English. 1 2 3 4 5
57. I believe that students' participation would be more effective if Arabic-English bilingualism were the medium of instruction. 1 2 3 4 5

Appendix B:

Teaching Staff Questionnaire Form

I. Part one: Personal Information

1. College:.....

2. Nationality:

3. Please classify your age

25-30 years []

31-35 years []

36-45 years []

46-more years []

4. Gender

Male []

Female []

5. Ethnicity

Arabic []

Berber []

6. What is your qualification? Please tick as appropriate.

University degree []

Postgraduate high diploma []

Master []

Doctorate []

7. What is your specializes?

Science [] Engineering []

8. How many years have you been a higher education lecturer / instructor?

Less than 2 years [] 2 - 5 years [] more than 5 years []

9. What faculty / institute do you teach at?

Science [] Engineering []

- Foreign language skills:

10. Have you ever studied in foreign language other than English language?

Yes [] No []

If your answer is yes, what language /s and / specify your language level proficiency below?

11. Language 1: Very good Good Poor

12. Language 2: Very good Good Poor

- What is your level of English language proficiency in their language skills, for each sign the boxes below?

Language skills	Fluent	Very good	Good	Fair	Poor
13. Reading					
14. Listening					
15. Writing					
16. Speaking					

- Language usage:

- In the following table for the courses you studied in college, specify the rate of language used in class by checking a box.

subjects	Only Arabic	Usually Arabic	Partly Arabic	Arabic and English	Usually English
17. Science					
18. Engineering					

- In the following table for the courses or research you are studied in postgraduate, specify the rate of language used in class by checking a box.

subjects	Only Arabic	Usually Arabic	Partly Arabic	Arabic and English	Usually English
19. Science					
20. Engineering					

Part 2: Foreign Language

The following statements are about "foreign language" and "English as a foreign language". Carefully read each statement and answer by circling the appropriate number to the right of statement using coding system below. Please do not leave unanswered statement.

(1) Strongly agree (2) Agree (3) Neutral (4) Disagree (5) Strongly Disagree

Foreign language and English as a foreign language	SA	A	N	D	SD
21. I believe that learning a foreign language is necessary for everyone in Libya.	1	2	3	4	5
22. I believe that learning English is necessary for everyone in Libya.	1	2	3	4	5
23. I believe that learning a foreign language is necessary for me.	1	2	3	4	5
24. I believe that learning English is necessary for me.	1	2	3	4	5
25. I am glad to speak English.	1	2	3	4	5
26. I feel that speaking English give you some prestige in society.	1	2	3	4	5

27. I want to learn English very well	1	2	3	4	5
28. I think English is a nice language.	1	2	3	4	5
29. the use of English in Libya has a positive effect on culture	1	2	3	4	5
30. I believe that knowing of English will bring advantage to me in the future.	1	2	3	4	5
31. A foreign language other than English should be compulsory at university level.	1	2	3	4	5
32. English should be taught as a compulsory course at stage 5 and 6 of primary education.	1	2	3	4	5
33. English should be taught as a compulsory course at stage 4 to 6 of primary education.	1	2	3	4	5
34. English should be taught as a compulsory foreign language course at secondary education.	1	2	3	4	5
35. Foreign language instruction should be offered at tertiary institutions.	1	2	3	4	5
36. The use of English in Libya has a positive effect on Arabic.	1	2	3	4	5

I would welcome any additional comments that you might want to add.

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Part 3: language of instruction

1. General Attitudes

The following statements are to measure your general attitude of language or languages you would like for instruction in your class. Please answer every question by circling the appropriate number to the right of statement using coding system below. Please do not leave unanswered statement.

(1) Strongly agree (2) Agree (3) Neutral (4) Disagree (5) Strongly Disagree

37. I prefer Arabic to be the medium of instruction for high engineering education	1	2	3	4	5
38. Given the choice, I would teach all my courses in Arabic.	1	2	3	4	5
39. I believe my result would be better if I taught in Arabic.	1	2	3	4	5
40. I believe that students' participation would be more effective if Arabic were the medium of instruction.	1	2	3	4	5
41. I believe the curriculum would provide the learner more efficiently if it were in Arabic.	1	2	3	4	5
42. I believe that Arabic is able of handling modern sciences and engineering.	1	2	3	4	5
43. I believe that is possible to use Arabic for	1	2	3	4	5

teaching in high engineering education.

- | | | | | | |
|---|---|---|---|---|---|
| 44. The use of Arabic as medium of instruction will promote the transfer of technology to Libya. | 1 | 2 | 3 | 4 | 5 |
| 45. I prefer English to be the medium of instruction for high engineering education. | 1 | 2 | 3 | 4 | 5 |
| 46. Given the choice, I would teach all my courses in English. | 1 | 2 | 3 | 4 | 5 |
| 47. I believe my result would be better if I taught in English. | 1 | 2 | 3 | 4 | 5 |
| 48. I believe that students' participation would be more effective if English were the medium of instruction. | 1 | 2 | 3 | 4 | 5 |
| 49. I believe the curriculum would provide the learner more efficiently if it were in English. | 1 | 2 | 3 | 4 | 5 |
| 50. I believe that English is able of handling modern sciences and engineering. | 1 | 2 | 3 | 4 | 5 |
| 51. I believe that is possible to use English for teaching in high engineering education. | 1 | 2 | 3 | 4 | 5 |
| 52. The use of English as medium of instruction will promote the transfer of technology to Libya. | 1 | 2 | 3 | 4 | 5 |
| 53. I prefer Arabic-English bilingualism to be the medium of instruction at high engineering education. | 1 | 2 | 3 | 4 | 5 |
| 54. Given the choice, I would teach all my courses bilingually in Arabic and English. | 1 | 2 | 3 | 4 | 5 |

55. I believe my result would be better if I taught bilingually in Arabic and English. 1 2 3 4 5
56. I believe that students' participation would be more effective if Arabic-English bilingualism were the medium of instruction. 1 2 3 4 5
57. I believe the curriculum would provide the learner more efficiently if it were in bilingual in Arabic and English. 1 2 3 4 5
58. I believe that Arabic-English bilingualism is able of handling modern sciences and engineering. 1 2 3 4 5
59. I believe that is possible to use Arabic-English bilingualism for teaching in high engineering education. 1 2 3 4 5
60. The use of Arabic-English bilingualism as medium of instruction will promote the transfer of technology to Libya. 1 2 3 4 5

I would welcome any additional comments that you might want to add.

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Appendix C:

Interview Questions Form

1. When lectures are delivered in English, what is its impact on students' performance in classes in general and in exams specifically?

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2. How do you rate students' command of English as a medium of learning and understanding?

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3. Does English medium of instruction lowers the performance in exams and lower the previous good grades?

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4. What will be the impact of teaching science and engineering students in Arabic on their present performance in classes and exams, and future of students in their practical life?

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5. What will be the impact of teaching science and engineering students in Arabic and English bilingually on their present performance in classes and exams, and future of students in their practical life?

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6. What will be the impact of teaching science and engineering students in English on their present performance in classes and exams, and future of students in their practical life?

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7. Do you encourage students to learn English for its importance as a global language of science and technology?
If Yes, Please explain

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Appendix D:

DCU Research Committee Approval Form

Ollscoil Chathair Bhaile Átha Cliath
Dublin City University



Mr. Abdalmonem Tamtam
School of Mechanical Engineering

31st January 2013

REC Reference: DCUREC/2012/210

Proposal Title: **University Students and Teaching Staff Attitudes toward Language of Instruction in Libyan Science and Engineering Education**

Applicants: Dr. Abdul Ghani Olabi, Mr. Abdalmonem Tamtam

Dear Abdalmonem

This research proposal qualifies under our Notification Procedure, as a low risk social research project. Therefore, the DCU Research Ethics Committee approves this research proposal. Materials used to recruit participants should note that ethical approval for this project has been obtained from the Dublin City University Research Ethics Committee. Should substantial modifications to the research protocol be required at a later stage, a further submission should be made to the REC.

Yours sincerely,



Donal O'Mathuna

Dr. Donal O'Mathuna
Chairperson
DCU Research Ethics Committee

Taighde & Nuálaíocht Tacaíocht
Ollscoil Chathair Bhaile Átha Cliath,
Baile Átha Cliath, Éire

Appendix E:

Study result tables

Case Study I Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
46 ^b	Male	6	17	7	41	12	83
	%	7.2%	20.5%	8.4%	49.4%	14.5%	100.0%
	Female	10	24	9	36	17	96
	%	10.4%	25.0%	9.4%	37.5%	17.7%	100.0%
	Total	16	41	16	77	29	179
	%	8.9%	22.9%	8.9%	43.0%	16.2%	100.0%
47	Male	1	5	19	47	11	83
	%	1.2%	6.0%	22.9%	56.6%	13.3%	100.0%
	Female	6	6	34	38	12	96
	%	6.3%	6.3%	35.4%	39.6%	12.5%	100.0%
	Total	7	11	53	85	23	179
	%	3.9%	6.1%	29.6%	47.5%	12.8%	100.0%
48	Male	3	10	28	34	8	83
	%	3.6%	12.0%	33.7%	41.0%	9.6%	100.0%
	Female	2	12	42	27	13	96
	%	2.1%	12.5%	43.8%	28.1%	13.5%	100.0%
	Total	5	22	70	61	21	179
	%	2.8%	12.3%	39.1%	34.1%	11.7%	100.0%
49	Male	5	19	8	40	11	83
	%	6.0%	22.9%	9.6%	48.2%	13.3%	100.0%
	Female	4	24	24	32	12	96
	%	4.2%	25.0%	25.0%	33.3%	12.5%	100.0%
	Total	9	43	32	72	23	179
	%	5.0%	24.0%	17.9%	40.2%	12.8%	100.0%
50	Male	4	13	23	36	7	83
	%	4.8%	15.7%	27.7%	43.4%	8.4%	100.0%
	Female	8	23	17	32	16	96
	%	8.3%	24.0%	17.7%	33.3%	16.7%	100.0%
	Total	12	36	40	68	23	179
	%	6.7%	20.1%	22.3%	38.0%	12.8%	100.0%
51	Male	11	36	10	24	2	83
	%	13.3%	43.4%	12.0%	28.9%	2.4%	100.0%
	Female	8	23	11	45	9	96
	%	8.3%	24.0%	11.5%	46.9%	9.4%	100.0%
	Total	19	59	21	69	11	179
	%	10.6%	33.0%	11.7%	38.5%	6.1%	100.0%
52	Male	17	26	7	31	2	83
	%	20.5%	31.3%	8.4%	37.3%	2.4%	100.0%
	Female	4	28	7	47	10	96
	%	4.2%	29.2%	7.3%	49.0%	10.4%	100.0%
	Total	21	54	14	78	12	179
	%	11.7%	30.2%	7.8%	43.6%	6.7%	100.0%
53	Male	22	24	6	25	6	83
	%	26.5%	28.9%	7.2%	30.1%	7.2%	100.0%
	Female	17	15	9	43	12	96
	%	17.7%	15.6%	9.4%	44.8%	12.5%	100.0%
	Total	39	39	15	68	18	179
	%	21.8%	21.8%	8.4%	38.0%	10.1%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
46 ^b	Male	7	44	8	35	4	98
	%	7.1%	44.9%	8.2%	35.7%	4.1%	100.0%
	Female	7	34	6	14	1	62
	%	11.3%	54.8%	9.7%	22.6%	1.6%	100.0%
	Total	14	78	14	49	5	160
	%	8.8%	48.8%	8.8%	30.6%	3.1%	100.0%
47	Male	3	22	20	48	5	98
	%	3.1%	22.4%	20.4%	49.0%	5.1%	100.0%
	Female	3	16	19	20	4	62
	%	4.8%	25.8%	30.6%	32.3%	6.5%	100.0%
	Total	6	38	39	68	9	160
	%	3.8%	23.8%	24.4%	42.5%	5.6%	100.0%
48	Male	3	36	28	26	5	98
	%	3.1%	36.7%	28.6%	26.5%	5.1%	100.0%
	Female	2	25	25	6	4	62
	%	3.2%	40.3%	40.3%	9.7%	6.5%	100.0%
	Total	5	61	53	32	9	160
	%	3.1%	38.1%	33.1%	20.0%	5.6%	100.0%
49	Male	5	48	9	33	3	98
	%	5.1%	49.0%	9.2%	33.7%	3.1%	100.0%
	Female	2	33	13	11	3	62
	%	3.2%	53.2%	21.0%	17.7%	4.8%	100.0%
	Total	7	81	22	44	6	160
	%	4.4%	50.6%	13.8%	27.5%	3.8%	100.0%
50	Male	3	41	20	29	5	98
	%	3.1%	41.8%	20.4%	29.6%	5.1%	100.0%
	Female	5	32	5	14	6	62
	%	8.1%	51.6%	8.1%	22.6%	9.7%	100.0%
	Total	8	73	25	43	11	160
	%	5.0%	45.6%	15.6%	26.9%	6.9%	100.0%
51	Male	10	67	8	12	1	98
	%	10.2%	68.4%	8.2%	12.2%	1.0%	100.0%
	Female	2	46	6	7	1	62
	%	3.2%	74.2%	9.7%	11.3%	1.6%	100.0%
	Total	12	113	14	19	2	160
	%	7.5%	70.6%	8.8%	11.9%	1.3%	100.0%
52	Male	12	60	8	18	0	98
	%	12.2%	61.2%	8.2%	18.4%	.0%	100.0%
	Female	1	51	2	8	0	62
	%	1.6%	82.3%	3.2%	12.9%	.0%	100.0%
	Total	13	111	10	26	0	160
	%	8.1%	69.4%	6.3%	16.3%	.0%	100.0%
53	Male	19	57	7	13	2	98
	%	19.4%	58.2%	7.1%	13.3%	2.0%	100.0%
	Female	8	43	3	8	0	62
	%	12.9%	69.4%	4.8%	12.9%	.0%	100.0%
	Total	27	100	10	21	2	160
	%	16.9%	62.5%	6.3%	13.1%	1.3%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
38 ^b	Male	7	50	11	7	8	83
	%	8.4%	60.2%	13.3%	8.4%	9.6%	100.0%
	Female	14	37	26	3	16	96
	%	14.6%	38.5%	27.1%	3.1%	16.7%	100.0%
	Total	21	87	37	10	24	179
	%	11.7%	48.6%	20.7%	5.6%	13.4%	100.0%
39	Male	6	4	36	35	2	83
	%	7.2%	4.8%	43.4%	42.2%	2.4%	100.0%
	Female	5	14	43	32	2	96
	%	5.2%	14.6%	44.8%	33.3%	2.1%	100.0%
	Total	11	18	79	67	4	179
	%	6.1%	10.1%	44.1%	37.4%	2.2%	100.0%
40	Male	4	31	24	21	3	83
	%	4.8%	37.3%	28.9%	25.3%	3.6%	100.0%
	Female	13	38	26	15	4	96
	%	13.5%	39.6%	27.1%	15.6%	4.2%	100.0%
	Total	17	69	50	36	7	179
	%	9.5%	38.5%	27.9%	20.1%	3.9%	100.0%
41	Male	8	35	31	3	6	83
	%	9.6%	42.2%	37.3%	3.6%	7.2%	100.0%
	Female	7	44	33	4	8	96
	%	7.3%	45.8%	34.4%	4.2%	8.3%	100.0%
	Total	15	79	64	7	14	179
	%	8.4%	44.1%	35.8%	3.9%	7.8%	100.0%
42	Male	15	33	13	19	3	83
	%	18.1%	39.8%	15.7%	22.9%	3.6%	100.0%
	Female	9	20	23	31	13	96
	%	9.4%	20.8%	24.0%	32.3%	13.5%	100.0%
	Total	24	53	36	50	16	179
	%	13.4%	29.6%	20.1%	27.9%	8.9%	100.0%
43	Male	19	14	16	31	3	83
	%	22.9%	16.9%	19.3%	37.3%	3.6%	100.0%
	Female	9	19	28	33	7	96
	%	9.4%	19.8%	29.2%	34.4%	7.3%	100.0%
	Total	28	33	44	64	10	179
	%	15.6%	18.4%	24.6%	35.8%	5.6%	100.0%
44	Male	6	31	30	15	1	83
	%	7.2%	37.3%	36.1%	18.1%	1.2%	100.0%
	Female	5	21	39	26	5	96
	%	5.2%	21.9%	40.6%	27.1%	5.2%	100.0%
	Total	11	52	69	41	6	179
	%	6.1%	29.1%	38.5%	22.9%	3.4%	100.0%
45	Male	10	25	15	28	5	83
	%	12.0%	30.1%	18.1%	33.7%	6.0%	100.0%
	Female	14	33	11	34	4	96
	%	14.6%	34.4%	11.5%	35.4%	4.2%	100.0%
	Total	24	58	26	62	9	179
	%	13.4%	32.4%	14.5%	34.6%	5.0%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
38 ^b	Male	1	11	17	32	37	98
	%	1.0%	11.2%	17.3%	32.7%	37.8%	100.0%
	Female	0	5	11	22	24	62
	%	.0%	8.1%	17.7%	35.5%	38.7%	100.0%
	Total	1	16	28	54	61	160
	%	.6%	10.0%	17.5%	33.8%	38.1%	100.0%
39	Male	2	5	11	66	14	98
	%	2.0%	5.1%	11.2%	67.3%	14.3%	100.0%
	Female	2	2	4	43	11	62
	%	3.2%	3.2%	6.5%	69.4%	17.7%	100.0%
	Total	4	7	15	109	25	160
	%	2.5%	4.4%	9.4%	68.1%	15.6%	100.0%
40	Male	3	18	14	52	11	98
	%	3.1%	18.4%	14.3%	53.1%	11.2%	100.0%
	Female	4	16	9	30	3	62
	%	6.5%	25.8%	14.5%	48.4%	4.8%	100.0%
	Total	7	34	23	82	14	160
	%	4.4%	21.3%	14.4%	51.3%	8.8%	100.0%
41	Male	7	19	16	43	13	98
	%	7.1%	19.4%	16.3%	43.9%	13.3%	100.0%
	Female	5	18	8	27	4	62
	%	8.1%	29.0%	12.9%	43.5%	6.5%	100.0%
	Total	12	37	24	70	17	160
	%	7.5%	23.1%	15.0%	43.8%	10.6%	100.0%
42	Male	6	16	13	52	11	98
	%	6.1%	16.3%	13.3%	53.1%	11.2%	100.0%
	Female	5	7	13	31	6	62
	%	8.1%	11.3%	21.0%	50.0%	9.7%	100.0%
	Total	11	23	26	83	17	160
	%	6.9%	14.4%	16.3%	51.9%	10.6%	100.0%
43	Male	5	16	7	60	10	98
	%	5.1%	16.3%	7.1%	61.2%	10.2%	100.0%
	Female	5	11	8	33	5	62
	%	8.1%	17.7%	12.9%	53.2%	8.1%	100.0%
	Total	10	27	15	93	15	160
	%	6.3%	16.9%	9.4%	58.1%	9.4%	100.0%
44	Male	2	15	16	55	10	98
	%	2.0%	15.3%	16.3%	56.1%	10.2%	100.0%
	Female	3	9	14	32	4	62
	%	4.8%	14.5%	22.6%	51.6%	6.5%	100.0%
	Total	5	24	30	87	14	160
	%	3.1%	15.0%	18.8%	54.4%	8.8%	100.0%
45	Male	3	14	7	60	14	98
	%	3.1%	14.3%	7.1%	61.2%	14.3%	100.0%
	Female	5	13	3	37	4	62
	%	8.1%	21.0%	4.8%	59.7%	6.5%	100.0%
	Total	8	27	10	97	18	160
	%	5.0%	16.9%	6.3%	60.6%	11.3%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
54 ^b	Male	29	13	26	14	1	83
	%	34.9%	15.7%	31.3%	16.9%	1.2%	100.0%
	Female	44	13	29	6	4	96
	%	45.8%	13.5%	30.2%	6.3%	4.2%	100.0%
	Total	73	26	55	20	5	179
	%	40.8%	14.5%	30.7%	11.2%	2.8%	100.0%
55	Male	39	10	16	15	3	83
	%	47.0%	12.0%	19.3%	18.1%	3.6%	100.0%
	Female	53	17	9	5	12	96
	%	55.2%	17.7%	9.4%	5.2%	12.5%	100.0%
	Total	92	27	25	20	15	179
	%	51.4%	15.1%	14.0%	11.2%	8.4%	100.0%
56	Male	29	12	23	18	1	83
	%	34.9%	14.5%	27.7%	21.7%	1.2%	100.0%
	Female	45	12	22	13	4	96
	%	46.9%	12.5%	22.9%	13.5%	4.2%	100.0%
	Total	74	24	45	31	5	179
	%	41.3%	13.4%	25.1%	17.3%	2.8%	100.0%
57	Male	24	23	18	17	1	83
	%	28.9%	27.7%	21.7%	20.5%	1.2%	100.0%
	Female	44	20	22	6	4	96
	%	45.8%	20.8%	22.9%	6.3%	4.2%	100.0%
	Total	68	43	40	23	5	179
	%	38.0%	24.0%	22.3%	12.8%	2.8%	100.0%
58	Male	32	20	16	14	1	83
	%	38.6%	24.1%	19.3%	16.9%	1.2%	100.0%
	Female	57	19	9	7	4	96
	%	59.4%	19.8%	9.4%	7.3%	4.2%	100.0%
	Total	89	39	25	21	5	179
	%	49.7%	21.8%	14.0%	11.7%	2.8%	100.0%
59	Male	32	17	18	15	1	83
	%	38.6%	20.5%	21.7%	18.1%	1.2%	100.0%
	Female	47	21	17	7	4	96
	%	49.0%	21.9%	17.7%	7.3%	4.2%	100.0%
	Total	79	38	35	22	5	179
	%	44.1%	21.2%	19.6%	12.3%	2.8%	100.0%
60	Male	39	10	19	14	1	83
	%	47.0%	12.0%	22.9%	16.9%	1.2%	100.0%
	Female	50	23	13	7	3	96
	%	52.1%	24.0%	13.5%	7.3%	3.1%	100.0%
	Total	89	33	32	21	4	179
	%	49.7%	18.4%	17.9%	11.7%	2.2%	100.0%
61	Male	40	7	20	15	1	83
	%	48.2%	8.4%	24.1%	18.1%	1.2%	100.0%
	Female	44	23	19	7	3	96
	%	45.8%	24.0%	19.8%	7.3%	3.1%	100.0%
	Total	84	30	39	22	4	179
	%	46.9%	16.8%	21.8%	12.3%	2.2%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by gender

Item		SA	A	N	D	SD ^a	Total
54 ^b	Male	29	40	19	9	1	98
	%	29.6%	40.8%	19.4%	9.2%	1.0%	100.0%
	Female	25	22	12	3	0	62
	%	40.3%	35.5%	19.4%	4.8%	.0%	100.0%
	Total	54	62	31	12	1	160
	%	33.8%	38.8%	19.4%	7.5%	.6%	100.0%
55	Male	38	32	9	16	3	98
	%	38.8%	32.7%	9.2%	16.3%	3.1%	100.0%
	Female	28	17	4	9	4	62
	%	45.2%	27.4%	6.5%	14.5%	6.5%	100.0%
	Total	66	49	13	25	7	160
	%	41.3%	30.6%	8.1%	15.6%	4.4%	100.0%
56	Male	30	38	17	12	1	98
	%	30.6%	38.8%	17.3%	12.2%	1.0%	100.0%
	Female	21	26	8	7	0	62
	%	33.9%	41.9%	12.9%	11.3%	.0%	100.0%
	Total	51	64	25	19	1	160
	%	31.9%	40.0%	15.6%	11.9%	.6%	100.0%
57	Male	24	48	14	11	1	98
	%	24.5%	49.0%	14.3%	11.2%	1.0%	100.0%
	Female	22	29	7	4	0	62
	%	35.5%	46.8%	11.3%	6.5%	.0%	100.0%
	Total	46	77	21	15	1	160
	%	28.8%	48.1%	13.1%	9.4%	.6%	100.0%
58	Male	32	46	10	9	1	98
	%	32.7%	46.9%	10.2%	9.2%	1.0%	100.0%
	Female	27	27	4	4	0	62
	%	43.5%	43.5%	6.5%	6.5%	.0%	100.0%
	Total	59	73	14	13	1	160
	%	36.9%	45.6%	8.8%	8.1%	.6%	100.0%
59	Male	31	42	14	10	1	98
	%	31.6%	42.9%	14.3%	10.2%	1.0%	100.0%
	Female	23	29	6	4	0	62
	%	37.1%	46.8%	9.7%	6.5%	.0%	100.0%
	Total	54	71	20	14	1	160
	%	33.8%	44.4%	12.5%	8.8%	.6%	100.0%
60	Male	37	38	13	9	1	98
	%	37.8%	38.8%	13.3%	9.2%	1.0%	100.0%
	Female	25	29	4	4	0	62
	%	40.3%	46.8%	6.5%	6.5%	.0%	100.0%
	Total	62	67	17	13	1	160
	%	38.8%	41.9%	10.6%	8.1%	.6%	100.0%
61	Male	39	34	14	10	1	98
	%	39.8%	34.7%	14.3%	10.2%	1.0%	100.0%
	Female	20	31	7	4	0	62
	%	32.3%	50.0%	11.3%	6.5%	.0%	100.0%
	Total	59	65	21	14	1	160
	%	36.9%	40.6%	13.1%	8.8%	.6%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
46 ^b	Science	11	27	12	42	19	111
	%	9.9%	24.3%	10.8%	37.8%	17.1%	100.0%
	Engineering	5	14	4	35	10	68
	%	7.4%	20.6%	5.9%	51.5%	14.7%	100.0%
	Total	16	41	16	77	29	179
	%	8.9%	22.9%	8.9%	43.0%	16.2%	100.0%
47	Science	6	8	33	50	14	111
	%	5.4%	7.2%	29.7%	45.0%	12.6%	100.0%
	Engineering	1	3	20	35	9	68
	%	1.5%	4.4%	29.4%	51.5%	13.2%	100.0%
	Total	7	11	53	85	23	179
	%	3.9%	6.1%	29.6%	47.5%	12.8%	100.0%
48	Science	3	17	44	35	12	111
	%	2.7%	15.3%	39.6%	31.5%	10.8%	100.0%
	Engineering	2	5	26	26	9	68
	%	2.9%	7.4%	38.2%	38.2%	13.2%	100.0%
	Total	5	22	70	61	21	179
	%	2.8%	12.3%	39.1%	34.1%	11.7%	100.0%
49	Science	5	33	16	42	15	111
	%	4.5%	29.7%	14.4%	37.8%	13.5%	100.0%
	Engineering	4	10	16	30	8	68
	%	5.9%	14.7%	23.5%	44.1%	11.8%	100.0%
	Total	9	43	32	72	23	179
	%	5.0%	24.0%	17.9%	40.2%	12.8%	100.0%
50	Science	8	27	28	30	18	111
	%	7.2%	24.3%	25.2%	27.0%	16.2%	100.0%
	Engineering	4	9	12	38	5	68
	%	5.9%	13.2%	17.6%	55.9%	7.4%	100.0%
	Total	12	36	40	68	23	179
	%	6.7%	20.1%	22.3%	38.0%	12.8%	100.0%
51	Science	9	41	5	48	8	111
	%	8.1%	36.9%	4.5%	43.2%	7.2%	100.0%
	Engineering	10	18	16	21	3	68
	%	14.7%	26.5%	23.5%	30.9%	4.4%	100.0%
	Total	19	59	21	69	11	179
	%	10.6%	33.0%	11.7%	38.5%	6.1%	100.0%
52	Science	9	33	11	48	10	111
	%	8.1%	29.7%	9.9%	43.2%	9.0%	100.0%
	Engineering	11	21	3	31	2	68
	%	16.2%	30.9%	4.4%	45.6%	2.9%	100.0%
	Total	20	54	14	79	12	179
	%	11.2%	30.2%	7.8%	44.1%	6.7%	100.0%
53	Science	25	14	12	46	14	111
	%	22.5%	12.6%	10.8%	41.4%	12.6%	100.0%
	Engineering	13	25	3	23	4	68
	%	19.1%	36.8%	4.4%	33.8%	5.9%	100.0%
	Total	38	39	15	69	18	179
	%	21.2%	21.8%	8.4%	38.5%	10.1%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
46 ^b	Science	7	44	10	28	1	90
	%	7.8%	48.9%	11.1%	31.1%	1.1%	100.0%
	Engineering	7	34	4	21	4	70
	%	10.0%	48.6%	5.7%	30.0%	5.7%	100.0%
	Total	14	78	14	49	5	160
	%	8.8%	48.8%	8.8%	30.6%	3.1%	100.0%
47	Science	4	23	23	36	4	90
	%	4.4%	25.6%	25.6%	40.0%	4.4%	100.0%
	Engineering	2	15	16	32	5	70
	%	2.9%	21.4%	22.9%	45.7%	7.1%	100.0%
	Total	6	38	39	68	9	160
	%	3.8%	23.8%	24.4%	42.5%	5.6%	100.0%
48	Science	3	35	32	17	3	90
	%	3.3%	38.9%	35.6%	18.9%	3.3%	100.0%
	Engineering	2	26	21	15	6	70
	%	2.9%	37.1%	30.0%	21.4%	8.6%	100.0%
	Total	5	61	53	32	9	160
	%	3.1%	38.1%	33.1%	20.0%	5.6%	100.0%
49	Science	3	50	9	25	3	90
	%	3.3%	55.6%	10.0%	27.8%	3.3%	100.0%
	Engineering	4	31	13	19	3	70
	%	5.7%	44.3%	18.6%	27.1%	4.3%	100.0%
	Total	7	81	22	44	6	160
	%	4.4%	50.6%	13.8%	27.5%	3.8%	100.0%
50	Science	6	43	14	19	8	90
	%	6.7%	47.8%	15.6%	21.1%	8.9%	100.0%
	Engineering	2	30	11	24	3	70
	%	2.9%	42.9%	15.7%	34.3%	4.3%	100.0%
	Total	8	73	25	43	11	160
	%	5.0%	45.6%	15.6%	26.9%	6.9%	100.0%
51	Science	4	71	5	10	0	90
	%	4.4%	78.9%	5.6%	11.1%	.0%	100.0%
	Engineering	8	42	9	9	2	70
	%	11.4%	60.0%	12.9%	12.9%	2.9%	100.0%
	Total	12	113	14	19	2	160
	%	7.5%	70.6%	8.8%	11.9%	1.3%	100.0%
52	Science	1	69	9	11	90	1
	%	1.1%	76.7%	10.0%	12.2%	100.0%	1.1%
	Engineering	12	42	1	15	70	12
	%	17.1%	60.0%	1.4%	21.4%	100.0%	17.1%
	Total	13	111	10	26	160	13
	%	8.1%	69.4%	6.3%	16.3%	100.0%	8.1%
53	Science	11	59	8	11	1	90
	%	12.2%	65.6%	8.9%	12.2%	1.1%	100.0%
	Engineering	16	41	2	10	1	70
	%	22.9%	58.6%	2.9%	14.3%	1.4%	100.0%
	Total	27	100	10	21	2	160
	%	16.9%	62.5%	6.3%	13.1%	1.3%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
38 ^b	Science	11	58	19	7	16	111
	%	9.9%	52.3%	17.1%	6.3%	14.4%	100.0%
	Engineering	10	29	18	3	8	68
	%	14.7%	42.6%	26.5%	4.4%	11.8%	100.0%
	Total	21	87	37	10	24	179
	%	11.7%	48.6%	20.7%	5.6%	13.4%	100.0%
39	Science	6	12	43	48	2	111
	%	5.4%	10.8%	38.7%	43.2%	1.8%	100.0%
	Engineering	5	6	36	19	2	68
	%	7.4%	8.8%	52.9%	27.9%	2.9%	100.0%
	Total	11	18	79	67	4	179
	%	6.1%	10.1%	44.1%	37.4%	2.2%	100.0%
40	Science	12	52	29	15	3	111
	%	10.8%	46.8%	26.1%	13.5%	2.7%	100.0%
	Engineering	5	17	21	21	4	68
	%	7.4%	25.0%	30.9%	30.9%	5.9%	100.0%
	Total	17	69	50	36	7	179
	%	9.5%	38.5%	27.9%	20.1%	3.9%	100.0%
41	Science	9	53	36	4	9	111
	%	8.1%	47.7%	32.4%	3.6%	8.1%	100.0%
	Engineering	6	26	28	3	5	68
	%	8.8%	38.2%	41.2%	4.4%	7.4%	100.0%
	Total	15	79	64	7	14	179
	%	8.4%	44.1%	35.8%	3.9%	7.8%	100.0%
42	Science	16	30	25	27	13	111
	%	14.4%	27.0%	22.5%	24.3%	11.7%	100.0%
	Engineering	8	23	11	23	3	68
	%	11.8%	33.8%	16.2%	33.8%	4.4%	100.0%
	Total	24	53	36	50	16	179
	%	13.4%	29.6%	20.1%	27.9%	8.9%	100.0%
43	Science	19	21	27	36	8	111
	%	17.1%	18.9%	24.3%	32.4%	7.2%	100.0%
	Engineering	9	12	17	28	2	68
	%	13.2%	17.6%	25.0%	41.2%	2.9%	100.0%
	Total	28	33	44	64	10	179
	%	15.6%	18.4%	24.6%	35.8%	5.6%	100.0%
44	Science	6	33	48	19	5	111
	%	5.4%	29.7%	43.2%	17.1%	4.5%	100.0%
	Engineering	5	19	21	22	1	68
	%	7.4%	27.9%	30.9%	32.4%	1.5%	100.0%
	Total	11	52	69	41	6	179
	%	6.1%	29.1%	38.5%	22.9%	3.4%	100.0%
45	Science	15	44	12	33	7	111
	%	13.5%	39.6%	10.8%	29.7%	6.3%	100.0%
	Engineering	8	15	14	29	2	68
	%	11.8%	22.1%	20.6%	42.6%	2.9%	100.0%
	Total	23	59	26	62	9	179
	%	12.8%	33.0%	14.5%	34.6%	5.0%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
38 ^b	Science	0	12	22	30	26	90
	%	.0%	13.3%	24.4%	33.3%	28.9%	100.0%
	Engineering	1	4	6	24	35	70
	%	1.4%	5.7%	8.6%	34.3%	50.0%	100.0%
	Total	1	16	28	54	61	160
	%	.6%	10.0%	17.5%	33.8%	38.1%	100.0%
39	Science	3	4	7	63	13	90
	%	3.3%	4.4%	7.8%	70.0%	14.4%	100.0%
	Engineering	1	3	8	46	12	70
	%	1.4%	4.3%	11.4%	65.7%	17.1%	100.0%
	Total	4	7	15	109	25	160
	%	2.5%	4.4%	9.4%	68.1%	15.6%	100.0%
40	Science	5	28	12	43	2	90
	%	5.6%	31.1%	13.3%	47.8%	2.2%	100.0%
	Engineering	2	6	11	39	12	70
	%	2.9%	8.6%	15.7%	55.7%	17.1%	100.0%
	Total	7	34	23	82	14	160
	%	4.4%	21.3%	14.4%	51.3%	8.8%	100.0%
41	Science	9	28	11	39	3	90
	%	10.0%	31.1%	12.2%	43.3%	3.3%	100.0%
	Engineering	3	9	13	31	14	70
	%	4.3%	12.9%	18.6%	44.3%	20.0%	100.0%
	Total	12	37	24	70	17	160
	%	7.5%	23.1%	15.0%	43.8%	10.6%	100.0%
42	Science	9	16	17	43	5	90
	%	10.0%	17.8%	18.9%	47.8%	5.6%	100.0%
	Engineering	2	7	9	40	12	70
	%	2.9%	10.0%	12.9%	57.1%	17.1%	100.0%
	Total	11	23	26	83	17	160
	%	6.9%	14.4%	16.3%	51.9%	10.6%	100.0%
43	Science	9	15	11	49	6	90
	%	10.0%	16.7%	12.2%	54.4%	6.7%	100.0%
	Engineering	1	12	4	44	9	70
	%	1.4%	17.1%	5.7%	62.9%	12.9%	100.0%
	Total	10	27	15	93	15	160
	%	6.3%	16.9%	9.4%	58.1%	9.4%	100.0%
44	Science	3	14	22	47	4	90
	%	3.3%	15.6%	24.4%	52.2%	4.4%	100.0%
	Engineering	2	10	8	40	10	70
	%	2.9%	14.3%	11.4%	57.1%	14.3%	100.0%
	Total	5	24	30	87	14	160
	%	3.1%	15.0%	18.8%	54.4%	8.8%	100.0%
45	Science	5	18	5	54	8	90
	%	5.6%	20.0%	5.6%	60.0%	8.9%	100.0%
	Engineering	3	9	5	43	10	70
	%	4.3%	12.9%	7.1%	61.4%	14.3%	100.0%
	Total	8	27	10	97	18	160
	%	5.0%	16.9%	6.3%	60.6%	11.3%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
54 ^b	Science	52	18	27	9	5	111
	%	46.8%	16.2%	24.3%	8.1%	4.5%	100.0%
	Engineering	21	8	28	11	0	68
	%	30.9%	11.8%	41.2%	16.2%	.0%	100.0%
	Total	73	26	55	20	5	179
	%	40.8%	14.5%	30.7%	11.2%	2.8%	100.0%
55	Science	59	19	11	9	13	111
	%	53.2%	17.1%	9.9%	8.1%	11.7%	100.0%
	Engineering	33	8	14	11	2	68
	%	48.5%	11.8%	20.6%	16.2%	2.9%	100.0%
	Total	92	27	25	20	15	179
	%	51.4%	15.1%	14.0%	11.2%	8.4%	100.0%
56	Science	48	16	26	16	5	111
	%	43.2%	14.4%	23.4%	14.4%	4.5%	100.0%
	Engineering	26	8	19	15	0	68
	%	38.2%	11.8%	27.9%	22.1%	.0%	100.0%
	Total	74	24	45	31	5	179
	%	41.3%	13.4%	25.1%	17.3%	2.8%	100.0%
57	Science	44	28	24	10	5	111
	%	39.6%	25.2%	21.6%	9.0%	4.5%	100.0%
	Engineering	24	15	16	13	0	68
	%	35.3%	22.1%	23.5%	19.1%	.0%	100.0%
	Total	68	43	40	23	5	179
	%	38.0%	24.0%	22.3%	12.8%	2.8%	100.0%
58	Science	56	29	11	10	5	111
	%	50.5%	26.1%	9.9%	9.0%	4.5%	100.0%
	Engineering	33	10	14	11	0	68
	%	48.5%	14.7%	20.6%	16.2%	.0%	100.0%
	Total	89	39	25	21	5	179
	%	49.7%	21.8%	14.0%	11.7%	2.8%	100.0%
59	Science	52	26	17	11	5	111
	%	46.8%	23.4%	15.3%	9.9%	4.5%	100.0%
	Engineering	27	12	18	11	0	68
	%	39.7%	17.6%	26.5%	16.2%	.0%	100.0%
	Total	79	38	35	22	5	179
	%	44.1%	21.2%	19.6%	12.3%	2.8%	100.0%
60	Science	53	27	17	10	4	111
	%	47.7%	24.3%	15.3%	9.0%	3.6%	100.0%
	Engineering	36	6	15	11	0	68
	%	52.9%	8.8%	22.1%	16.2%	.0%	100.0%
	Total	89	33	32	21	4	179
	%	49.7%	18.4%	17.9%	11.7%	2.2%	100.0%
61	Science	51	23	22	11	4	111
	%	45.9%	20.7%	19.8%	9.9%	3.6%	100.0%
	Engineering	33	7	17	11	0	68
	%	48.5%	10.3%	25.0%	16.2%	.0%	100.0%
	Total	84	30	39	22	4	179
	%	46.9%	16.8%	21.8%	12.3%	2.2%	100.0%

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
54 ^b	Science	37	36	12	4	1	90
	%	41.1%	40.0%	13.3%	4.4%	1.1%	100.0%
	Engineering	17	26	19	8	0	70
	%	24.3%	37.1%	27.1%	11.4%	.0%	100.0%
	Total	54	62	31	12	1	160
	%	33.8%	38.8%	19.4%	7.5%	.6%	100.0%
55	Science	41	26	5	14	4	90
	%	45.6%	28.9%	5.6%	15.6%	4.4%	100.0%
	Engineering	25	23	8	11	3	70
	%	35.7%	32.9%	11.4%	15.7%	4.3%	100.0%
	Total	66	49	13	25	7	160
	%	41.3%	30.6%	8.1%	15.6%	4.4%	100.0%
56	Science	29	39	14	7	1	90
	%	32.2%	43.3%	15.6%	7.8%	1.1%	100.0%
	Engineering	22	25	11	12	0	70
	%	31.4%	35.7%	15.7%	17.1%	.0%	100.0%
	Total	51	64	25	19	1	160
	%	31.9%	40.0%	15.6%	11.9%	.6%	100.0%
57	Science	25	46	12	6	1	90
	%	27.8%	51.1%	13.3%	6.7%	1.1%	100.0%
	Engineering	21	31	9	9	0	70
	%	30.0%	44.3%	12.9%	12.9%	.0%	100.0%
	Total	46	77	21	15	1	160
	%	28.8%	48.1%	13.1%	9.4%	.6%	100.0%
58	Science	31	47	6	5	1	90
	%	34.4%	52.2%	6.7%	5.6%	1.1%	100.0%
	Engineering	28	26	8	8	0	70
	%	40.0%	37.1%	11.4%	11.4%	.0%	100.0%
	Total	59	73	14	13	1	160
	%	36.9%	45.6%	8.8%	8.1%	.6%	100.0%
59	Science	33	42	8	6	1	90
	%	36.7%	46.7%	8.9%	6.7%	1.1%	100.0%
	Engineering	21	29	12	8	0	70
	%	30.0%	41.4%	17.1%	11.4%	.0%	100.0%
	Total	54	71	20	14	1	160
	%	33.8%	44.4%	12.5%	8.8%	.6%	100.0%
60	Science	35	41	8	5	1	90
	%	38.9%	45.6%	8.9%	5.6%	1.1%	100.0%
	Engineering	27	26	9	8	0	70
	%	38.6%	37.1%	12.9%	11.4%	.0%	100.0%
	Total	62	67	17	13	1	160
	%	38.8%	41.9%	10.6%	8.1%	.6%	100.0%
61	Science	36	38	9	6	1	90
	%	40.0%	42.2%	10.0%	6.7%	1.1%	100.0%
	Engineering	23	27	12	8	0	70
	%	32.9%	38.6%	17.1%	11.4%	.0%	100.0%
	Total	59	65	21	14	1	160
	%	36.9%	40.6%	13.1%	8.8%	.6%	100.0%

Case Study I Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	0	3	3	10	2	18
	Second	11	13	1	17	7	49
	Third	4	18	8	38	13	81
	Fourth	1	7	4	12	7	31
	Total	16	41	16	77	29	179
47	First	0	1	7	10	0	18
	Second	6	5	10	22	6	49
	Third	1	3	22	43	12	81
	Fourth	0	2	14	10	5	31
	Total	7	11	53	85	23	179
48	First	0	1	15	2	0	18
	Second	0	8	18	16	7	49
	Third	4	10	22	35	10	81
	Fourth	1	3	15	8	4	31
	Total	5	22	70	61	21	179
49	First	0	4	3	7	4	18
	Second	5	11	10	16	7	49
	Third	3	20	13	38	7	81
	Fourth	1	8	6	11	5	31
	Total	9	43	32	72	23	179
50	First	0	4	3	8	3	18
	Second	9	14	7	9	10	49
	Third	3	12	19	41	6	81
	Fourth	0	6	11	10	4	31
	Total	12	36	40	68	23	179
51	First	0	13	3	2	0	18
	Second	10	8	1	27	3	49
	Third	8	29	12	26	6	81
	Fourth	1	9	5	14	2	31
	Total	19	59	21	69	11	179
52	First	0	10	5	3	0	18
	Second	7	10	1	27	4	49
	Third	12	25	5	33	6	81
	Fourth	1	9	3	16	2	31
	Total	20	54	14	79	12	179
53	First	6	8	2	2	0	18
	Second	10	7	3	22	7	49
	Third	19	20	5	31	6	81
	Fourth	3	4	5	14	5	31
	Total	38	39	15	69	18	179

Case Study II Frequencies and Distributions of students on Attitude toward English as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	0	7	3	8	0	18
	Second	9	20	1	8	1	39
	Third	4	35	6	25	2	72
	Fourth	1	16	4	8	2	31
	Total	14	78	14	49	5	160
47	First	0	1	6	11	0	18
	Second	5	11	8	12	3	39
	Third	1	19	14	34	4	72
	Fourth	0	7	11	11	2	31
	Total	6	38	39	68	9	160
48	First	0	5	11	2	0	18
	Second	0	16	15	5	3	39
	Third	4	28	15	21	4	72
	Fourth	1	12	12	4	2	31
	Total	5	61	53	32	9	160
49	First	0	8	2	7	1	18
	Second	3	20	8	5	3	39
	Third	3	36	8	25	0	72
	Fourth	1	17	4	7	2	31
	Total	7	81	22	44	6	160
50	First	0	8	0	7	3	18
	Second	7	21	4	2	5	39
	Third	1	29	13	28	1	72
	Fourth	0	15	8	6	2	31
	Total	8	73	25	43	11	160
51	First	0	13	3	2	0	18
	Second	6	29	0	4	0	39
	Third	6	50	7	7	2	72
	Fourth	0	21	4	6	0	31
	Total	12	113	14	19	2	160
52	First	0	11	4	3	18	0
	Second	4	30	1	4	39	4
	Third	9	47	3	13	72	9
	Fourth	0	23	2	6	31	0
	Total	13	111	10	26	160	13
53	First	6	9	1	2	0	18
	Second	4	28	3	3	1	39
	Third	15	43	3	11	0	72
	Fourth	2	20	3	5	1	31
	Total	27	100	10	21	2	160

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	2	2	5	4	5	18
	Second	9	9	17	0	14	49
	Third	9	56	11	3	2	81
	Fourth	1	20	4	3	3	31
	Total	21	87	37	10	24	179
47	First	0	1	5	10	2	18
	Second	1	5	15	27	1	49
	Third	9	10	41	20	1	81
	Fourth	1	2	18	10	0	31
	Total	11	18	79	67	4	179
48	First	1	6	2	8	1	18
	Second	12	29	6	2	0	49
	Third	2	23	35	17	4	81
	Fourth	2	11	7	9	2	31
	Total	17	69	50	36	7	179
49	First	5	5	2	2	4	18
	Second	5	33	3	0	8	49
	Third	4	32	42	3	0	81
	Fourth	1	9	17	2	2	31
	Total	15	79	64	7	14	179
50	First	1	4	5	8	0	18
	Second	6	9	19	1	14	49
	Third	14	31	8	28	0	81
	Fourth	3	9	4	13	2	31
	Total	24	53	36	50	16	179
51	First	2	1	4	11	0	18
	Second	4	11	23	1	10	49
	Third	17	17	12	35	0	81
	Fourth	5	4	5	17	0	31
	Total	28	33	44	64	10	179
52	First	0	2	5	11	0	18
	Second	1	8	24	10	6	49
	Third	9	30	28	14	0	81
	Fourth	1	12	12	6	0	31
	Total	11	52	69	41	6	179
53	First	1	1	0	12	4	18
	Second	10	16	4	15	4	49
	Third	10	33	14	24	0	81
	Fourth	2	9	8	11	1	31
	Total	23	59	26	62	9	179

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	0	0	1	6	11	18
	Second	0	1	13	10	15	39
	Third	1	11	10	27	23	72
	Fourth	0	4	4	11	12	31
	Total	1	16	28	54	61	160
47	First	0	0	0	15	3	18
	Second	0	4	3	29	3	39
	Third	4	2	8	43	15	72
	Fourth	0	1	4	22	4	31
	Total	4	7	15	109	25	160
48	First	1	3	0	13	1	18
	Second	4	14	4	17	0	39
	Third	2	11	16	31	12	72
	Fourth	0	6	3	21	1	31
	Total	7	34	23	82	14	160
49	First	4	1	0	9	4	18
	Second	3	17	2	14	3	39
	Third	4	14	15	29	10	72
	Fourth	1	5	7	18	0	31
	Total	12	37	24	70	17	160
50	First	1	0	4	13	0	18
	Second	3	3	12	14	7	39
	Third	6	15	6	35	10	72
	Fourth	1	5	4	21	0	31
	Total	11	23	26	83	17	160
51	First	0	1	1	16	0	18
	Second	0	8	10	16	5	39
	Third	8	12	4	38	10	72
	Fourth	2	6	0	23	0	31
	Total	10	27	15	93	15	160
52	First	0	0	4	14	0	18
	Second	0	3	10	22	4	39
	Third	5	14	11	32	10	72
	Fourth	0	7	5	19	0	31
	Total	5	24	30	87	14	160
53	First	0	0	0	14	4	18
	Second	1	8	3	24	3	39
	Third	6	15	5	36	10	72
	Fourth	1	4	2	23	1	31
	Total	8	27	10	97	18	160

Case Study I Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	10	4	3	1	0	18
	Second	25	5	16	3	0	49
	Third	30	12	24	12	3	81
	Fourth	8	5	12	4	2	31
	Total	73	26	55	20	5	179
47	First	14	2	1	1	0	18
	Second	28	2	8	3	8	49
	Third	38	15	13	12	3	81
	Fourth	12	8	3	4	4	31
	Total	92	27	25	20	15	179
48	First	12	1	4	1	0	18
	Second	18	5	15	11	0	49
	Third	32	13	20	13	3	81
	Fourth	12	5	6	6	2	31
	Total	74	24	45	31	5	179
49	First	8	8	1	1	0	18
	Second	22	5	19	3	0	49
	Third	27	21	16	14	3	81
	Fourth	11	9	4	5	2	31
	Total	68	43	40	23	5	179
50	First	7	10	0	1	0	18
	Second	31	6	8	4	0	49
	Third	36	17	14	11	3	81
	Fourth	15	6	3	5	2	31
	Total	89	39	25	21	5	179
51	First	10	6	1	1	0	18
	Second	22	14	9	4	0	49
	Third	34	12	20	12	3	81
	Fourth	13	6	5	5	2	31
	Total	79	38	35	22	5	179
52	First	11	4	2	1	0	18
	Second	25	11	9	4	0	49
	Third	36	14	17	11	3	81
	Fourth	17	4	4	5	1	31
	Total	89	33	32	21	4	179
53	First	14	1	2	1	0	18
	Second	18	11	16	4	0	49
	Third	36	14	16	12	3	81
	Fourth	16	4	5	5	1	31
	Total	84	30	39	22	4	179

Case Study II Frequencies and Distributions of students on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Year of Study

Item		SA	A	N	D	SD ^a	Total
46 ^b	First	10	6	2	0	0	18
	Second	15	14	9	1	0	39
	Third	21	28	13	9	1	72
	Fourth	8	14	7	2	0	31
	Total	54	62	31	12	1	160
47	First	13	5	0	0	0	18
	Second	17	8	4	5	5	39
	Third	26	24	6	15	1	72
	Fourth	10	12	3	5	1	31
	Total	66	49	13	25	7	160
48	First	11	5	2	0	0	18
	Second	10	15	8	6	0	39
	Third	22	30	9	10	1	72
	Fourth	8	14	6	3	0	31
	Total	51	64	25	19	1	160
49	First	8	10	0	0	0	18
	Second	14	14	10	1	0	39
	Third	18	35	7	11	1	72
	Fourth	6	18	4	3	0	31
	Total	46	77	21	15	1	160
50	First	7	11	0	0	0	18
	Second	19	15	4	1	0	39
	Third	23	32	7	9	1	72
	Fourth	10	15	3	3	0	31
	Total	59	73	14	13	1	160
51	First	10	8	0	0	0	18
	Second	13	20	5	1	0	39
	Third	23	28	10	10	1	72
	Fourth	8	15	5	3	0	31
	Total	54	71	20	14	1	160
52	First	10	8	0	0	0	18
	Second	16	17	5	1	0	39
	Third	25	29	8	9	1	72
	Fourth	11	13	4	3	0	31
	Total	62	67	17	13	1	160
53	First	13	5	0	0	0	18
	Second	10	18	10	1	0	39
	Third	25	29	7	10	1	72
	Fourth	11	13	4	3	0	31
	Total	59	65	21	14	1	160

Case Study I Frequencies and Distributions of Teaching staff on Attitude toward English as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
45 ^b	Male	8	6	5	3	2	24
	%	33.3%	25.0%	20.8%	12.5%	8.3%	100.0%
	Female	0	3	3	0	0	6
	%	.0%	50.0%	50.0%	.0%	.0%	100.0%
	Total	8	9	8	3	2	30
	%	26.7%	30.0%	26.7%	10.0%	6.7%	100.0%
46	Male	2	9	8	2	3	24
	%	8.3%	37.5%	33.3%	8.3%	12.5%	100.0%
	Female	0	0	6	0	0	6
	%	.0%	.0%	100.0%	.0%	.0%	100.0%
	Total	2	9	14	2	3	30
	%	6.7%	30.0%	46.7%	6.7%	10.0%	100.0%
47	Male	2	6	11	3	2	24
	%	8.3%	25.0%	45.8%	12.5%	8.3%	100.0%
	Female	0	0	3	3	0	6
	%	.0%	.0%	50.0%	50.0%	.0%	100.0%
	Total	2	6	14	6	2	30
	%	6.7%	20.0%	46.7%	20.0%	6.7%	100.0%
48	Male	2	6	10	3	3	24
	%	8.3%	25.0%	41.7%	12.5%	12.5%	100.0%
	Female	0	0	3	3	0	6
	%	.0%	.0%	50.0%	50.0%	.0%	100.0%
	Total	2	6	13	6	3	30
	%	6.7%	20.0%	43.3%	20.0%	10.0%	100.0%
49	Male	5	5	10	2	2	24
	%	20.8%	20.8%	41.7%	8.3%	8.3%	100.0%
	Female	2	0	2	1	1	6
	%	33.3%	.0%	33.3%	16.7%	16.7%	100.0%
	Total	7	5	12	3	3	30
	%	23.3%	16.7%	40.0%	10.0%	10.0%	100.0%
50	Male	7	9	5	1	2	24
	%	29.2%	37.5%	20.8%	4.2%	8.3%	100.0%
	Female	0	5	0	1	0	6
	%	.0%	83.3%	.0%	16.7%	.0%	100.0%
	Total	7	14	5	2	2	30
	%	23.3%	46.7%	16.7%	6.7%	6.7%	100.0%
51	Male	11	5	5	1	2	24
	%	45.8%	20.8%	20.8%	4.2%	8.3%	100.0%
	Female	0	6	0	0	0	6
	%	.0%	100.0%	.0%	.0%	.0%	100.0%
	Total	11	11	5	1	2	30
	%	36.7%	36.7%	16.7%	3.3%	6.7%	100.0%
52	Male	14	4	3	1	2	24
	%	58.3%	16.7%	12.5%	4.2%	8.3%	100.0%
	Female	3	3	0	0	0	6
	%	50.0%	50.0%	.0%	.0%	.0%	100.0%
	Total	17	7	3	1	2	30
	%	56.7%	23.3%	10.0%	3.3%	6.7%	100.0%

Case Study II Frequencies and Distributions of Teaching staff on Attitude toward English as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
45 ^b	Male	8	8	2	2	1	21
	%	38.1%	38.1%	9.5%	9.5%	4.8%	100.0%
	Female	0	3	2	0	0	5
	%	.0%	60.0%	40.0%	.0%	.0%	100.0%
	Total	8	11	4	2	1	26
	%	30.8%	42.3%	15.4%	7.7%	3.8%	100.0%
46	Male	3	10	5	1	2	21
	%	14.3%	47.6%	23.8%	4.8%	9.5%	100.0%
	Female	0	0	5	0	0	5
	%	.0%	.0%	100.0%	.0%	.0%	100.0%
	Total	3	10	10	1	2	26
	%	11.5%	38.5%	38.5%	3.8%	7.7%	100.0%
47	Male	3	10	6	1	1	21
	%	14.3%	47.6%	28.6%	4.8%	4.8%	100.0%
	Female	0	0	2	3	0	5
	%	.0%	.0%	40.0%	60.0%	.0%	100.0%
	Total	3	10	8	4	1	26
	%	11.5%	38.5%	30.8%	15.4%	3.8%	100.0%
48	Male	3	9	4	2	3	21
	%	14.3%	42.9%	19.0%	9.5%	14.3%	100.0%
	Female	0	0	2	3	0	5
	%	.0%	.0%	40.0%	60.0%	.0%	100.0%
	Total	3	9	6	5	3	26
	%	11.5%	34.6%	23.1%	19.2%	11.5%	100.0%
49	Male	5	7	6	1	2	21
	%	23.8%	33.3%	28.6%	4.8%	9.5%	100.0%
	Female	1	0	2	1	1	5
	%	20.0%	.0%	40.0%	20.0%	20.0%	100.0%
	Total	6	7	8	2	3	26
	%	23.1%	26.9%	30.8%	7.7%	11.5%	100.0%
50	Male	7	10	1	1	2	21
	%	33.3%	47.6%	4.8%	4.8%	9.5%	100.0%
	Female	0	4	0	1	0	5
	%	.0%	80.0%	.0%	20.0%	.0%	100.0%
	Total	7	14	1	2	2	26
	%	26.9%	53.8%	3.8%	7.7%	7.7%	100.0%
51	Male	9	8	1	1	2	21
	%	42.9%	38.1%	4.8%	4.8%	9.5%	100.0%
	Female	0	5	0	0	0	5
	%	.0%	100.0%	.0%	.0%	.0%	100.0%
	Total	9	13	1	1	2	26
	%	34.6%	50.0%	3.8%	3.8%	7.7%	100.0%
52	Male	12	5	1	1	2	21
	%	57.1%	23.8%	4.8%	4.8%	9.5%	100.0%
	Female	2	3	0	0	0	5
	%	40.0%	60.0%	.0%	.0%	.0%	100.0%
	Total	14	8	1	1	2	26
	%	53.8%	30.8%	3.8%	3.8%	7.7%	100.0%

Case Study I Frequencies and Distributions of Teaching staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
37 ^b	Male	3	3	5	8	5	24
	%	12.5%	12.5%	20.8%	33.3%	20.8%	100.0%
	Female	0	1	1	2	2	6
	%	.0%	16.7%	16.7%	33.3%	33.3%	100.0%
	Total	3	4	6	10	7	30
	%	10.0%	13.3%	20.0%	33.3%	23.3%	100.0%
38	Male	4	4	6	5	5	24
	%	16.7%	16.7%	25.0%	20.8%	20.8%	100.0%
	Female	0	1	3	0	2	6
	%	.0%	16.7%	50.0%	.0%	33.3%	100.0%
	Total	4	5	9	5	7	30
	%	13.3%	16.7%	30.0%	16.7%	23.3%	100.0%
39	Male	5	5	4	6	4	24
	%	20.8%	20.8%	16.7%	25.0%	16.7%	100.0%
	Female	0	4	0	2	0	6
	%	.0%	66.7%	.0%	33.3%	.0%	100.0%
	Total	5	9	4	8	4	30
	%	16.7%	30.0%	13.3%	26.7%	13.3%	100.0%
40	Male	3	6	5	5	5	24
	%	12.5%	25.0%	20.8%	20.8%	20.8%	100.0%
	Female	0	5	1	0	0	6
	%	.0%	83.3%	16.7%	.0%	.0%	100.0%
	Total	3	11	6	5	5	30
	%	10.0%	36.7%	20.0%	16.7%	16.7%	100.0%
41	Male	2	2	7	7	6	24
	%	8.3%	8.3%	29.2%	29.2%	25.0%	100.0%
	Female	0	4	0	2	0	6
	%	.0%	66.7%	.0%	33.3%	.0%	100.0%
	Total	2	6	7	9	6	30
	%	6.7%	20.0%	23.3%	30.0%	20.0%	100.0%
42	Male	3	4	8	7	2	24
	%	12.5%	16.7%	33.3%	29.2%	8.3%	100.0%
	Female	1	4	0	1	0	6
	%	16.7%	66.7%	.0%	16.7%	.0%	100.0%
	Total	4	8	8	8	2	30
	%	13.3%	26.7%	26.7%	26.7%	6.7%	100.0%
43	Male	2	5	6	7	4	24
	%	8.3%	20.8%	25.0%	29.2%	16.7%	100.0%
	Female	0	4	1	1	0	6
	%	.0%	66.7%	16.7%	16.7%	.0%	100.0%
	Total	2	9	7	8	4	30
	%	6.7%	30.0%	23.3%	26.7%	13.3%	100.0%
44	Male	2	8	6	7	1	24
	%	8.3%	33.3%	25.0%	29.2%	4.2%	100.0%
	Female	0	1	2	0	3	6
	%	.0%	16.7%	33.3%	.0%	50.0%	100.0%
	Total	2	9	8	7	4	30
	%	6.7%	30.0%	26.7%	23.3%	13.3%	100.0%

Case Study II Frequencies and Distributions of Teaching staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
37 ^b	Male	1	2	4	9	5	21
	%	4.8%	9.5%	19.0%	42.9%	23.8%	100.0%
	Female	0	1	0	3	1	5
	%	.0%	20.0%	.0%	60.0%	20.0%	100.0%
	Total	1	3	4	12	6	26
	%	3.8%	11.5%	15.4%	46.2%	23.1%	100.0%
38	Male	2	2	5	7	5	21
	%	9.5%	9.5%	23.8%	33.3%	23.8%	100.0%
	Female	0	1	2	1	1	5
	%	.0%	20.0%	40.0%	20.0%	20.0%	100.0%
	Total	2	3	7	8	6	26
	%	7.7%	11.5%	26.9%	30.8%	23.1%	100.0%
39	Male	2	2	6	7	4	21
	%	9.5%	9.5%	28.6%	33.3%	19.0%	100.0%
	Female	0	3	0	2	0	5
	%	.0%	60.0%	.0%	40.0%	.0%	100.0%
	Total	2	5	6	9	4	26
	%	7.7%	19.2%	23.1%	34.6%	15.4%	100.0%
40	Male	1	3	5	7	5	21
	%	4.8%	14.3%	23.8%	33.3%	23.8%	100.0%
	Female	0	4	0	1	0	5
	%	.0%	80.0%	.0%	20.0%	.0%	100.0%
	Total	1	7	5	8	5	26
	%	3.8%	26.9%	19.2%	30.8%	19.2%	100.0%
41	Male	1	1	7	7	5	21
	%	4.8%	4.8%	33.3%	33.3%	23.8%	100.0%
	Female	0	3	0	2	0	5
	%	.0%	60.0%	.0%	40.0%	.0%	100.0%
	Total	1	4	7	9	5	26
	%	3.8%	15.4%	26.9%	34.6%	19.2%	100.0%
42	Male	2	3	7	7	2	21
	%	9.5%	14.3%	33.3%	33.3%	9.5%	100.0%
	Female	1	3	0	1	0	5
	%	20.0%	60.0%	.0%	20.0%	.0%	100.0%
	Total	3	6	7	8	2	26
	%	11.5%	23.1%	26.9%	30.8%	7.7%	100.0%
43	Male	1	3	7	6	4	21
	%	4.8%	14.3%	33.3%	28.6%	19.0%	100.0%
	Female	0	3	1	1	0	5
	%	.0%	60.0%	20.0%	20.0%	.0%	100.0%
	Total	1	6	8	7	4	26
	%	3.8%	23.1%	30.8%	26.9%	15.4%	100.0%
44	Male	1	5	6	8	1	21
	%	4.8%	23.8%	28.6%	38.1%	4.8%	100.0%
	Female	0	0	2	1	2	5
	%	.0%	.0%	40.0%	20.0%	40.0%	100.0%
	Total	1	5	8	9	3	26
	%	3.8%	19.2%	30.8%	34.6%	11.5%	100.0%

Case Study I Frequencies and Distributions of Teaching staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
53 ^b	Male	8	10	1	4	1	24
	%	33.3%	41.7%	4.2%	16.7%	4.2%	100.0%
	Female	0	5	1	0	0	6
	%	.0%	83.3%	16.7%	.0%	.0%	100.0%
	Total	8	15	2	4	1	30
	%	26.7%	50.0%	6.7%	13.3%	3.3%	100.0%
54	Male	7	10	2	4	1	24
	%	29.2%	41.7%	8.3%	16.7%	4.2%	100.0%
	Female	0	3	2	1	0	6
	%	.0%	50.0%	33.3%	16.7%	.0%	100.0%
	Total	7	13	4	5	1	30
	%	23.3%	43.3%	13.3%	16.7%	3.3%	100.0%
55	Male	7	9	2	4	2	7
	%	29.2%	37.5%	8.3%	16.7%	8.3%	29.2%
	Female	0	3	3	0	0	0
	%	.0%	50.0%	50.0%	.0%	.0%	.0%
	Total	7	12	5	4	2	7
	%	23.3%	40.0%	16.7%	13.3%	6.7%	23.3%
56	Male	7	9	3	3	2	24
	%	29.2%	37.5%	12.5%	12.5%	8.3%	100.0%
	Female	0	3	3	0	0	6
	%	.0%	50.0%	50.0%	.0%	.0%	100.0%
	Total	7	12	6	3	2	30
	%	23.3%	40.0%	20.0%	10.0%	6.7%	100.0%
57	Male	7	6	7	2	2	24
	%	29.2%	25.0%	29.2%	8.3%	8.3%	100.0%
	Female	0	0	6	0	0	6
	%	.0%	.0%	100.0%	.0%	.0%	100.0%
	Total	7	6	13	2	2	30
	%	23.3%	20.0%	43.3%	6.7%	6.7%	100.0%
58	Male	7	5	3	7	2	24
	%	29.2%	20.8%	12.5%	29.2%	8.3%	100.0%
	Female	0	3	3	0	0	6
	%	.0%	50.0%	50.0%	.0%	.0%	100.0%
	Total	7	8	6	7	2	30
	%	23.3%	26.7%	20.0%	23.3%	6.7%	100.0%
59	Male	3	11	4	3	3	24
	%	12.5%	45.8%	16.7%	12.5%	12.5%	100.0%
	Female	0	3	3	0	0	6
	%	.0%	50.0%	50.0%	.0%	.0%	100.0%
	Total	3	14	7	3	3	30
	%	10.0%	46.7%	23.3%	10.0%	10.0%	100.0%
60	Male	3	12	4	2	3	24
	%	12.5%	50.0%	16.7%	8.3%	12.5%	100.0%
	Female	1	2	3	0	0	6
	%	16.7%	33.3%	50.0%	.0%	.0%	100.0%
	Total	4	14	7	2	3	30
	%	13.3%	46.7%	23.3%	6.7%	10.0%	100.0%

Case Study II Frequencies and Distributions of Teaching staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Gender

Item		SA	A	N	D	SD ^a	Total
53 ^b	Male	7	11	1	1	1	21
	%	33.3%	52.4%	4.8%	4.8%	4.8%	100.0%
	Female	0	4	1	0	0	5
	%	.0%	80.0%	20.0%	.0%	.0%	100.0%
	Total	7	15	2	1	1	26
	%	26.9%	57.7%	7.7%	3.8%	3.8%	100.0%
54	Male	6	11	2	1	1	21
	%	28.6%	52.4%	9.5%	4.8%	4.8%	100.0%
	Female	0	3	2	0	0	5
	%	.0%	60.0%	40.0%	.0%	.0%	100.0%
	Total	6	14	4	1	1	26
	%	23.1%	53.8%	15.4%	3.8%	3.8%	100.0%
55	Male	6	11	1	1	2	21
	%	28.6%	52.4%	4.8%	4.8%	9.5%	100.0%
	Female	0	3	2	0	0	5
	%	.0%	60.0%	40.0%	.0%	.0%	100.0%
	Total	6	14	3	1	2	26
	%	23.1%	53.8%	11.5%	3.8%	7.7%	100.0%
56	Male	6	11	2	1	1	21
	%	28.6%	52.4%	9.5%	4.8%	4.8%	100.0%
	Female	0	2	2	1	0	5
	%	.0%	40.0%	40.0%	20.0%	.0%	100.0%
	Total	6	13	4	2	1	26
	%	23.1%	50.0%	15.4%	7.7%	3.8%	100.0%
57	Male	6	9	3	1	2	21
	%	28.6%	42.9%	14.3%	4.8%	9.5%	100.0%
	Female	0	1	4	0	0	5
	%	.0%	20.0%	80.0%	.0%	.0%	100.0%
	Total	6	10	7	1	2	26
	%	23.1%	38.5%	26.9%	3.8%	7.7%	100.0%
58	Male	6	7	2	4	2	21
	%	28.6%	33.3%	9.5%	19.0%	9.5%	100.0%
	Female	0	4	1	0	0	5
	%	.0%	80.0%	20.0%	.0%	.0%	100.0%
	Total	6	11	3	4	2	26
	%	23.1%	42.3%	11.5%	15.4%	7.7%	100.0%
59	Male	4	9	2	4	2	21
	%	19.0%	42.9%	9.5%	19.0%	9.5%	100.0%
	Female	0	3	2	0	0	5
	%	.0%	60.0%	40.0%	.0%	.0%	100.0%
	Total	4	12	4	4	2	26
	%	15.4%	46.2%	15.4%	15.4%	7.7%	100.0%
60	Male	4	9	3	1	4	21
	%	19.0%	42.9%	14.3%	4.8%	19.0%	100.0%
	Female	1	2	2	0	0	5
	%	20.0%	40.0%	40.0%	.0%	.0%	100.0%
	Total	5	11	5	1	4	26
	%	19.2%	42.3%	19.2%	3.8%	15.4%	100.0%

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward English as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
45 ^b	Science	4	7	5	1	1	18
	%	22.2%	38.9%	27.8%	5.6%	5.6%	100.0%
	Engineering	4	2	3	2	1	12
	%	33.3%	16.7%	25.0%	16.7%	8.3%	100.0%
	Total	8	9	8	3	2	30
	%	26.7%	30.0%	26.7%	10.0%	6.7%	100.0%
46	Science	0	5	11	1	1	18
	%	.0%	27.8%	61.1%	5.6%	5.6%	100.0%
	Engineering	2	4	3	1	2	12
	%	16.7%	33.3%	25.0%	8.3%	16.7%	100.0%
	Total	2	9	14	2	3	30
	%	6.7%	30.0%	46.7%	6.7%	10.0%	100.0%
47	Science	0	4	8	6	0	18
	%	.0%	22.2%	44.4%	33.3%	.0%	100.0%
	Engineering	2	2	6	0	2	12
	%	16.7%	16.7%	50.0%	.0%	16.7%	100.0%
	Total	2	6	14	6	2	30
	%	6.7%	20.0%	46.7%	20.0%	6.7%	100.0%
48	Science	0	4	7	6	1	18
	%	.0%	22.2%	38.9%	33.3%	5.6%	100.0%
	Engineering	2	2	6	0	2	12
	%	16.7%	16.7%	50.0%	.0%	16.7%	100.0%
	Total	2	6	13	6	3	30
	%	6.7%	20.0%	43.3%	20.0%	10.0%	100.0%
49	Science	5	1	9	1	2	18
	%	27.8%	5.6%	50.0%	5.6%	11.1%	100.0%
	Engineering	2	4	3	2	1	12
	%	16.7%	33.3%	25.0%	16.7%	8.3%	100.0%
	Total	7	5	12	3	3	30
	%	23.3%	16.7%	40.0%	10.0%	10.0%	100.0%
50	Science	4	10	2	1	1	18
	%	22.2%	55.6%	11.1%	5.6%	5.6%	100.0%
	Engineering	3	4	3	1	1	12
	%	25.0%	33.3%	25.0%	8.3%	8.3%	100.0%
	Total	7	14	5	2	2	30
	%	23.3%	46.7%	16.7%	6.7%	6.7%	100.0%
51	Science	5	10	2	0	1	18
	%	27.8%	55.6%	11.1%	.0%	5.6%	100.0%
	Engineering	6	1	3	1	1	12
	%	50.0%	8.3%	25.0%	8.3%	8.3%	100.0%
	Total	11	11	5	1	2	30
	%	36.7%	36.7%	16.7%	3.3%	6.7%	100.0%
52	Science	9	6	2	0	1	18
	%	50.0%	33.3%	11.1%	.0%	5.6%	100.0%
	Engineering	8	1	1	1	1	12
	%	66.7%	8.3%	8.3%	8.3%	8.3%	100.0%
	Total	17	7	3	1	2	30
	%	56.7%	23.3%	10.0%	3.3%	6.7%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward English as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
45 ^b	Science	3	8	3	1	0	15
	%	20.0%	53.3%	20.0%	6.7%	.0%	100.0%
	Engineering	5	3	1	1	1	11
	%	45.5%	27.3%	9.1%	9.1%	9.1%	100.0%
	Total	8	11	4	2	1	26
	%	30.8%	42.3%	15.4%	7.7%	3.8%	100.0%
46	Science	0	5	9	0	1	15
	%	.0%	33.3%	60.0%	.0%	6.7%	100.0%
	Engineering	3	5	1	1	1	11
	%	27.3%	45.5%	9.1%	9.1%	9.1%	100.0%
	Total	3	10	10	1	2	26
	%	11.5%	38.5%	38.5%	3.8%	7.7%	100.0%
47	Science	0	6	5	4	0	15
	%	.0%	40.0%	33.3%	26.7%	.0%	100.0%
	Engineering	3	4	3	0	1	11
	%	27.3%	36.4%	27.3%	.0%	9.1%	100.0%
	Total	3	10	8	4	1	26
	%	11.5%	38.5%	30.8%	15.4%	3.8%	100.0%
48	Science	0	5	4	5	1	15
	%	.0%	33.3%	26.7%	33.3%	6.7%	100.0%
	Engineering	3	4	2	0	2	11
	%	27.3%	36.4%	18.2%	.0%	18.2%	100.0%
	Total	3	9	6	5	3	26
	%	11.5%	34.6%	23.1%	19.2%	11.5%	100.0%
49	Science	3	3	6	1	2	15
	%	20.0%	20.0%	40.0%	6.7%	13.3%	100.0%
	Engineering	3	4	2	1	1	11
	%	27.3%	36.4%	18.2%	9.1%	9.1%	100.0%
	Total	6	7	8	2	3	26
	%	23.1%	26.9%	30.8%	7.7%	11.5%	100.0%
50	Science	3	10	0	1	1	15
	%	20.0%	66.7%	.0%	6.7%	6.7%	100.0%
	Engineering	4	4	1	1	1	11
	%	36.4%	36.4%	9.1%	9.1%	9.1%	100.0%
	Total	7	14	1	2	2	26
	%	26.9%	53.8%	3.8%	7.7%	7.7%	100.0%
51	Science	4	10	0	0	1	15
	%	26.7%	66.7%	.0%	.0%	6.7%	100.0%
	Engineering	5	3	1	1	1	11
	%	45.5%	27.3%	9.1%	9.1%	9.1%	100.0%
	Total	9	13	1	1	2	26
	%	34.6%	50.0%	3.8%	3.8%	7.7%	100.0%
52	Science	7	7	0	0	1	15
	%	46.7%	46.7%	.0%	.0%	6.7%	100.0%
	Engineering	7	1	1	1	1	11
	%	63.6%	9.1%	9.1%	9.1%	9.1%	100.0%
	Total	14	8	1	1	2	26
	%	53.8%	30.8%	3.8%	3.8%	7.7%	100.0%

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
37 ^b	Science	2	1	4	7	4	18
	%	11.1%	5.6%	22.2%	38.9%	22.2%	100.0%
	Engineering	1	3	2	3	3	12
	%	8.3%	25.0%	16.7%	25.0%	25.0%	100.0%
	Total	3	4	6	10	7	30
	%	10.0%	13.3%	20.0%	33.3%	23.3%	100.0%
38	Science	2	2	7	3	4	18
	%	11.1%	11.1%	38.9%	16.7%	22.2%	100.0%
	Engineering	2	3	2	2	3	12
	%	16.7%	25.0%	16.7%	16.7%	25.0%	100.0%
	Total	4	5	9	5	7	30
	%	13.3%	16.7%	30.0%	16.7%	23.3%	100.0%
39	Science	2	7	2	6	1	18
	%	11.1%	38.9%	11.1%	33.3%	5.6%	100.0%
	Engineering	3	2	2	2	3	12
	%	25.0%	16.7%	16.7%	16.7%	25.0%	100.0%
	Total	5	9	4	8	4	30
	%	16.7%	30.0%	13.3%	26.7%	13.3%	100.0%
40	Science	2	8	4	3	1	18
	%	11.1%	44.4%	22.2%	16.7%	5.6%	100.0%
	Engineering	1	3	2	2	4	12
	%	8.3%	25.0%	16.7%	16.7%	33.3%	100.0%
	Total	3	11	6	5	5	30
	%	10.0%	36.7%	20.0%	16.7%	16.7%	100.0%
41	Science	1	5	5	5	2	18
	%	5.6%	27.8%	27.8%	27.8%	11.1%	100.0%
	Engineering	1	0	2	5	4	12
	%	8.3%	.0%	16.7%	41.7%	33.3%	100.0%
	Total	2	5	7	10	6	30
	%	6.7%	16.7%	23.3%	33.3%	20.0%	100.0%
42	Science	3	7	5	2	1	18
	%	16.7%	38.9%	27.8%	11.1%	5.6%	100.0%
	Engineering	1	1	3	6	1	12
	%	8.3%	8.3%	25.0%	50.0%	8.3%	100.0%
	Total	4	8	8	8	2	30
	%	13.3%	26.7%	26.7%	26.7%	6.7%	100.0%
43	Science	1	8	4	4	1	18
	%	5.6%	44.4%	22.2%	22.2%	5.6%	100.0%
	Engineering	1	1	3	4	3	12
	%	8.3%	8.3%	25.0%	33.3%	25.0%	100.0%
	Total	2	9	7	8	4	30
	%	6.7%	30.0%	23.3%	26.7%	13.3%	100.0%
44	Science	1	6	5	2	4	18
	%	5.6%	33.3%	27.8%	11.1%	22.2%	100.0%
	Engineering	1	3	3	5	0	12
	%	8.3%	25.0%	25.0%	41.7%	.0%	100.0%
	Total	2	9	8	7	4	30
	%	6.7%	30.0%	26.7%	23.3%	13.3%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by College

Item	SA	A	N	D	SD ^a	Total	
37 ^b	Science	1	1	2	8	3	15
	%	6.7%	6.7%	13.3%	53.3%	20.0%	100.0%
	Engineering	0	2	2	4	3	11
	%	.0%	18.2%	18.2%	36.4%	27.3%	100.0%
	Total	1	3	4	12	6	26
%	3.8%	11.5%	15.4%	46.2%	23.1%	100.0%	
38	Science	1	2	5	4	3	15
	%	6.7%	13.3%	33.3%	26.7%	20.0%	100.0%
	Engineering	1	1	2	4	3	11
	%	9.1%	9.1%	18.2%	36.4%	27.3%	100.0%
	Total	2	3	7	8	6	26
%	7.7%	11.5%	26.9%	30.8%	23.1%	100.0%	
39	Science	1	5	2	6	1	15
	%	6.7%	33.3%	13.3%	40.0%	6.7%	100.0%
	Engineering	1	0	4	3	3	11
	%	9.1%	.0%	36.4%	27.3%	27.3%	100.0%
	Total	2	5	6	9	4	26
%	7.7%	19.2%	23.1%	34.6%	15.4%	100.0%	
40	Science	1	6	3	4	1	15
	%	6.7%	40.0%	20.0%	26.7%	6.7%	100.0%
	Engineering	0	1	2	4	4	11
	%	.0%	9.1%	18.2%	36.4%	36.4%	100.0%
	Total	1	7	5	8	5	26
%	3.8%	26.9%	19.2%	30.8%	19.2%	100.0%	
41	Science	0	4	4	6	1	15
	%	.0%	26.7%	26.7%	40.0%	6.7%	100.0%
	Engineering	1	0	3	3	4	11
	%	9.1%	.0%	27.3%	27.3%	36.4%	100.0%
	Total	1	4	7	9	5	26
%	3.8%	15.4%	26.9%	34.6%	19.2%	100.0%	
42	Science	2	5	4	3	1	15
	%	13.3%	33.3%	26.7%	20.0%	6.7%	100.0%
	Engineering	1	1	3	5	1	11
	%	9.1%	9.1%	27.3%	45.5%	9.1%	100.0%
	Total	3	6	7	8	2	26
%	11.5%	23.1%	26.9%	30.8%	7.7%	100.0%	
43	Science	0	5	5	4	1	15
	%	.0%	33.3%	33.3%	26.7%	6.7%	100.0%
	Engineering	1	1	3	3	3	11
	%	9.1%	9.1%	27.3%	27.3%	27.3%	100.0%
	Total	1	6	8	7	4	26
%	3.8%	23.1%	30.8%	26.9%	15.4%	100.0%	
44	Science	0	3	5	4	3	15
	%	.0%	20.0%	33.3%	26.7%	20.0%	100.0%
	Engineering	1	2	3	5	0	11
	%	9.1%	18.2%	27.3%	45.5%	.0%	100.0%
	Total	1	5	8	9	3	26
%	3.8%	19.2%	30.8%	34.6%	11.5%	100.0%	

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by College

Item		SA	A	N	D	SD ^a	Total
53 ^b	Science	5	12	0	0	1	18
	%	27.8%	66.7%	.0%	.0%	5.6%	100.0%
	Engineering	4	6	0	2	0	12
	%	33.3%	50.0%	.0%	16.7%	.0%	100.0%
	Total	9	18	0	2	1	30
	%	30.0%	60.0%	.0%	6.7%	3.3%	100.0%
54	Science	4	8	5	0	1	18
	%	22.2%	44.4%	27.8%	.0%	5.6%	100.0%
	Engineering	4	5	1	2	0	12
	%	33.3%	41.7%	8.3%	16.7%	.0%	100.0%
	Total	8	13	6	2	1	30
	%	26.7%	43.3%	20.0%	6.7%	3.3%	100.0%
55	Science	4	8	5	0	1	18
	%	22.2%	44.4%	27.8%	.0%	5.6%	100.0%
	Engineering	4	5	1	1	1	12
	%	33.3%	41.7%	8.3%	8.3%	8.3%	100.0%
	Total	8	13	6	1	2	30
	%	26.7%	43.3%	20.0%	3.3%	6.7%	100.0%
56	Science	4	8	5	0	1	18
	%	22.2%	44.4%	27.8%	.0%	5.6%	100.0%
	Engineering	4	5	1	1	1	12
	%	33.3%	41.7%	8.3%	8.3%	8.3%	100.0%
	Total	8	13	6	1	2	30
	%	26.7%	43.3%	20.0%	3.3%	6.7%	100.0%
57	Science	4	2	11	0	1	18
	%	22.2%	11.1%	61.1%	.0%	5.6%	100.0%
	Engineering	4	5	1	1	1	12
	%	33.3%	41.7%	8.3%	8.3%	8.3%	100.0%
	Total	8	7	12	1	2	30
	%	26.7%	23.3%	40.0%	3.3%	6.7%	100.0%
58	Science	4	7	5	1	1	18
	%	22.2%	38.9%	27.8%	5.6%	5.6%	100.0%
	Engineering	4	1	1	5	1	12
	%	33.3%	8.3%	8.3%	41.7%	8.3%	100.0%
	Total	8	8	6	6	2	30
	%	26.7%	26.7%	20.0%	20.0%	6.7%	100.0%
59	Science	1	9	5	2	1	18
	%	5.6%	50.0%	27.8%	11.1%	5.6%	100.0%
	Engineering	3	4	1	2	2	12
	%	25.0%	33.3%	8.3%	16.7%	16.7%	100.0%
	Total	4	13	6	4	3	30
	%	13.3%	43.3%	20.0%	13.3%	10.0%	100.0%
60	Science	2	7	6	1	2	18
	%	11.1%	38.9%	33.3%	5.6%	11.1%	100.0%
	Engineering	3	4	1	1	3	12
	%	25.0%	33.3%	8.3%	8.3%	25.0%	100.0%
	Total	5	11	7	2	5	30
	%	16.7%	36.7%	23.3%	6.7%	16.7%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by College

Item	SA	A	N	D	SD ^a	Total	
53 ^b	Science	4	9	1	0	1	15
	%	26.7%	60.0%	6.7%	.0%	6.7%	100.0%
	Engineering	3	6	1	1	0	11
	%	27.3%	54.5%	9.1%	9.1%	.0%	100.0%
	Total	7	15	2	1	1	26
%	26.9%	57.7%	7.7%	3.8%	3.8%	100.0%	
54	Science	3	8	3	0	1	15
	%	20.0%	53.3%	20.0%	.0%	6.7%	100.0%
	Engineering	3	6	1	1	0	11
	%	27.3%	54.5%	9.1%	9.1%	.0%	100.0%
	Total	6	14	4	1	1	26
%	23.1%	53.8%	15.4%	3.8%	3.8%	100.0%	
55	Science	3	8	2	1	1	15
	%	20.0%	53.3%	13.3%	6.7%	6.7%	100.0%
	Engineering	3	6	1	0	1	11
	%	27.3%	54.5%	9.1%	.0%	9.1%	100.0%
	Total	6	14	3	1	2	26
%	23.1%	53.8%	11.5%	3.8%	7.7%	100.0%	
56	Science	3	7	3	1	1	15
	%	20.0%	46.7%	20.0%	6.7%	6.7%	100.0%
	Engineering	3	6	1	1	0	11
	%	27.3%	54.5%	9.1%	9.1%	.0%	100.0%
	Total	6	13	4	2	1	26
%	23.1%	50.0%	15.4%	7.7%	3.8%	100.0%	
57	Science	3	4	6	1	1	15
	%	20.0%	26.7%	40.0%	6.7%	6.7%	100.0%
	Engineering	3	6	1	0	1	11
	%	27.3%	54.5%	9.1%	.0%	9.1%	100.0%
	Total	6	10	7	1	2	26
%	23.1%	38.5%	26.9%	3.8%	7.7%	100.0%	
58	Science	3	8	2	1	1	15
	%	20.0%	53.3%	13.3%	6.7%	6.7%	100.0%
	Engineering	3	3	1	3	1	11
	%	27.3%	27.3%	9.1%	27.3%	9.1%	100.0%
	Total	6	11	3	4	2	26
%	23.1%	42.3%	11.5%	15.4%	7.7%	100.0%	
59	Science	2	7	3	2	1	15
	%	13.3%	46.7%	20.0%	13.3%	6.7%	100.0%
	Engineering	2	5	1	2	1	11
	%	18.2%	45.5%	9.1%	18.2%	9.1%	100.0%
	Total	4	12	4	4	2	26
%	15.4%	46.2%	15.4%	15.4%	7.7%	100.0%	
60	Science	2	6	4	1	2	15
	%	13.3%	40.0%	26.7%	6.7%	13.3%	100.0%
	Engineering	2	5	2	0	2	11
	%	18.2%	45.5%	18.2%	.0%	18.2%	100.0%
	Total	4	11	6	1	4	26
%	15.4%	42.3%	23.1%	3.8%	15.4%	100.0%	

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward English as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
45 ^b	Master	6	5	5	3	2	21
	%	28.6%	23.8%	23.8%	14.3%	9.5%	100.0%
	Doctorate	2	4	3	0	0	9
	%	22.2%	44.4%	33.3%	.0%	.0%	100.0%
	Total	8	9	8	3	2	30
	%	26.7%	30.0%	26.7%	10.0%	6.7%	100.0%
46	Master	1	6	9	2	3	21
	%	4.8%	28.6%	42.9%	9.5%	14.3%	100.0%
	Doctorate	1	3	5	0	0	9
	%	11.1%	33.3%	55.6%	.0%	.0%	100.0%
	Total	2	9	14	2	3	30
	%	6.7%	30.0%	46.7%	6.7%	10.0%	100.0%
47	Master	1	5	9	4	2	21
	%	4.8%	23.8%	42.9%	19.0%	9.5%	100.0%
	Doctorate	1	1	5	2	0	9
	%	11.1%	11.1%	55.6%	22.2%	.0%	100.0%
	Total	2	6	14	6	2	30
	%	6.7%	20.0%	46.7%	20.0%	6.7%	100.0%
48	Master	1	5	8	4	3	21
	%	4.8%	23.8%	38.1%	19.0%	14.3%	100.0%
	Doctorate	1	1	5	2	0	9
	%	11.1%	11.1%	55.6%	22.2%	.0%	100.0%
	Total	2	6	13	6	3	30
	%	6.7%	20.0%	43.3%	20.0%	10.0%	100.0%
49	Master	6	3	8	2	2	21
	%	28.6%	14.3%	38.1%	9.5%	9.5%	100.0%
	Doctorate	1	2	4	1	1	9
	%	11.1%	22.2%	44.4%	11.1%	11.1%	100.0%
	Total	7	5	12	3	3	30
	%	23.3%	16.7%	40.0%	10.0%	10.0%	100.0%
50	Master	5	10	3	1	2	21
	%	23.8%	47.6%	14.3%	4.8%	9.5%	100.0%
	Doctorate	2	4	2	1	0	9
	%	22.2%	44.4%	22.2%	11.1%	.0%	100.0%
	Total	7	14	5	2	2	30
	%	23.3%	46.7%	16.7%	6.7%	6.7%	100.0%
51	Master	7	8	3	1	2	21
	%	33.3%	38.1%	14.3%	4.8%	9.5%	100.0%
	Doctorate	4	3	2	0	0	9
	%	44.4%	33.3%	22.2%	.0%	.0%	100.0%
	Total	11	11	5	1	2	30
	%	36.7%	36.7%	16.7%	3.3%	6.7%	100.0%
52	Master	11	5	2	1	2	21
	%	52.4%	23.8%	9.5%	4.8%	9.5%	100.0%
	Doctorate	6	2	1	0	0	9
	%	66.7%	22.2%	11.1%	.0%	.0%	100.0%
	Total	17	7	3	1	2	30
	%	56.7%	23.3%	10.0%	3.3%	6.7%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward English as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
45 ^b	Master	5	7	2	2	1	17
	%	29.4%	41.2%	11.8%	11.8%	5.9%	100.0%
	Doctorate	3	4	2	0	0	9
	%	33.3%	44.4%	22.2%	.0%	.0%	100.0%
	Total	8	11	4	2	1	26
	%	30.8%	42.3%	15.4%	7.7%	3.8%	100.0%
46	Master	1	7	6	1	2	17
	%	5.9%	41.2%	35.3%	5.9%	11.8%	100.0%
	Doctorate	2	3	4	0	0	9
	%	22.2%	33.3%	44.4%	.0%	.0%	100.0%
	Total	3	10	10	1	2	26
	%	11.5%	38.5%	38.5%	3.8%	7.7%	100.0%
47	Master	1	8	5	2	1	17
	%	5.9%	47.1%	29.4%	11.8%	5.9%	100.0%
	Doctorate	2	2	3	2	0	9
	%	22.2%	22.2%	33.3%	22.2%	.0%	100.0%
	Total	3	10	8	4	1	26
	%	11.5%	38.5%	30.8%	15.4%	3.8%	100.0%
48	Master	1	7	3	3	3	17
	%	5.9%	41.2%	17.6%	17.6%	17.6%	100.0%
	Doctorate	2	2	3	2	0	9
	%	22.2%	22.2%	33.3%	22.2%	.0%	100.0%
	Total	3	9	6	5	3	26
	%	11.5%	34.6%	23.1%	19.2%	11.5%	100.0%
49	Master	4	5	5	1	2	17
	%	23.5%	29.4%	29.4%	5.9%	11.8%	100.0%
	Doctorate	2	2	3	1	1	9
	%	22.2%	22.2%	33.3%	11.1%	11.1%	100.0%
	Total	6	7	8	2	3	26
	%	23.1%	26.9%	30.8%	7.7%	11.5%	100.0%
50	Master	4	10	0	1	2	17
	%	23.5%	58.8%	.0%	5.9%	11.8%	100.0%
	Doctorate	3	4	1	1	0	9
	%	33.3%	44.4%	11.1%	11.1%	.0%	100.0%
	Total	7	14	1	2	2	26
	%	26.9%	53.8%	3.8%	7.7%	7.7%	100.0%
51	Master	5	9	0	1	2	17
	%	29.4%	52.9%	.0%	5.9%	11.8%	100.0%
	Doctorate	4	4	1	0	0	9
	%	44.4%	44.4%	11.1%	.0%	.0%	100.0%
	Total	9	13	1	1	2	26
	%	34.6%	50.0%	3.8%	3.8%	7.7%	100.0%
52	Master	8	6	0	1	2	17
	%	47.1%	35.3%	.0%	5.9%	11.8%	100.0%
	Doctorate	6	2	1	0	0	9
	%	66.7%	22.2%	11.1%	.0%	.0%	100.0%
	Total	14	8	1	1	2	26
	%	53.8%	30.8%	3.8%	3.8%	7.7%	100.0%

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
37 ^b	Master	3	1	4	8	5	21
	%	14.3%	4.8%	19.0%	38.1%	23.8%	100.0%
	Doctorate	0	3	2	2	2	9
	%	.0%	33.3%	22.2%	22.2%	22.2%	100.0%
	Total	3	4	6	10	7	30
	%	10.0%	13.3%	20.0%	33.3%	23.3%	100.0%
38	Master	4	2	5	5	5	21
	%	19.0%	9.5%	23.8%	23.8%	23.8%	100.0%
	Doctorate	0	3	4	0	2	9
	%	.0%	33.3%	44.4%	.0%	22.2%	100.0%
	Total	4	5	9	5	7	30
	%	13.3%	16.7%	30.0%	16.7%	23.3%	100.0%
39	Master	4	5	2	8	2	21
	%	19.0%	23.8%	9.5%	38.1%	9.5%	100.0%
	Doctorate	1	4	2	0	2	9
	%	11.1%	44.4%	22.2%	.0%	22.2%	100.0%
	Total	5	9	4	8	4	30
	%	16.7%	30.0%	13.3%	26.7%	13.3%	100.0%
40	Master	3	6	4	5	3	21
	%	14.3%	28.6%	19.0%	23.8%	14.3%	100.0%
	Doctorate	0	5	2	0	2	9
	%	.0%	55.6%	22.2%	.0%	22.2%	100.0%
	Total	3	11	6	5	5	30
	%	10.0%	36.7%	20.0%	16.7%	16.7%	100.0%
41	Master	2	3	4	8	4	21
	%	9.5%	14.3%	19.0%	38.1%	19.0%	100.0%
	Doctorate	0	2	3	2	2	9
	%	.0%	22.2%	33.3%	22.2%	22.2%	100.0%
	Total	2	5	7	10	6	30
	%	6.7%	16.7%	23.3%	33.3%	20.0%	100.0%
42	Master	4	4	6	6	1	21
	%	19.0%	19.0%	28.6%	28.6%	4.8%	100.0%
	Doctorate	0	4	2	2	1	9
	%	.0%	44.4%	22.2%	22.2%	11.1%	100.0%
	Total	4	8	8	8	2	30
	%	13.3%	26.7%	26.7%	26.7%	6.7%	100.0%
43	Master	2	6	5	6	2	21
	%	9.5%	28.6%	23.8%	28.6%	9.5%	100.0%
	Doctorate	0	3	2	2	2	9
	%	.0%	33.3%	22.2%	22.2%	22.2%	100.0%
	Total	2	9	7	8	4	30
	%	6.7%	30.0%	23.3%	26.7%	13.3%	100.0%
44	Master	2	7	4	5	3	21
	%	9.5%	33.3%	19.0%	23.8%	14.3%	100.0%
	Doctorate	0	2	4	2	1	9
	%	.0%	22.2%	44.4%	22.2%	11.1%	100.0%
	Total	2	9	8	7	4	30
	%	6.7%	30.0%	26.7%	23.3%	13.3%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
37 ^b	Master	1	2	3	7	4	17
	%	5.9%	11.8%	17.6%	41.2%	23.5%	100.0%
	Doctorate	0	1	1	5	2	9
	%	.0%	11.1%	11.1%	55.6%	22.2%	100.0%
	Total	1	3	4	12	6	26
	%	3.8%	11.5%	15.4%	46.2%	23.1%	100.0%
38	Master	2	2	4	5	4	17
	%	11.8%	11.8%	23.5%	29.4%	23.5%	100.0%
	Doctorate	0	1	3	3	2	9
	%	.0%	11.1%	33.3%	33.3%	22.2%	100.0%
	Total	2	3	7	8	6	26
	%	7.7%	11.5%	26.9%	30.8%	23.1%	100.0%
39	Master	2	2	4	7	2	17
	%	11.8%	11.8%	23.5%	41.2%	11.8%	100.0%
	Doctorate	0	3	2	2	2	9
	%	.0%	33.3%	22.2%	22.2%	22.2%	100.0%
	Total	2	5	6	9	4	26
	%	7.7%	19.2%	23.1%	34.6%	15.4%	100.0%
40	Master	1	4	4	5	3	17
	%	5.9%	23.5%	23.5%	29.4%	17.6%	100.0%
	Doctorate	0	3	1	3	2	9
	%	.0%	33.3%	11.1%	33.3%	22.2%	100.0%
	Total	1	7	5	8	5	26
	%	3.8%	26.9%	19.2%	30.8%	19.2%	100.0%
41	Master	1	2	5	6	3	17
	%	5.9%	11.8%	29.4%	35.3%	17.6%	100.0%
	Doctorate	0	2	2	3	2	9
	%	.0%	22.2%	22.2%	33.3%	22.2%	100.0%
	Total	1	4	7	9	5	26
	%	3.8%	15.4%	26.9%	34.6%	19.2%	100.0%
42	Master	3	2	6	5	1	17
	%	17.6%	11.8%	35.3%	29.4%	5.9%	100.0%
	Doctorate	0	4	1	3	1	9
	%	.0%	44.4%	11.1%	33.3%	11.1%	100.0%
	Total	3	6	7	8	2	26
	%	11.5%	23.1%	26.9%	30.8%	7.7%	100.0%
43	Master	1	3	6	5	2	17
	%	5.9%	17.6%	35.3%	29.4%	11.8%	100.0%
	Doctorate	0	3	2	2	2	9
	%	.0%	33.3%	22.2%	22.2%	22.2%	100.0%
	Total	1	6	8	7	4	26
	%	3.8%	23.1%	30.8%	26.9%	15.4%	100.0%
44	Master	1	4	5	5	2	17
	%	5.9%	23.5%	29.4%	29.4%	11.8%	100.0%
	Doctorate	0	1	3	4	1	9
	%	.0%	11.1%	33.3%	44.4%	11.1%	100.0%
	Total	1	5	8	9	3	26
	%	3.8%	19.2%	30.8%	34.6%	11.5%	100.0%

Case Study I Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
37 ^b	Master	6	12	0	2	1	21
	%	28.6%	57.1%	.0%	9.5%	4.8%	100.0%
	Doctorate	3	6	0	0	0	9
	%	33.3%	66.7%	.0%	.0%	.0%	100.0%
	Total	9	18	0	2	1	30
	%	30.0%	60.0%	.0%	6.7%	3.3%	100.0%
38	Master	6	8	4	2	1	21
	%	28.6%	38.1%	19.0%	9.5%	4.8%	100.0%
	Doctorate	2	5	2	0	0	9
	%	22.2%	55.6%	22.2%	.0%	.0%	100.0%
	Total	8	13	6	2	1	30
	%	26.7%	43.3%	20.0%	6.7%	3.3%	100.0%
39	Master	6	8	4	1	2	21
	%	28.6%	38.1%	19.0%	4.8%	9.5%	100.0%
	Doctorate	2	5	2	0	0	9
	%	22.2%	55.6%	22.2%	.0%	.0%	100.0%
	Total	8	13	6	1	2	30
	%	26.7%	43.3%	20.0%	3.3%	6.7%	100.0%
40	Master	6	8	4	1	2	21
	%	28.6%	38.1%	19.0%	4.8%	9.5%	100.0%
	Doctorate	2	5	2	0	0	9
	%	22.2%	55.6%	22.2%	.0%	.0%	100.0%
	Total	8	13	6	1	2	30
	%	26.7%	43.3%	20.0%	3.3%	6.7%	100.0%
41	Master	6	4	8	1	2	21
	%	28.6%	19.0%	38.1%	4.8%	9.5%	100.0%
	Doctorate	2	3	4	0	0	9
	%	22.2%	33.3%	44.4%	.0%	.0%	100.0%
	Total	8	7	12	1	2	30
	%	26.7%	23.3%	40.0%	3.3%	6.7%	100.0%
42	Master	6	5	4	4	2	21
	%	28.6%	23.8%	19.0%	19.0%	9.5%	100.0%
	Doctorate	2	3	2	2	0	9
	%	22.2%	33.3%	22.2%	22.2%	.0%	100.0%
	Total	8	8	6	6	2	30
	%	26.7%	26.7%	20.0%	20.0%	6.7%	100.0%
43	Master	2	9	3	4	3	21
	%	9.5%	42.9%	14.3%	19.0%	14.3%	100.0%
	Doctorate	2	4	3	0	0	9
	%	22.2%	44.4%	33.3%	.0%	.0%	100.0%
	Total	4	13	6	4	3	30
	%	13.3%	43.3%	20.0%	13.3%	10.0%	100.0%
44	Master	2	8	4	2	5	21
	%	9.5%	38.1%	19.0%	9.5%	23.8%	100.0%
	Doctorate	3	3	3	0	0	9
	%	33.3%	33.3%	33.3%	.0%	.0%	100.0%
	Total	5	11	7	2	5	30
	%	16.7%	36.7%	23.3%	6.7%	16.7%	100.0%

Case Study II Frequencies and Distributions of Teaching Staff on Attitude toward Modern Standard Arabic and English bilingually as a Medium of Instruction by Qualification

Item		SA	A	N	D	SD ^a	Total
37 ^b	Master	4	9	2	1	1	17
	%	23.5%	52.9%	11.8%	5.9%	5.9%	100.0%
	Doctorate	3	6	0	0	0	9
	%	33.3%	66.7%	.0%	.0%	.0%	100.0%
	Total	7	15	2	1	1	26
	%	26.9%	57.7%	7.7%	3.8%	3.8%	100.0%
38	Master	4	8	3	1	1	17
	%	23.5%	47.1%	17.6%	5.9%	5.9%	100.0%
	Doctorate	2	6	1	0	0	9
	%	22.2%	66.7%	11.1%	.0%	.0%	100.0%
	Total	6	14	4	1	1	26
	%	23.1%	53.8%	15.4%	3.8%	3.8%	100.0%
39	Master	4	8	2	1	2	17
	%	23.5%	47.1%	11.8%	5.9%	11.8%	100.0%
	Doctorate	2	6	1	0	0	9
	%	22.2%	66.7%	11.1%	.0%	.0%	100.0%
	Total	6	14	3	1	2	26
	%	23.1%	53.8%	11.5%	3.8%	7.7%	100.0%
40	Master	4	7	4	1	1	17
	%	23.5%	41.2%	23.5%	5.9%	5.9%	100.0%
	Doctorate	2	6	0	1	0	9
	%	22.2%	66.7%	.0%	11.1%	.0%	100.0%
	Total	6	13	4	2	1	26
	%	23.1%	50.0%	15.4%	7.7%	3.8%	100.0%
41	Master	4	5	5	1	2	17
	%	23.5%	29.4%	29.4%	5.9%	11.8%	100.0%
	Doctorate	2	5	2	0	0	9
	%	22.2%	55.6%	22.2%	.0%	.0%	100.0%
	Total	6	10	7	1	2	26
	%	23.1%	38.5%	26.9%	3.8%	7.7%	100.0%
42	Master	4	6	2	3	2	17
	%	23.5%	35.3%	11.8%	17.6%	11.8%	100.0%
	Doctorate	2	5	1	1	0	9
	%	22.2%	55.6%	11.1%	11.1%	.0%	100.0%
	Total	6	11	3	4	2	26
	%	23.1%	42.3%	11.5%	15.4%	7.7%	100.0%
43	Master	1	7	3	4	2	17
	%	5.9%	41.2%	17.6%	23.5%	11.8%	100.0%
	Doctorate	3	5	1	0	0	9
	%	33.3%	55.6%	11.1%	.0%	.0%	100.0%
	Total	4	12	4	4	2	26
	%	15.4%	46.2%	15.4%	15.4%	7.7%	100.0%
44	Master	1	7	4	1	4	17
	%	5.9%	41.2%	23.5%	5.9%	23.5%	100.0%
	Doctorate	3	4	2	0	0	9
	%	33.3%	44.4%	22.2%	.0%	.0%	100.0%
	Total	4	11	6	1	4	26
	%	15.4%	42.3%	23.1%	3.8%	15.4%	100.0%

Hypothesis Questions Analysis

Question No.	Language of instruction	Chi-Square	Degree of freedom	Alpha	H ₀	H ₁
Students Q1	English	187.431	4	9.49	Reject	Accept
Teaching staff Q1	English	11.319	4	9.49	Reject	Accept
Students Q2	Arabic	372.723	4	9.49	Reject	Accept
Teaching staff Q2	Arabic	8.233	4	9.49	Accept	Reject
Students Q3	Arabic/English	186.294	4	9.49	Reject	Accept
Teaching staff Q3	Arabic/English	7.086	4	9.49	Accept	Reject
Students A Q4.1 a	Education	138.125	12	21.026	Reject	Accept
Students A Q4.1 b	Gender	15.179	4	9.49	Reject	Accept
Students A Q4.1 c	College	45.674	4	9.49	Reject	Accept
Students A Q4.1 d	Ethnic origin	70.376	4	9.49	Reject	Accept
Students E Q4.2 a	Education	105.178	12	21.026	Reject	Accept
Students E Q4.2 b	Gender	33.013	4	9.49	Reject	Accept
Students E Q4.2 c	College	11.369	4	9.49	Reject	Accept
Students E Q4.2 d	Ethnic origin	41.356	4	9.49	Reject	Accept
Students B Q4.3 a	Education	119.372	12	21.026	Reject	Accept
Students B Q4.3 b	Gender	19.088	4	9.49	Reject	Accept
Students B Q4.3 c	College	77.014	4	9.49	Reject	Accept
Students B Q4.3 d	Ethnic origin	41.928	4	9.49	Reject	Accept
Teaching staff A Q4.1 a	Education	24.550	4	9.49	Reject	Accept
Teaching staff A Q4.1 b	Gender	42.788	4	9.49	Reject	Accept
Teaching staff A Q4.1 c	College	21.016	4	9.49	Reject	Accept
Teaching staff E Q4.2 a	Education	17.286	4	9.49	Reject	Accept
Teaching staff E Q4.2 b	Gender	27.546	4	9.49	Reject	Accept
Teaching staff E Q4.2 c	College	22.362	4	9.49	Reject	Accept
Teaching staff B Q4.3 a	Education	27.371	4	9.49	Reject	Accept
Teaching staff B Q4.3 b	Gender	78.155	4	9.49	Reject	Accept
Teaching staff B Q4.3 c	College	29.8344	4	9.49	Reject	Accept