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Code-Mixing of Arabic and English in a University

Science-Teaching Context:

Frequency, Grammatical Categories, and Attitudes

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ABSTRACT

Code-Mixing of Arabic and English in a University Science-teaching Context:

Frequency, Grammatical Categories, and Attitudes

Hana A. El-Fiki

This study explores a language contact phenomenon in the monolingual Arabic-speaking country of Libya. It investigates aspects of Arabic-English code-mixing in a university scientific and technical teaching context. While the language policy in Libya is one which promotes the maintenance and purification of Arabic, and there are ideological barriers against the use of foreign languages (Al-Galley, 1989), English is a guest language that plays an important role in attaining some educational goals, especially at post-secondary levels. For the purpose of this investigation, code-mixing is defined as: the verbal behavior of embedding English words, phrases, sentences, or constituents in Arabic-based instruction. The present study addressed itself to three questions: 1. *To what extent does the phenomenon of code-mixing exist in the language of instruction?* 2. *Which grammatical categories are susceptible to being rendered by English?* and 3. *What are the general trends of students' attitudes toward code-mixing?* Using quantitative and qualitative methods, the study provides findings for each of the questions addressed. For the first two questions, samples of university lecturers' speech were audio-taped, transcribed, and analyzed on the basis of utterances. Frequency counts for utterances that featured English elements were taken and compared to those of Arabic-only. Fifty-two percent of the total number of utterances in the examined speech were code-mixed. Code-

mixing was, therefore, a dominant feature. In addition, to answer question two, all of the English elements that occurred within the Arabic-English mixed utterances were grammatically classified, and counted within these classifications. The noun and noun phrase categories (58% and 34%) respectively were the most susceptible to being rendered in English; other grammatical categories (clauses, adjectives, adjective phrases, verbs, verb phrases, adverbs, prepositions and conjunctions) were found to be of comparatively rare susceptibility (8%). Regarding the question of student attitudes toward code-mixing (question three), based on a questionnaire administered to students attending the examined lectures, followed by extensive discussions of the issues raised by the questionnaire, the study reveals that students understand the important role that English plays in their fields of study, and thus have positive attitudes toward code-mixing as represented in their professors' speech.

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CHAPTER 1

INTRODUCTION

Language contact takes place for many reasons (social, political, geographical or other), causing some form of bilingualism to occur. Education and culture have always been among the channels through which languages come in contact (Grosjean, 1982). In this regard, Grosjean points out that throughout history there were times when particular languages and cultures dominated the life of peoples across the world. For example, Greek was the language of education at the time of the Roman Empire; Latin dominated the cultural life as Christianity spread; French dominated the cultural life in Europe during the period of the Crusades and that of Louis XIV; and Italian was prominent during the Renaissance. At the present time, English dominates the fields of science and technology. In the future, it is said that *"one cannot completely exclude English from playing a vital role in global language policies. Of course, each country will determine the dose and intensity of English in its language policies"* (Kachru, 1994, p. 150). Today, in the educational arena of many countries in the world, while English is not the native tongue, it is increasingly used as a language of instruction, especially for university-level education (Flowerdew and Miller, 1996).

The spread of English, and its domination of scientific and technical fields, made the tendency to insert English words, phrases, and sentences in other base languages a common practice, particularly in specialized discourse. The literature on language contact phenomena refers to this tendency as code-mixing or code-switching. This phenomenon

is an important aspect of bilingualism , and it is a natural occurrence when bilingual speakers engage in discourse. Code-mixing is a topic that has attracted a lot of research over the past two decades, and has been addressed from a number of perspectives: sociolinguistic, psycholinguistic, neurolinguistic, formal and functional perspectives (Cheng and Butler, 1989). Some research (Valdes-Fallis, 1976; Truchot, 1997; Hannigan, 1986) supports the argument that code-mixing is generally field or topic-bound, and that in scientific and technical domains, specialists and participants tend to use English and often code-mix, especially in oral communication.

While considerable research has focused on code-mixing as a language contact phenomenon in officially bi-or multi-lingual countries, comparatively little interest has been raised in investigating language phenomena or possible silent linguistic conflicts existing in officially monolingual countries. This inclination causes a gap in the research field. The present study aims to fill this gap by examining the contact phenomenon of code-mixing in a monolingual country that has a history of linguistic resistance against foreign elements being incorporated into its national heritage language. The study examines the code-mixing of Arabic and English in the country of Libya, in lectures given on scientific and technical topics to undergraduate university students. The phenomenon of code-mixing is investigated here with reference to: frequency of occurrence, grammatical categories susceptible to being rendered in English, and students' attitudes toward the mixing of English with Arabic in lectures.

The environment of the study is particularly different from those of other studies on code-mixing or code-switching, therefore specific variables come into play. However, a broad understanding of the language situation in Libya is necessary to provide an essential context for this study of code-mixing as a speech behavior in the instructional contexts at Libyan universities.

CHARACTERISTICS OF THE STUDY ENVIRONMENT

Geographic location:

Facing the Mediterranean to the north, Libya is the sixteenth largest country in the world, and covers an area of 1,760,000 square kilometers; a territory as large as France, Spain, Italy and the former West Germany combined. It borders Egypt on the east, Chad and Niger on the south, and Algeria and Tunisia on the west. This geographic location puts the country in the heart of the Arab world. At the present time, the population is estimated to be approximately five million. The people are a homogeneous ethnic group, of mixed Arab and Berber descent who all speak Arabic (Nydell, 1987).

Historical overview:

Historically, Libya experienced Turkish Moslim rule (from 1551 to 1912) and Italian colonization (from 1912 to1950). The Italian colonization affected the country in many ways, such as the stricture of city life, although the colonial exclusionary and discriminatory policies served in protecting Libyan society from a heavy imprint of Italian culture. As a result, Libya escaped the dilemma of bilingualism and the problems of

cultural dualism that have clouded other nations which have undergone European colonization (Nyrop, Anthony, Benderly, Cover, Parker, & Teleki, 1973). In this regard, Nyrop et al. further explain that before independence Italian was the language of education in all schools. While Italian culture and social subjects were taught, Arabic was offered at schools only as a subject (a second language course). Most families refused to enroll their children in Italian schools in order to protect them from being exposed to foreign values that might undermine the Moslem way of life. Instead, they depended on the traditional religious education that was available. Since independence in 1951, the Libyan government has continually strive to enhance the public awareness of Islamic and Arabic traditions, and to eliminate the Western cultural influence, through its cultural, educational and information policies.

The national language:

Libya is essentially a monolingual country where Arabic is the official language. Official language policy in Libya promotes Arabization by means of exclusive use of Arabic in all contexts. There are basically two varieties of Arabic used in this society: Classical Arabic and the spoken Libyan dialect. These two varieties stand in what Ferguson (1959) rerfers to as a 'diglossic' relationship (a relationship between two varieties of the same language). The Classical Arabic variety, which is sometimes referred to as Modern Standard Arabic, being remarkably uniform throughout the twenty countries of the Arab world, is the prestigious variety and the bearer of the literary heritage; thus being the High variety. It is the variety that is transmitted in both written and spoken forms, and is used for literature, newspapers, broadcasting, public speeches

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and in formal settings. Moreover, Classical Arabic is learned in formal educational contexts. In contrast, the Libyan Arabic dialect is the language of the home, everyday conversations and of folk literature. It is acquired as the first language and transmitted only orally; thus being the Low variety. This dialect differs from the formal variety in its wider flexibility in word order and on the level of phonology. So, while the Libyan dialect is spoken by everyone, Classical Arabic is not; however, it is understood by all.

Despite people's varying competence in Classical Arabic, they have a strong pride in, and love for this language. Nydell (1987) reports that Arabs are secure in their knowledge that Arabic is superior to all other languages, and that they base this belief on arguments such as: it was the medium chosen by God for His message through the Koran; it has an unusually large vocabulary; it has a grammar that allows for easy coining of new words, so that borrowing from other languages is less common; and that it is beautiful in the sense that its structure easily lends itself to rhythm and rhyme. Such societal beliefs are often stressed and met with conformity. In Libyan Arab Moslem society it is sometimes difficult to separate religion, culture, and the Arabic language in everyday life. The social norms and rules of appropriate verbal behavior for everyday activities are dictated by religious and Koranic instructions in Arabic; therefore they are seen to be best maintained through the Arabic language. These norms extend to include beliefs about Arabic, being the language of the Koran, is suitable for all needs and all times and that it adds spiritual value to the act of communication when it is used. Moreover, the use of Arabic in Libya not only expresses linguistic meaning, but it is also reflective of a

religious and cultural affiliation that is highly valued by participants in society, and that one must display in everyday activities.

Compared to other Arab nations like Egypt or Saudi Arabia, where English is seen and used alongside Arabic on road signs, shops, etc., such public use of English in Libya is rare. Furthermore, on an administrative level, all government records are kept in Arabic. Documents that are not written in Arabic are not considered official and people sometimes refuse to sign them. However, despite the protective language policy in Libya, a form of linguistic invasion in certain fields, like those of science and technology, is taking place, and resistance seems to be difficult to maintain.

The Invasion of English:

The world-wide spread of English has found its way into Libya through many gateways that are difficult to protect. Business, industry, the media, education and the practices of science and technology are all gateways through which English is penetrating society. In business and industry, English is commonly introduced at the level of applied research as well as in the technical procedures of manufacturing. It is also introduced at the levels of management and marketing, where products and services are linguistically arranged for the international market. Easy access to international media also provides many opportunities for contact with the English language and culture (e.g. through films and television programs). Moreover, the government itself has unintentionally opened doors to the penetration of English. As part of the educational and developmental plans in Libya, the government has encouraged and subsidized study abroad in many fields (for qualified students and citizens working at national firms and companies), particularly

science and technology. Most of those who studied abroad went to English-speaking countries. When they returned to Libya after completing their higher degrees, they gained positions relevant to their studies. The educational system in Libya also provides exposure to English by offering English language courses in schools and universities in preparing for diplomas in some fields. Some university level teaching and teaching materials (textbooks and references) are dependent on English as a medium, so that while students practice in their studies, they learn English and use it. Other widely opened gateways for English in Libya, and everywhere in the world, are the fields of science and technology. In this regard, Truchot (1997) notes that English is the language of more than eighty percent (80%) of the existing scientific journals, and the language of the information recorded in data banks. Therefore, published articles and available information that are used everywhere as references are mostly in English. As a consequence, this dominance of English dictates the language practices of the scientific and technical fields.

Having provided a general picture of the language situation for the larger context of this study, it can be concluded that English is entering Libyan society through channels that are hard to block. The language policy in Libya promotes the maintenance and "purification" of Arabic, but at the same time it allows the use of English as an instrument in attaining some national developmental goals. In public discourse (media, government documents, etc.) the notion of Arabic-English bilingualism in Libya is linked to Western cultural threats, European colonialism, and challenges to the preservation of the Arabic identity. In much of the discourse, the focus is only on Arabic as the language

that should be used in all contexts. Although the role of English cannot be denied in the scientific and technical domains, especially at university-level education, this issue is left undiscussed, and thus the situation seems to lack an objective viewpoint. The use of English in Libyan society is a topic that is quite sensitive and is not usually discussed with ease or comfort because there are emotional and subjective issues related to it. This research is a formal study based on the premise that it is time that this silence be broken, and that the knowledge derived from this investigation may possibly support a situation of learning and teaching that relies on the use of a second language, in spite of the linguistically charged atmosphere of the study environment.

Research site:

The study was conducted at two universities in the city of Benghazi: Garyounis University and Al-Arab Medical University. Garyounis University was opened in the mid-1950s after Libya's independence in 1951. Operating under the Ministry of Education it was the only university in Benghazi that had undergone, and is still undergoing expansion in response to the Libyan government's policy of expanding education in general. The medical faculties were part of Garyounis University until the early 1980s. In 1983-84, with the increasing rate of student enrollment and in compliance with the government's expansion plans, the medical faculties were moved to a new campus area in Benghazi, thus establishing the Arab Medical University. Extending over a large area, the university campus comprises a number of new purpose-built buildings that are well equipped. It too operates under the auspices of the Ministry of Education.

These universities are the only two in the city of Benghazi, and like all Libyan universities they are governmental institutions. As the government tends to maintain a balance among all universities in terms of academic capacities, student enrollment rate and financial support, both Garyounis University and Al-Arab Medical University are very much representative of other universities in the country. This study took place at different faculties and departments: the departments of biology and mathematics, in the faculty of science at Garyounis University; the department of mechanical engineering, in the faculty of engineering at Garyounis University; and the department of physics, in the faculty of medicine at Al-Arab Medical University.

Statement of the problem:

The Ministry of Education's policy decrees that the language of instruction be Arabic. Efforts are made by educational authorities and the administrations of both institutions to encourage and enforce linguistic purity to a certain degree. However, in practice, there is a mixed code of English and Arabic used in most scientific and technical lectures at both universities. In addition, most of the course materials, such as textbooks, references, and audio-visual materials used in scientific and technical courses are available only in English. In most cases when students first enter their university programs, their English language skills are not usually sufficient enough to handle the curriculum. Therefore, they are put into a situation where they must somehow help themselves to learn, study and benefit through that Arabic-English mixed mode of instruction. How this situation could develop, and how much of a threat such a case of bilingual education poses to the aim of linguistic purity in education, are issues of concern to many national educators and

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language planners in Libya. They are also issues that may result in considerable tension around the role of English in the universities' instructional settings. However, the present study concerns itself more with the students' perspectives of the language situation. It explores the extent to which English is being mixed with Arabic in the speech of some university professors while lecturing; the grammatical categories susceptible to being rendered by English; and students' attitudes toward the Arabic-English mixed mode of instruction.

REVIEW OF THE LITERATURE

CONCEPTS OF CODE MIXING

When language communities come in contact, the result is usually the use of two or more language systems in various combinations. These different combinations can be considered *code-mixing*, whereby the elements of two language systems mix together, resulting in the creation of a new system. The use of the terms *code* and *mixing* is traditional in the study of linguistics. While *code* is a neutral term for any linguistic variety, code-mixing is defined in the *Dictionary of Linguistics and Phonetics* as a linguistic behavior that *"involves the transfer of linguistic elements from one language into another"* (Crystal, 1997, p. 66). The literature on language contact phenomena presents patterns of language-mixing and reflects efforts to distinguish between them. It discusses issues and types of language combinations with reference to the terms: code-mixing; code-switching; code alteration; borrowing; interferenc; and integration. The present study concerns itself with code-mixing as will be defined below.

A major problem in exploring this field of research is that there is a dispute over the concepts of the terms which are assigned to distinguish each type of language-mix. In this regard Romaine (1995) commented that *"Problems of terminology continue to plague the study of language contact phenomena with terms such as code-switching, mixing, borrowing not being used by all researchers in the same way or even defined at all, which makes comparison across studies difficult"*(p. 180). Code-mixing is defined differently. Some scholars distinguish it from the concept of code-switching; others do

not. Adding to the problem is the overlap and the lack of distinction between code-mixing/code-switching and other terms like borrowing. Table 1.1 below illustrates some of these concepts as used by scholars in the field.

Table 1.1 : Illustration of concepts of terms used in research.

Scholar	Code-switching	Code-mixing	Borrowing
Cheng and Butler (1989, p. 294)	"Code-switching occurs at the lexical level as well as the syntactic, morphological and phonological levels of language."	N/A	N/A
Scotton and Ury (1977, p. 5)	" CS is the use of two or more linguistic varieties in the same conversation or interaction."	N/A	N/A
Kamwangamalu (1992, p. 173-174)	"...where the alternating use of two languages is intersentential."	"...where the alternating use of two languages is intrasentential."	"...entails integration of linguistic units from one language into the linguistic system of the other language. The linguistic units thus integrated become part of the linguistic system of the borrowing language."
Annamalai (1989, p. 48)	"...switching is usually done for the duration of a unit of discourse."	" In mixing the speech event is constant, with no variation in participants or topic, and all participants have knowledge of both languages. Moreover, mixing is not normally done with full sentences from another language."	N/A
Grosjean (1982, p. 145)	"...the alternate use of two or more languages in the same utterance or conversation."	N/A	"...adapting a word to the base language that happens on the level of the individual (speech borrowing) or the community national level (language borrowing)."
Bokamba (1989, p. 278)	"...is the mixing of words, phrases and sentences from distinct grammatical (sub-) systems across sentence boundaries within the same speech event. In other words CS is intersentential switching."	" ..is embedding of various linguistic units such as affixes (bound morphemes),words (un-bound morphemes), phrases and clauses from two grammatical (sub-) systems within the same sentence and speech event. That is CM is intrasentential switching."	N/A

The terms code-switching (CS) and code-mixing (CM) are used by scholars to refer to different concepts. For Cheng and Butler (1989), Scotton and Ury (1977) and Grosjean (1982), there is no distinction between CS and CM. Their concept of CS extends to include intrasentential switching which is labeled differently in other studies. Kamwangamalu (1992), Annamalai (1989), and Bokamba's (1989) studies are examples of cases where a distinction is made between CS and CM on the basis of the grammatical categories involved. Annamalai's (1989) description of CM extends further to include conditions related to participants and the topic in the speech events. However, his description of CS falls somewhat short in considering instances of intersentential switching that occurs as part of the unit of discourse. Moreover, concerning the distinction among borrowing, code-switching and code-mixing, Gardner-Chloros (as cited in Scotton, 1990) explains that there are difficulties in separating the concepts of CS and borrowing due to the fact that there are no categorical criteria to separate them. She lists three tendencies of borrowing: being more likely brief, linguistically integrated, and filling a semantic gap in the matrix language; however she notes that such tendencies are also applicable to cases of switching. Hence, on this distinction, it is concluded that it is *"of a 'more or less' and not an absolute nature"*(p. 101).

In regards to the disagreement over the terms and concepts used, scholarly views vary on the issue of establishing a distinction. For example, Eastman (1992) reported a common theme found in twelve papers on language contact phenomena. This theme, he states, is that *"efforts to distinguish codeswitching, codemixing and borrowing are*

doomed"(p. 1). Tay (1989) stresses that the distinction cannot be maintained. Conversely, some researchers, for example, Kachru (1983) and Sridhar and Sridhar (1980), hold the view that such distinction is crucial and must be made. Romaine (1995) and Eastman (1992) suggest that one should be freed from the need to categorize instances of language mix and go beyond such distinctions in order to understand more about the processes involved in language contact. However, in this field of research, it is a tradition that each writer presents his or her definitions of the terms used in the discussion.

The operational definitions employed in the study:

Many researchers (Goke-Pariola, 1983; Ennaji, 1995; Boyle, 1997; and Gibbons, 1983) have used the term code-mixing in their studies to refer to both intersentential and intrasentential language mixing. In this present study too, the term is used in the same sense.

- **Code-mixing:** is the verbal behavior of embedding English words, phrases, sentences, or constituents in Arabic-based instruction.

- **Arabic:** refers to all the varieties (spoken and written) of Arabic used by speakers and writers.

- **Bilingualism:** refers to the use of two or more language systems rather than varieties within one language system.

These definitions were particularly adopted for two reasons: to maintain operational practicality throughout the procedure and data analysis of the study; and to maintain focus on the scope of this research, which is the Arabic-English aspect of the contact phenomenon examined.

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CODE-MIXING RESEARCH

Despite the dispute over the terms and distinctions, researchers have explored the phenomenon of code-mixing from different perspectives. The various inquiries on the phenomenon could be discussed under three major headings: the syntactic features of code-mixing, the functional aspects of code-mixing, and attitudes towards code-mixing.

The Syntactic Features of Code-Mixing

From the linguistic perspective, some scholars (Kachru, 1978, 1982; Poplack, 1980; Lipski, 1978; Pfaff, 1979; and Sridhar, & Sridhar, 1980) addressed questions about the structural features of mixed-code systems. Their major concern was to find an answer to the question of what a well-formed mixed sentence is. These linguists put a lot of effort into finding grammatical descriptions for the mixed-code styles, although participants who immerse in the interaction are often unaware of when and how they themselves are mixing codes. Looking for grammaticality in instances where two different grammatical systems were joined in single speech events, they analyzed mixed speech of more than one speaker in social settings, and proposed some linguistic constraints that are assumed to govern the mixed language systems. Annamalai (1989) explains that the assumption behind this proposal is that universal constraints are likely to exist because code-mixing is a universal phenomenon, by means of that any two languages can be mixed by speakers, and that the mixed system is seen to have the properties of a natural language. According to Bokamba (1989) and Romaine's (1995) discussions of the issue, the proposed syntactic constraints are as follows:

- *free morpheme constraints*: predicting that a switch between a bound and a free morpheme may not occur unless the free morpheme had already integrated into the language of the bound one.

- *equivalence constraints*: predicting that a switch will occur at points of the structure where the two languages will fit together grammatically and map into each other. That is, switching may occur between sentence elements which are similarly ordered in the two languages mixed.

- *morphological constraints*: predicting that switches may not occur between structures of main and auxiliary verbs, subjects and verbs, adjectives and nouns, possessive pronouns and nouns, infinitival constructions and boundaries of prepositional phrases.

- *size of constituent constraints*: predicting that switches are more likely to appear in major constituent boundaries. In other words, major constituents like verb phrases, noun phrases, and sentences are more frequently switched than other smaller constituents like determiners, adjectives , verbs and nouns.

These syntactic constraints were further examined using different language pairs. However, several studies (Bokamba, 1988, 1989; Berg-Seligson, 1986; Scotton, 1988; Mustafa, & Al-khatib, 1994; Kamwangamalu, 1987), provided examples of code-mixing that remain unaccounted for by the set of four constraints listed above. On the basis of the inadequacy of these proposed constraints to account for all instances of code-mixing, Bokamba (1989) and Annamalai (1989) argue that current syntactic constraints research is of limited predictive value outside the specific language contexts in which it was carried out. They point out that it is premature to characterize these constraints as

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universals. A broader synthasis of current research would be required. They also explain that the flaws in this research are caused by failure to account for many socio-psychological and sociolinguistic factors involved in code-mixing.

The Functional Aspects of Code-Mixing

Examining the phenomenon of code-mixing from another perspective, a group of socio-linguistically oriented scholars (Gumperz, 1971; Hoffman, 1991; Gal, 1979; Di Pietro, 1977; Scotton, 1983, 1988, 1989) raised interest in investigating the functional aspects of this particular style of speech. Maintaining an interpretive approach in their studies, they addressed the question of why code-mixing and code-switching take place. Mixing codes seems to occur automatically while the speakers' main concern is to communicate effectively (Gumperz, 1982). In this group of sociolinguistic inquiries, code-mixing is regarded as a strategy and a meaningful style employed by participants to convey linguistic and social information. It is also regarded as an additional option to the language choices with which bilingual and multilingual individuals are endowed.

Summarizing conclusions reached in this area of investigation, Grosjean (1982) presented a number of communicative functions that the strategy of code-mixing is seen to fulfill in speech events:

- *Fill a linguistic need for lexical item, set phrase, discourse marker, or sentence filler*

- *Continue the last language used (triggering)*

- *Quote someone*

- *Specify addressee*

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- *Qualify message: amplify or emphasize ("topper" in argument)*

- *Specify speaker involvement (personalize message)*

- *Mark and emphasize group identity (solidarity)*

- *Convey confidentiality, anger, annoyance*

- *Exclude someone from conversation*

- *Change role of speaker: raise status, add authority, show expertise* (p. 152).

One basic issue in the discussion of code-mixing from the functional viewpoint was 'transactional' vs. 'metaphorical switching' introduced by Blom and Gumperz (1972). They proposed these concepts to distinguish or characterize instances of language mixing. Transactional switching (sometimes referred to as situational code-switching) is when the use of a particular style is imposed by the demands of the situation. For example, in some speech communities, people tend to use the local dialect in informal settings or when the exchange concerns certain topics (like those about family members). They switch to the standard variety in formal settings or when the topic is changed to a formal one. Metaphorical switching (sometimes referred to as non-situational switching) concerns the communicative effect the speaker intends to convey. It is a discourse strategy speakers employ in speech events to achieve certain interactional effects and to attain their communicative goals. It carries an implicit sociolinguistic meaning and intention at specific points during a conversation. In metaphorical switching, the when and how aspects depend on the speaker's personal intent and judgment of the situation, as well as his or her linguistic competence. However, this distinction is seen to provide two broad categories into which code-mixing at almost every corner of conversational life could fall.

The sociolinguistic investigation of code-mixing also shed light on the social significance of code choice. Scotton (1983) explored this aspect of code-mixing and proposed a model for interpreting code choice that is based on a theory of markedness. To her, code-mixing is not a function of the situation per se but also of negotiations of rights and obligations between participants. According to Scotton's model it is assumed that underlying the human ability to use code selection indexically is an innate markedness theory that is part of the individual's communicative competence. The details of each speaker's actual markedness readings are speech-community specific; therefore markedness judgments are community-based. An unmarked choice is that which communicates a normative expected balance of rights and obligations between participants in an exchange. Which choice is unmarked depends on the balance of the conventionalized exchange. Moreover, unmarked choices are not fixed , they vary across exchanges, and can be identified as the most frequent choices in particular exchanges. Hence, unmarked choices are not chosen by speakers, it is the marked choice that is made when attempting to negotiate balances of rights and obligations other than the expected one. Scotton views code-switching in terms of marked, unmarked, or exploratory choice in that she identifies markedness as a gradient rather than a categorical concept. In later research, Scotton (1989) adds that code-switching as an unmarked choice would only be promoted in certain types of communities where there are models to follow, and the different codes for the particular exchange are positively evaluated. Findings of some studies (Poplack, 1988; Calsamiglia and Tuson, 1984) on code-mixing in different types of speech communities were found to be consistent with what Scotton's (1983) proposed

model. However, Gardner-Chloros's (1991) study reveals that code-mixing could be a product of necessity rather than of choice.

Although the literature on the functions of code-mixing stresses that code selection is to an extent a dynamic process driven by individual motivation for a predictable outcome in speech events or social situations Gumperz (1982) points out that not all instances of switching or mixing are intended to serve specific functions. In detecting and specifying communicative functions, scholars rely on discourse analysis. They carefully examine switches occurring in texts or passages of speech events for interpretations that go beyond the literal meaning and try to pinpoint some possible message coded or emphasized by using more than one language system. In order to confirm the investigator's interpretation, speech analysts sometimes ask for the participants' interpretations. However, in analyzing speech events, researchers maintain different methodological approaches. Romaine's (1995) review of this issue shows that analyses are conducted on different basis. She explains that Gumperz's approach relies on the 'we' vs. the 'they' code distinction in interpreting exchanges in speech events. Scotton and Ury rely on their concept of 'social arenas' (identity, power and transaction) where they appeal to the switch as an extension of the speaker in order to explain why switching takes place. Other examples of varying approaches are McConvell's (1988) model of two or more social arenas that are always available to speakers, and where events are seen to belong to two or more of them; and Goffman's concept of 'footwork' and the 'folk categories'(the speaker, topic and listener in the speech event) where switching was seen to signal a

change in the conversation. Whatever the basis of the analysis, the approach maintained in investigating functions of code-mixing is generally interpretive.

On the functional plane, problems of research methodology has been recognized. For example, Kamwangamalu (1992) noted that the dichotomy existing between the 'we-code' and the 'they-code' based on which interpretations are done is not always workable, especially in multilingual settings. He argues that it is neither as fixed nor as clear-cut as Gumperz implies. Another problem that Romaine (1995) discussed is the fact that some of the meanings assumed for code-mixing are of some degree of abstraction and are unlikely to be accessible to introspection. She also points out that researchers differed in the extent to which they assigned a meaning to every instance of code-mixing. Moreover, Tay (1989) maintains that to evolve a functional typology to fit all situations of code-mixing seems futile. Instead, he suggests that the total communicative impact created by the discourse should be examined, and then the communicative intent should be determined. Once this is done, strategies could be studied in terms of how they are manipulated to achieve specific purposes.

Attitudes Toward Code-Mixing

A third area of research inquiry on code-mixing is the investigation of attitudes towards this particular phenomenon. There are widely differing attitudes towards code-mixing, which is a phenomenon observed all over the world and yet in some communities has been the norm rather than the exception (Grosjean, 1982). The difference in peoples' attitudes toward code-mixing depends mainly on the way such

linguistic behavior is perceived on both the individual and the community levels. In discussion of this topic, research studies (Kachru, 1978; Grosjean, 1982; Gumperz, 1982; Cheng and Butler, 1989) illustrate varying attitudes toward code-mixing that range from positive to negative. These studies find that some people see code-mixing as a useful strategy, a competence, or even a good skill in communicating effectively. Other people have moderate and relaxed feelings about code-mixing. They accept it as a style of communication or as a variety used by participants in some speech events; it is neither better nor worse than single code-use. In contrast, other people's attitudes towards code-mixing are negative. They consider it a grammarless mixture of two languages, and a deficiency in the speaker's ability to converse in either one of his/her languages well enough. In this negative view, code-mixing is characterized as: bad manners, an embarrassing behavior, a dangerous behavior, a behavior that is not pure, a behavior that should be avoided, and a behavior that can pollute a language (Gosjean, 1982). However, there are factors that come into play in forming peoples' attitudes. Some of these factors are community-specific, such as the language situation (if there are high and low varieties, and language policy restrictions) and the appropriateness of language use determined by the community's social norms. Other factors fall into the level of the individual participant such as the degree of language proficiency, the intent of the message to be conveyed, age, sex, education, and the personal judgment involved on the suitability of code-mixing in particular situations.

Contrary to the negative views on the linguistic behavior of code-mixing, the literature reviewed reflects generally positive attitudes among scholars with regard to

this particular phenomenon. Such a trend is particularly evident in the literature on the functional aspects of code-switching and code-mixing, where this style of speech is characterized as a competence, a communicative strategy, and a resource for effective communication. Apart from professionals who deal with language disorders and discuss the use of code-mixing as an indicator of language proficiency or sometimes lack thereof, code-mixing/switching has always been portrayed in scholarly discussions as a benefit. One example of how code-mixing is usually characterized is in Poplack's (1979) study where she states that *"Code-switching is a verbal skill requiring a large degree of competence in more than one language, rather than a defect arising from insufficient knowledge of one or the other"* (p. 72). However, in spite of how scholars feel about what this strategy could serve, Sanchez (as cited in Cheng and Butler, 1989) has argued that code-mixing could " take away the purity of the language" (p. 298).

Studies on language attitudes employ different methodological procedures to obtain evaluative judgments about other people's speech patterns. In most cases, subjects evaluate recorded speech samples using pen and paper instruments. Questionnaires, matched-guise techniques, and interviews are used in attitude investigations, where results are collected as numerical data and statistical analysis is applied to discover any significant tendencies (Fasold, 1984). Nevertheless, these designs are open to the criticism that there are accuracy problems in the measuring instruments, and that such designs are too laboratory-like and so responses may be systematically artificial (Fitch, and Hopper, 1983). Moreover, although aspects of code-mixing have been examined in several different situations, it remains difficult to generalize findings, because each

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investigation had its own specific characteristics. Yet generally, with regard to the study of issues of bilingualism, researchers (for example Romaine, 1995; Tay, 1989; Baker, 1993; and Bokamba, 1989) agree that there is a need to evolve unified bilingual norms for the description and analysis of bilingual phenomena such as code-mixing.

The Significance of the Study of Attitudes

Exploring the sociology of language and the dynamics of human communication, sociolinguists acknowledge the importance of the study of language attitudes. Language mixing phenomena usually give rise to different reactions (positive and negative) in certain social contexts. Such attitudes are important in determining the prestige of the languages involved; and also in supporting or counterbalancing existing linguistic policies and regulations. Across societies, while official linguistic decisions are sometimes made, and to an extent enforced, participants always have their own set of unofficial linguistic norms. Kachru (as cited in Pulcini, 1997) describes attitudes toward languages as 'unplanned' or invisible societal pressures that spring from unorganized forces; and that this naturally invisible force somehow interact with 'planned' visible interventions that are organized by policy makers. Knowledge of the extent to which such two forces are in agreement or not, gives insights into the language situation within the speech community. Findings of studies on language attitudes are nurturing to some fields in society such as education and politics. They are considered in setting societal plans, making linguistic decisions and in treating situations where linguistic conflicts may exist. The findings are also useful in understanding and predicting the extent to which

participants in a speech community show linguistic resistance, tolerance, or accommodation of a language phenomenon.

STATEMENT OF PURPOSE

In the present age, processes of internationalization and the growing demand of world communication are bringing the worlds of different tongues together. English is dominating many fields including those of business, science and technology. Nowadays, it seems that English is being adopted in many countries in the world, even in places where there are geographic and ideological barriers against such a linguistic move. This present study is an attempt to explore an existing language contact phenomenon, in a situation where linguistic purity is officially being enforced, and bilingualism is generally not accepted in public. The study takes a sociolinguistic approach to investigate aspects of English-Arabic code-mixing in scientific and technical domains, which apparently respond with only limited resistance to the English language. Code-mixing is examined at Libyan universities, in lectures given to undergraduate students, on a variety of scientific and technical topics.

Research Questions

The study aims to investigate aspects of code-mixing in university lectures in Libya. It addresses itself to the following research questions:

1. *To what extent does the phenomenon of code-mixing exist in the language of instruction?*

2. *Which grammatical categories are susceptible to being rendered by English elements?*

3. *What are the general trends of students' attitudes toward code-mixing?.*

CHAPTER 2

METHODS

DATA COLLECTION

Data Required: In order to find answers to the questions addressed in this study, particular sets of data needed to be obtained. *Firstly*, samples of university lecturers' speech had to be audio-taped and transcribed, to serve as a corpus. Based on these samples, question 1 (*To what extent does the phenomenon of code-mixing exist in the language of instruction?*) and question 2 (*Which grammatical categories are susceptible to being rendered with English elements?*) were to be answered. This data set was used to identify code-mixing, in the examined situations in terms of extent, features, and grammatical categories that are susceptible to being delivered in English. In addressing question 3 (*What are the general trends of students' attitudes toward code-mixing?*), the speech samples served as a stimulus to which students responded, showing their attitudes toward code-mixing. *Secondly*, data about students' opinions and views on issues of code-mixing were required in order to provide an answer to the issue of student attitudes addressed in this study. *Thirdly*, data reflecting the perceptions of university mixers (professors) had to be collected to provide a more complete picture of the examined situation. *Finally*, the researcher was to collect as much information as possible from different accessible data sources that may serve the investigation (for example field notes and samples of course materials) .

Sources of Data: University professors and students who were the participants in this study were the main data sources. The speech samples were provided by the professors as

they lectured on different topics. They and other professors (whose speech was not examined) also furnished the study with data regarding their views on the issue of code-mixing in the university instructional setting. Student participants contributed by furnishing data that revealed their views and attitudes toward the examined phenomenon. Participants, however were selected according to a set of pre-determined criteria (selection details are provided below under 'participants').

Materials: In order to collect the perceptual data required for this study, a questionnaire was devised to elicit students' attitudes toward the Arabic-English code-mixing which might occur in some of the universities' instructional settings, particularly that in the examined lectures which they attended. Most of the questionnaire items are adaptations from other research on code-mixing and language attitudes (Munro, 1996; Gibbons, 1983; Gardner, & MacIntyre, 1991; Al- Haq, & Smadi, 1996; Crismore, Ngeow, & Soo, 1996). The questionnaire was written in Arabic and accompanied by a cover page of explanations and instructions (for English version see appendix A). The instrument consisted of forty-two items, to which students were asked to respond. Forty-one items were on a five-point Likert scale, where students showed their extent of agreement/disagreement (strongly agree, agree, undecided, disagree, strongly disagree). The last item was an open-ended question. This was included to allow students to freely comment, express their opinions, or add any additional comments. The forty-one Likert scale items fell into eight groups or categories. Each category was designed to elicit information about one of the following concerns:

- general views on the language situation;

- students' perception of the language mix;

- students' language preference;

- perceived functions of the language mix;

- students' reaction to the language mix;

- students' view of their lecturers who mix English with Arabic;

- if the language exhibited in the lectures examined is representative of that found in other lectures;

- and perceived effects on students' academic progress.

Eliciting the data regarding the professors' standpoints and views on their own mix of Arabic and English was conducted through planned informal discussions. Considering the circumstances of the study atmosphere, these discussions were not to take the form of structured interviews but rather were to be as Hammersley and Atkinson (1983) described as *reflexive*. That is, there was no specific set of pre-determined questions to be asked; instead there were issues of focus to cover. The focus of the discussions was to be on: the professors' awareness of their own language mix while lecturing; their perceptions of their students' ability to handle instruction in a mixed-mode; and the professors' coping strategies in mixed-code language situations such as those examined.

Preparations and pre-arrangements:

Bearing in mind the nature of this field research and the issues surrounding the role of English, in order to maintain appropriateness and ease the work ahead, some preparations and arrangements had to be made prior to carrying out the actual procedure. Prior to undertaking fieldwork, permission was sought to conduct the study at the intended research sites (Garyounis University and Al-Arab Medical University in the city of Benghazi). The material of the study (questionnaire and study plan) was checked, discussed, and approved by an authorized university committee. The next step taken was to make contact with faculty and staff members at the departments where the study was to take place. This was seen helpful as it provided the researcher with some assistance, guidance, or information regarding the logistics of collecting the data. This initial phase in the fieldwork involved formal and informal meetings with academic staff members working in the departments where the study was to take place. It also involved attending some lectures at these particular departments, allowing the researcher to explore the study environment more closely, and providing opportunities for several discussions on issues of concern to the study. These contacts gave easy access to information about lectures, lecturers, subjects taught, time tables, etc., and hence facilitated the task of identifying the situations which were to be examined.

The lectures to be examined were targeted (selection criteria are furnished below) and professors were approached for permission and clarification was given about the procedure. However, to avoid variables that could affect the quality of data to be

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collected, and as a common practice in such research, professors were given a general account of the purpose of the study. They were told that the study would address the issue of Arabization in scientific and technical domains.

The plan for the data collection consisted of two main parts. The first part of the procedure involved recording professors while lecturing. The second part involved administering a questionnaire to the students attending those lectures. With regards to part one, professors were asked permission to be recorded while lecturing. On receiving their agreement, it was arranged that one of their students would operate the tape recorder while the professor was lecturing. The presence of a researcher with a recorder in the room, or having the professors themselves handle their own speech recording was to be avoided so that the atmosphere of the lecture would be as normal as possible for the professors and the students. To make the professors even more relaxed about being recorded, they were told that they retained the choice of receiving the recorded tape and keeping it, or giving it to the researcher to be used in the study.

With regards to the second part of the procedure, which involved administering a questionnaire at the end of the lecture, professors were requested to end their lectures fifteen minutes early to permit the researcher to administer the student questionnaires. It was agreed upon with the professors that by the end of the lecture the researcher would enter the room, the professor would introduce her to the students, and request the students' cooperation. The professor would then leave the room so that the students' responses to the questionnaire would not be affected by the professor's presence. Furthermore, it was agreed with each professor that he/she would be given an opportunity

to see a blank copy of the questionnaire, after it had been administered to their students. Moreover, at that point, if a professor was not comfortable with his/her students' completed questionnaires being used in the study, that particular set of questionnaires would be destroyed.

As one last step in preparing for the actual procedure, a pilot test was conducted in one of the lectures to which the researcher was invited to attend (during the exploratory visits to the different departments involved). The pilot test showed that administering the questionnaire took more time than planned. Students tended to take more time to decide on their responses than anticipated. They compared answers, and wanted to discuss some of the issues with each other or with the researcher. Another unanticipated factor was the time taken to distribute the questionnaire among the number of students in the somewhat large lecture rooms.

To eliminate the time problem, lecture rooms where the procedure was to take place were located and visited in advance, so that the researcher would be thoroughly familiar with the location. Information about room and group sizes was also obtained beforehand. In addition, arrangements were made for one or two research assistants to help in handling the questionnaire administration part of the procedure. Also, to save more time and to benefit from the students' apparent willingness to discuss items or issues raised by the questionnaire, it was decided that after completing the questionnaire the researcher would invite them to discuss or comment on any of the issues raised by the questions.

Lectures

As in all Libyan universities, at Garyounis University and Al-Arab Medical University, lectures are the principle medium of instruction. Seven lectures on topics in engineering, physics, biology, and mathematics were recorded. To control for the possibility that some areas of the study could be more subject to Arabization than others, all of the lectures were on topics that had been taught in the departments for seven years or more. Table 2.1 below provides details of each lecture situation examined. Two of the lectures were in the faculty of medicine, three in the faculty of science and two in the faculty of engineering. The medical lectures were given in the department of physics; two of the science lectures were given in the department of biology and one in the department of mathematics; and the remaining two were in the department of mechanical engineering. Each lecture however, differed in terms of the topic discussed and the specific branch of knowledge concerned. Student attendance varied (between 24 and 93) in the seven lectures. The lectures were between forty-five and seventy-five minutes long.

In all seven cases, the lecture rooms were large enough to seat well over 200 students. There were blackboards or whiteboards and an overhead projector in each room. The two lectures given at Al-Arab medical University took place in amphitheater-style lecture halls. In all cases, the students arrived at the lecture rooms before their professors and waited until the lectures began. The lectures could be described as teacher-led, formal university

Table 2.1 : Details of the lectures examined.

Lecture	Faculty	Department	Topic	Number of students	Duration (Minutes)
1	Medicine	Physics	Conduction in solids: use of heat and pressure transducers in recording temperature and pressure.	93	45
2	Medicine	Physics	Nuclides and radioactivity: some types of nuclides, their conservation laws, and processes of decay.	66	45
3	Science	Biology	Cell physiology: replication of the genetic material of the cell (DNA, proteins, and chromosomes).	78	60
4	Science	Biology	Systode worms: systode classification, life cycle and some preventive measures.	50	45
5	Engineering	Mechanical Engineering	Heat transfer: calculating temperature of surfaces after being exposed to heat over a period of time.	34	45
6	Science	Mathematics	The linear system of differential equations: solving for unknowns through value substitutions.	28	75
7	Engineering	Mechanical Engineering	Refrigeration: the mechanical operations of different types of evaporators and cooling systems.	24	45

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classes where the discourse structure took the form of formal presentations by the lecturers. Student contributions were limited to a few countable events where they asked or answered questions. Professors introduced the topics of their lectures, and then developed them, introducing related concepts. Students followed the lecturers, taking notes and from time to time turning to the course notes or handouts (mostly written in English) which were provided by their professor or their departments. As the academic culture (setting, roles, attitudes, and patterns of behavior) adopted at the two sites is similar to that of other universities across the region, the lecture situations examined could be considered typical of Libyan universities.

Participants

The participants who provided data were seven (7) lecturers and three hundred and seventy-three (373) students.

Lecturers: There was one female, and six male professors, all in their fifties. Two were teaching at the faculty of medicine, two at the faculty of engineering and three at the faculty of science. The two professors of medicine were Iraqi, the others were Libyan. Specific criteria were used in choosing each of the lecturers: they had to be native-Arabic speakers, bilingual in Arabic and English; Ph.D. holders who had completed their studies in English-speaking counties; and they had to have taught Arabic-speaking students in undergraduate programs in an Arabic-speaking country for more than eight years. These criteria were selected to control for variables that might affect the professors' performance while lecturing.

Students: There were 373 male and female student informants between 19 and 22 years of age, all enrolled as full-time students. In seven groups of differing sizes (93, 66, 78, 50, 34, 28 and 24), these were the students who attended the seven lectures examined. Typically, they had received their education through the Libyan public education system; they had studied English as a foreign language for three years (3 hours a week) during their secondary schooling, and had taken two compulsory courses (ESP) at their universities. These students are also exposed to English through their university studies, as much of their course materials are written (partly or fully) in English. Most of them are at a lower-intermediate or intermediate level of English, and are native speakers of Arabic.

Other Participants: In addition to the above-mentioned lecturers and students, five professors and ten students from the same departments where the study was conducted also provided information for this study. They were not selected by the researcher, but since they attended the discussions during the procedure, they participated by sharing their opinions and views on the examined phenomenon.

Procedure

Recording: At each of the examined lectures, the actual recording was done by one of the attending students. However, to ensure high quality recordings, the researcher selected the student in each case, arranged their seating in the room, and advised them on how to operate the recorder. A small, high-quality Aiwa tape recorder was used for the recordings. A small recorder was preferred since it would not draw much attention to the recording process. As agreed with the professors, about fifteen minutes before the end of

each lecture, the researcher politely entered the lecture room. The professor introduced the researcher to his/her students, explained the purpose of her visit, and asked the students to be cooperative and frank. The professors also assured their students that they, the professors, would not see the completed set of questionnaires and that there would be no negative consequences of any kind to their responses on the questionnaire. After that, before each professor left, he/she made sure that the researcher got the tape from the student who did the recording. None of the professors refused to give the tape to the researcher. The researcher then started the procedure of administering the questionnaire to the students.

Administering the questionnaire: The researcher began by explaining verbally to the students that the questionnaire was to investigate their attitudes towards the phenomenon of code-mixing in the universities' instructional settings; and, in particular, the mix of English with Arabic in the lectures they had just attended. The researcher explained the concept of code-mixing, and how the students were to respond on the questionnaire. Although the cover page attached to the questionnaire included explicit information and instructions , the complementary oral instructions were meant to assist the students in their task of completing the questionnaires fully. Students were instructed not to write their names on the questionnaire and were again assured that their professors were not going to see any of the completed ones. They were also told that the researcher was ready to answer any questions regarding their understanding of the items of the questionnaire; and that they were welcome to discuss any of the items or other related issues immediately after completing their questionnaires, or at a later time in the researcher's

office. Depending on the number of students and the size of each of the lecture rooms, the questionnaire was administered by two, or sometimes three researchers. While the students were completing their questionnaires there were a few questions and comments expressing interest in discussing some issues, and surprise at being asked some questions (such as those that involve judging their professors' language competence).

Students' discussions: As the students completed their questionnaires and were leaving, many of them gathered around the researcher to comment or give opinions on some of the items. Some of the students who did not have to rush to other classes stayed with the researcher and discussed issues raised or related to the questionnaire items. Other students arrived later, accompanied with friends and classmates, at the researcher's office to chat about different issues related to code-mixing. Extensive, hand-written notes of students' comments and opinions were taken by the researcher to supplement the interpretation of the questionnaire results. Moreover, the students' willingness and enthusiasm to participate in the study offered the researcher opportunities to collect some course materials for each of the lecture situations, in order to get insights into the examined speech events and the linguistic tasks such material introduces to students. The process of administering the questionnaire took fifteen to twenty minutes, but the discussion that followed sometimes took up to forty-five minutes.

Professors' discussions: As agreed, sometime after the questionnaire was administered to the students, the professors met the researcher in their offices so that they could examine a copy of the questionnaire and give their approval for the researcher to proceed. In all cases, the professors cooperated by allowing the use of the questionnaire

and agreeing to discuss some issues of concern to the study. The discussions were informal, and took place in the professors' offices, where sometimes other colleagues and staff members joined in. These discussions did not take the form of structured interviews, and there were different degrees of involvement in the conversations. They did however, cover the proposed areas of focus concerning: professors' awareness of their own language mix while lecturing; their perception of their students' ability to handle instruction in a mixed-code such as that exhibited in the lectures; and professors' coping strategies in mixed-code language situations such as those examined. However, these discussions were not restricted only to our proposed areas of focus. Professors liked to extend the discussion and talk about other issues such as the Arabic language, and the causes that led to code-mixing in university instructional settings. Immediately after each discussion, notes were taken of what was expressed by the professors.

The Data Sets:

The data for this study were collected over a period of seven weeks. Employing the above-described procedures, the following sets of data were obtained, on which this study was based:

- A total of six hours of audio-taped speech of seven professors, each lecturing on a different scientific or technical topic.

- Three hundred and seventy-three questionnaires completed by students who attended the recorded lectures.

- Researcher notes based on intensive discussions with about fifty students, most of whom (forty) were participants in the examined lectures (the remaining ten were just enrolled in the same programs).

- Researcher notes based on less formal discussions with the seven professors whose lectures were recorded. These notes also included opinions and points of view of an additional five professors who worked at the same research sites and were willing to talk about issues concerning the language mix that occurs in the universities' instructional settings.

- Field notes based on participant observation of other lectures given at the research sites.

- Course materials such as handouts, exams, term papers, copies of specialized dictionaries, and student notes.

CHAPTER 3

DATA ANALYSIS AND RESULTS

INTRODUCTION

Taking into account the multidimensional nature of the examined phenomenon, six

sets of data were collected to provide complementary information. In view of the scope of

this research on code-mixing, the focus is on three particular variables: frequency of

occurrence, susceptibility of grammatical categories to mixing, and student attitudes

toward code-mixing. Consequently, the audio-taped speech and the completed

questionnaires are the two main sets of data on which the study is based. The other sets of

data (notes and materials) were collected to enrich the study as they are related to the

issues addressed and provide additional contextual information. However, all available

data were used to shed as much light as possible on the examined situation. In this

section of the present study, the analysis of data is described, and the results are reported

and explained. Further exploration of the results will be furnished in the Findings section

of this paper.

DATA ANALYSIS

Analysis of Recorded Speech

To address the first research question regarding the extent to which code-mixing exists in the language of instruction, the six hours of recorded speech were transcribed and analyzed. The term *'utterance'* refers to " a *stretch of speech preceded and followed by silence or a change of speaker*" (Crystal, 1997, p. 405). The utterances ranged in size from single-word to multi-word units.

For each lecture situation, all utterances were counted and categorized into Arabic-only utterances, English-only utterances, and Arabic-English mixed utterances. The following presents an example of each type of utterance:

- Arabic utterance

  " *Hatha algehaz laho wathaif motaadeda wa mohema lel khalia hata toadi wathaifha alhaiaweya wa tastamer fi alhaia*".

  " That system has numerous important functions that allows the cell to maintain its biological functions and continues to live".

- English utterance

  " *'S' for sugar*".

- Arabic-English mixed utterance:

  " *al wahed milimeter men al **liver cell** tateena **eleven meter square** min al **membrane**".

  " one millimeter from the liver cell gives us eleven square meters of membrane".

The classification of utterances in this way served to illustrate the extent of occurrence of each of the three types separately (Arabic only, English only, and incidence of Arabic-English mixed utterances); and of code-mixing (incidence of both English-only and Arabic-English mixed utterances together) in the speech events examined.

To answer the second research question concerning what grammatical categories were susceptible to being rendered in English, the transcribed speech was further analyzed. In particular, the mixed-code type of utterances in which both Arabic and English elements occurred were analyzed to identify the grammatical categories that were used to host English elements. The English elements that occurred in the mixed-type utterances (in each of the seven lecture situations) were highlighted and classified into grammatical categories (nouns, noun phrases, adjectives, clauses, adjective phrases, verbs, verb phrases, adverbs, conjunctions and prepositional phrades). The classification was based on Quirk, Greenbaum, Leech and Svartvik's (1972) grammar model. Count was then taken of the frequency in which each grammatical category was featured in a switch. By means of this analysis, an answer to our inquiry regarding the susceptibility of particular word classes to mixing was found.

Analysis of Questionnaire Responses

Most student participants responded to all items of the questionnaire except the last optional question (number forty-two),where they were invited to comment or add a point. Only twelve percent of the students responded to that one question. All responses to the forty-one items were loaded into an SPSS-6 computer data base for statistical analysis. To arrive at general trends in the students' response, the percentage of students selecting each point in the five-point scale was computed for each question. These frequency counts were reflective of participants' general trends of response, and were used in detecting students' views on the issues presented in the questionnaire. These responses were examined separately for interpretations on an item-by-item basis, and jointly within

the frame of each of the eight questionnaire categories. The data received for the open-ended question were analyzed qualitatively. It is worth noting here that, at the start of this study, it was planned to treat the student population as a single group rather than seven groups representing different branches of science and technology. This is due to the very small number of the separate fields of study involved, and each representing a different topic within the field could not be considered as adequately representing these individual fields.

Analysis of Notes From Student Discussions

The researcher's notes of discussions with over 50 students were first combined with the comments received in response to question 42 of the questionnaire and examined together. These notes and comments were reviewed, edited and organized into 9 categories, eight of which coincided with the questionnaire categories. The ninth concerned an additional issue that students brought up in their comments and discussions. This analysis provided data that served as an additional clarification in interpreting student responses to the questionnaire items.

Analysis of Notes from Professors' Discussions

The notes arising from discussions with professors were reviewed and organized. All the points noted were analyzed under the five main issues: professors' awareness of their own language mix; their perception of their students' ability to handle it; professors' coping strategies; the Arabic language; and the origins of the examined phenomenon. Although the professors' attitudes toward language mix was not the immediate focus of this investigation, these data served to add context to the study and

permitted a perspective of viewing the examined teaching/learning situations from different vantage points.

Examining Field Notes and Course Materials

The field notes and course material collected were examined and used by the researcher to provide background information about the examined speech events. The sociolinguistic context of the study, including the norms of discourse and the prevailing academic culture, were elucidated by the field notes. The course materials were examined for a general idea about the linguistic demands or tasks that such materials might present to students in the examined learning situations.

RESULTS

I. To What Extent does Code-Mixing Exist in The Language of Instruction?

I.1 . The types of utterances: Our speech analysis shows that three different utterance types were used in all of the lecture situations examined. These were Arabic-only, English-only, and Arabic-English mixed. Focusing on the holistic picture of the frequency of occurrence of each one of these three types in the speech sample collected, Figure (1) below illustrates the summary of results in this regard. The data show that Arabic-only utterances were found to be generally dominant (48%) when compared separately with the two other types, the English-only (19%) and the Arabic-English mixed (33%), (48% >19% and 48% >33%). These differences however, were not tested for significance. It is worth noting here that, while the three types of utterances were used in all lecture situations, the extent to which each type was used varied in the seven speech events (for details of each lecture situation see appendix B).

I.2. The extent of code-mixing in the speech of lecturers: The operational definition of code-mixing adopted in this study comprises two types of utterances: utterances in which English and Arabic are mixed, and utterances in which English-only was used. Thus, the extent of code-mixing within the lectures was calculated as the total number of utterances in which English-Arabic were mixed and utterances in which English-only was used.

To find out the extent to which code-mixing was found in the language of instruction, the percentage of utterances in which code-mixing occurred (that is Arabic-English and English-only utterances) in the total number of utterances used in the lectures (with

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Figure (1): Percentages of the three types of utterances by language
exhibited in the lectures examined

Arabic-only
utterances
48%

English-only
utterances
19%

Arabic-English
utterances
33%
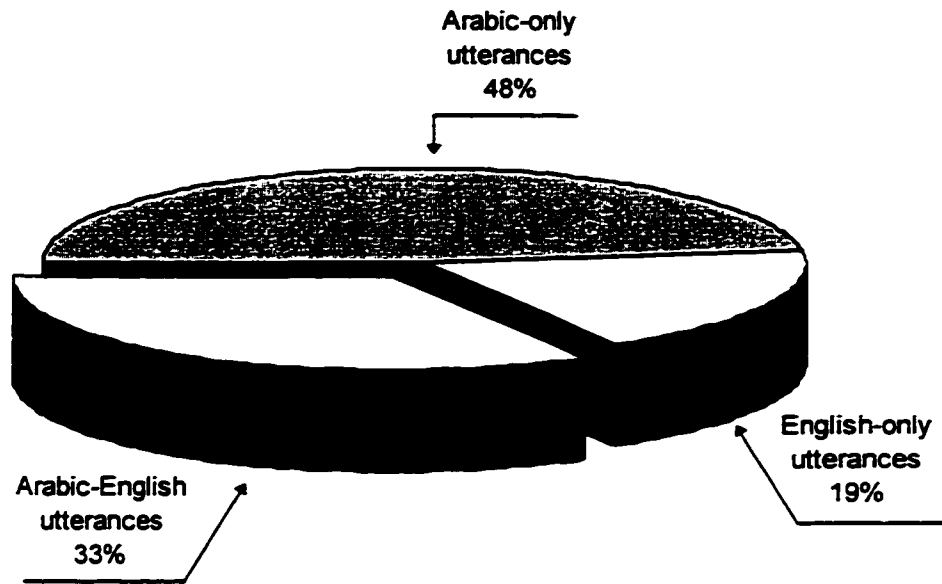
Arabic-only utterances) was calculated. Figure (2) below presents the result of this calculation.

Figure (2): Code mixing in the language of instruction
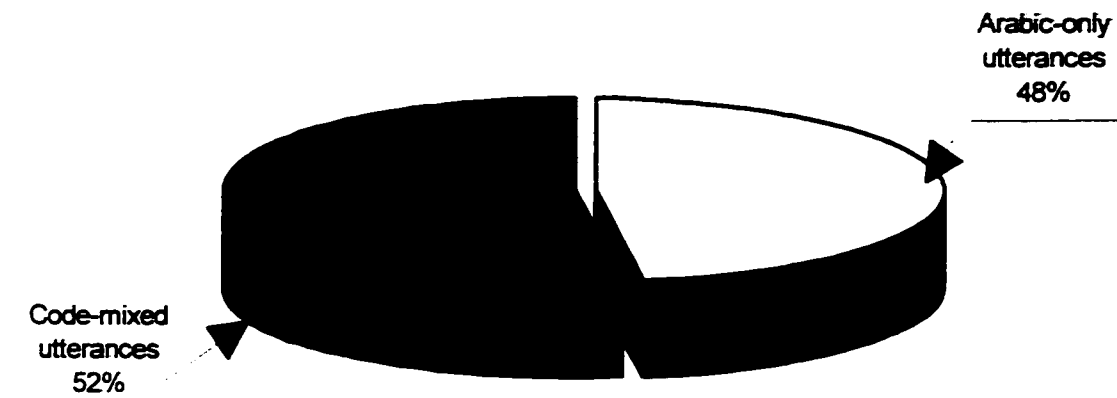
The results show that in all seven lectures combined, the incidence of code-mixing (52%) exceeds the use of Arabic-only (48%) (52%>48%). Hence, code-mixing was a dominant feature in the language exhibited in the examined situations.

II. Which Grammatical Categories were Susceptible to Being Rendered in English?

In identifying the grammatical categories that were susceptible to English, all incidence of Arabic-English mixed utterances were examined. Within each of these utterances, the English elements were classified into grammatical categories. The data revealed that nine grammatical categories were open to being rendered in English. These categories were: nouns, noun phrases, single adjectives, adjective phrases, clauses, single verbs, verb phrases, adverbs, and one other category for word classes of extremely rare occurrence. However, some of these grammatical categories appear to be more receptive to English than others. Based on all the incidence of Arabic-English mixed utterances in the seven lectures examined, Figure (3) presents the grammatical categories found, and illustrates the difference in their susceptibility to being rendered into English. The data show that the majority (58%) of elements expressed in English fell in the single noun word class. Noun phrases are found to have the second largest proportion (34 %). The remaining (8%) is made up of the other seven grammatical categories. Within this relatively small proportion (8%), adjectives constitute exactly half (4%), and clauses make up (3%). The other five categories together were of comparatively rare occurrence (1%): adjective phrases (0.4%); verbs (0.2%); verb phrases (0.2%); adverbs (0.1%); and others (conjunctions and prepositional phrases) combined made up only (0.1%).

Figure (3): Distribution of English elements in all mixed utterances by grammatical category

V 0.2%
VP 0.2%
Ad 0.1%
O 0.1%

C 3%

AP 0.4%

A 4%

Other 8%

NP 34%

N 58%

N = Single Nouns   NP = Noun Phrases   A = Single Adjectives
AP = Adjective Phrases   C = Clauses   V = Single Verbs
VP = Verb Phrases   Ad = Adverbs   O = Others
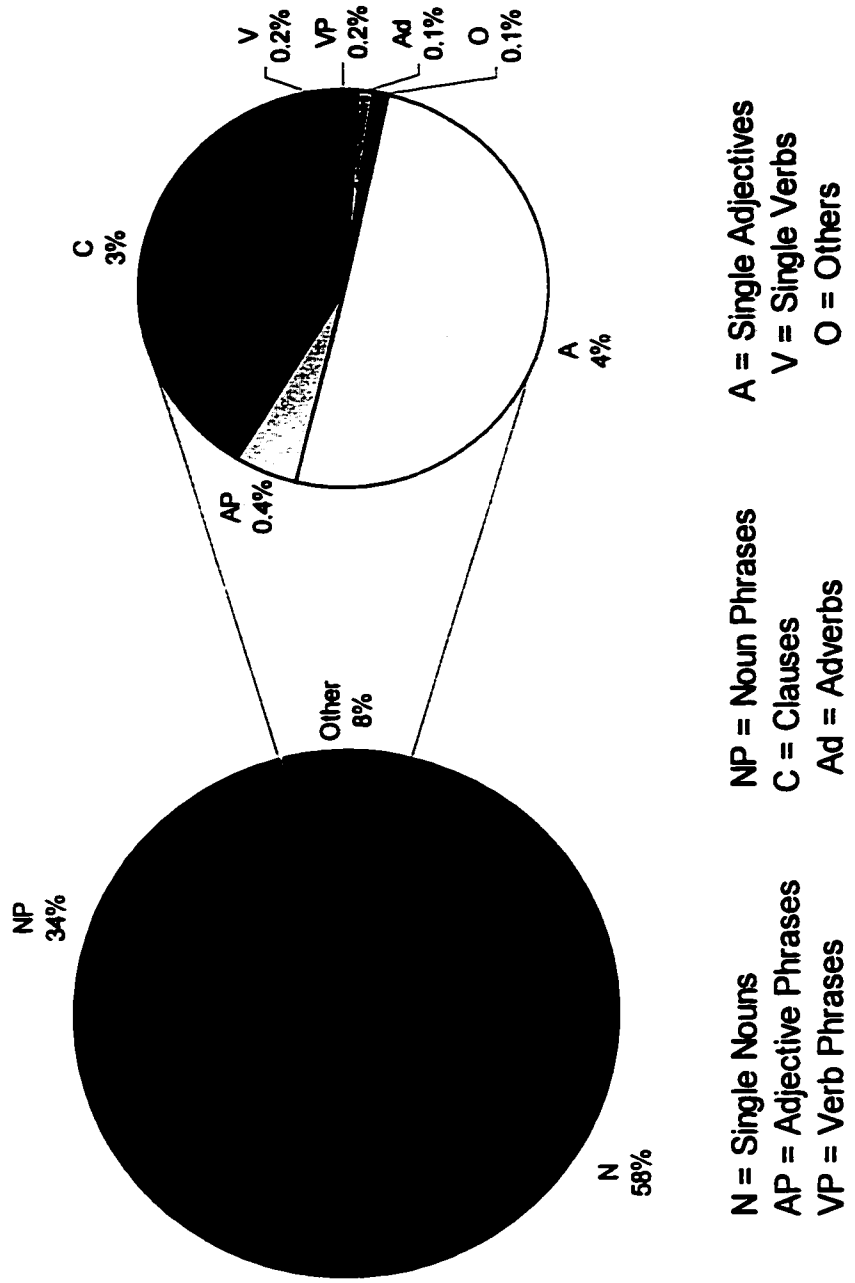
III. What are the students' attitudes toward CM?

1. Responses to Questionnaire Items and data from student discussions.

The questionnaire responses and the data obtained from the students' discussions were two complementary sets of data. As described above (page 28-29), the student questionnaire was designed to elicit data on eight perceptions of the phenomenon examined. Thus student responses to the questionnaire items were examined within eight categories, each representing one of these perceptual issues.

The data elicited through the student discussions consisted of points made and views expressed concerning the issues raised by the questionnaire. This set of data was organized into nine categories that represent the eight main issues encompassed by the questionnaire, along with a ninth category consisting of student suggestions. Such qualitative approach enabled the researcher to explore the reasons behind student responses and thus provide explanations about their attitudes.

Below, for each of the issues raised by the questionnaire, results of the quantitative data are summarized and presented along with the results of the qualitative set. Except for the ninth issue raised in the student discussions (suggestions), the quantitative results (questionnaire responses) are discussed in terms of the concepts contained within each of the eight questionnaire categories and in light of the qualitative data obtained. Tables 3.1 to 3.8 below illustrate the quantitative results found in this regard. The data columns contain the group results for each point on the five-point scale. The *Strongly agree* (SA) and *Agree* (A) responses, and also *Disagree* (D) and *Strongly Disagree* (SD) responses have been adds to provide two additional columns representing the total number in

agreement and the total number in disagreement with each item. The results in the two additional columns have been highlighted. Tables 3.1A to 3.8A and 3.9 present summaries of the qualitative data concerning the separate issues and perceptions.

Students' general views on the language situation in the university:

The first category of the questionnaire concerns students' general views on the language situation in the universities where the study was conducted. This category consists of six items to which students responded. Table 3.1 below shows the percentages of student responses to each; and Table 3.1A presents the students' comments on the language situation in their universities. The data show that for item 1.1, most students (89%) considered Arabic a prestigious language. For item 1.2, the majority of the students (74%) tended to accept code-mixing as a register in their particular study fields. With regard to item 1.3 concerning the translation of reports of knowledge, 76% believed that Arabic should be widely used and that scientific technology should be translated into Arabic. Responses to item 1.4 show that most students (60%) seemed to perceive a link between CM and the need to keep abreast of the latest developments in their fields On the issue of whether or not CM poses a threat to the Arabic language in particular domains (item 1.5), students had differing views. 41% of the students perceived the phenomenon as a threat to Arabic. They thought that the use of English could undermine the Arabic language in the technical and scientific domains. Other students (47%) however, maintained that knowledge is not confined to one language, and that Arabic is well protected against such a threat. Responses to item 1.6 regarding the role of

English in the university instructional settings, most students (74%) tend to find the role of English instrumental in information transfer.

Table 3.1: Students' views on the language situation in the university, expressed quantatively-

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
1.1	Arabic is a prestigious language.	64	25	**89**	**7**	3	1	**4**
1.2	Mixing English with Arabic in the university instructional setting is an acceptable style of speech to me.	28	46	**74**	**12**	8	6	**14**
1.3	Reports of scientific and technical knowledge originally written in English should be translated to Arabic.	50	26	**76**	**10**	9	4	**14**
1.4	Mixing English with Arabic in lectures is a sign of being in tune with the times.	25	35	**60**	**16**	17	7	**24**
1.5	Mixing English with Arabic poses a threat to the Arabic language in the domain of science and technology.	12	29	**41**	**12**	16	31	**47**
1.6	English is used in the university instructional settings as an instrument for technology and information transfer.	31	43	**74**	**11**	10	5	**15**

*SA= Strongly Agree A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree   TD= Total Disagree

Table 3.1A: Students' views on the language situation, expressed qualitatively.

Qualitative responses
• Arabic is a beautiful language; and is part of one's identity and heritage.
• Arabic is the language of Koran.
• Arabic was at one time a language of science.
• CM is a norm in the scientific and technical domains.
• English should not be a barrier in gaining knowledge.
• English is necessary for the country's technological development.
• At present, the use of English is an international linguistic trend.
• English is a means not an end in itself.
• The use of English in some academic fields does not mean employing Western culture or values.
• The excessive use of English in scientific fields weakens other languages in these fields.
• Translations and Arabization should be supported.

Students at both universities where Arabic and English were used in different combinations, expressed a variety of considerations. They asserted their respect and pride in Arabic, explaining that it is a sign of their identity, and that it is the language of Koran whose inherent value goes unquestioned and unchallenged because of its religious significance. Furthermore, based on the historical fact that Arabic was for centuries used in studying and documenting science, they expressed confidence in the efficiency of the language to serve in all domains. Such favorable attitudes toward the native language did not mean negative attitudes toward English nor the use of English. Students seemed to differentiate between English being a carrier of Western values, and English as a means in attaining academic goals, not an end in itself. Employing the latter view, they expressed awareness of the role that English plays in the international community, especially in the scientific arena. They held the view that at present, a lot of scientific and technical knowledge are products of the West, and only available in a Western linguistic

code (English). Being part of the international community, the code barrier has to be broken in order to benefit from such products and maintain a certain level of advancement. Students perceived CM as a common practice dictated by the nature of their fields of study which are areas of language contact strongly bound to English.

Students' perception of the extent of CM:

˙ Category 2 of the questionnaire consisted of five items concerning students' perception of CM. Tables 3.2 and 3.2A below present the results for this issue. Responses to item 2.1 show that the majority of students (81%) perceived CM as a common occurrence in lectures. In terms of the extent to which CM is used by professors, responses to items 2.2 and 2.3 are reflective of the differing sensitivity to CM among students. Regarding item 2.2, while 52% of the students agreed that the use of CM in lectures was frequent, 36% acknowledged it but did not consider its use as frequent. In item 2.3, only 28% of the students perceived their professors' use of CM during the lectures as a rare occurrence, though 60% disagreed on that. With regard to students' perception of the English elements employed by their professors, responses to items 2.4 and 2.5 were revealing. Responses to item 2.4 show that most students (68%) perceived the English elements heard in their lectures as referential terms or segments of sentences only. However, the answers obtained for item 2.5 indicate that some students (35%) perceived their professors' use of English as being extended to larger segments, including sentences.

Table 3.2: Students' perception of the extent of code-mixing, expressed quantatively.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
2.1	Mixing English with Arabic is a common phenomenon in the lectures I have attended in this university.	29	52	**81**	**7**	7	5	**12**
2.2	The professor was frequently mixing English with Arabic during the lecture.	9	43	**52**	**12**	17	19	**36**
2.3	The professor seldom mixes English with Arabic in his lectures.	7	21	**28**	**12**	40	20	**60**
2.4	While lecturing in Arabic the professor's use of English is limited to parts of sentences (e.g.: words, terminology, or phrases) rather than complete sentences.	28	40	**68**	**10**	15	7	**22**
2.5	The professor uses complete English sentences while lecturing in Arabic.	10	25	**35**	**17**	34	14	**48**

*SA= Strongly Agree A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree   TD= Total Disagree

Table 3.2A: Students' views on the extent of CM, expressed qualitatively.

Qualitative responses

- CM is common.
- English is frequently used in lectures.
- Arabic is more dominant.
- Some students are more sensitive to CM than others.
- Most of the English elements are referential terms.
- Students are not sure if they heard the English elements as complete sentences.
- The focus is on the overall meaning of the message.

So, with regard to this issue, students generally maintain that CM is a frequent occurrence in their lectures. While the present study finds CM a dominant feature in the speech events examined, students felt that the use of Arabic is a more dominant feature. Students also maintained that when lectures are delivered they listen and follow, focusing on the meaning being conveyed in the mixed code with little or no attention paid to the size of English units heard. The data also reveal that students generally perceive the English elements included in their professors' speech as being mostly referential terms.

Students' language preference:

The third category of the questionnaire consisted of a set of four items focused on the students' language preference. Tables 3.3 and 3.3A below illustrate the results obtained on this issue. The data show that for item 3.1 on the language preference, 42% of the students reported that they would prefer their professors to minimize the use of English while lecturing, but 43% totally disagreed. The first group argued for ease of comprehension, the other stated that minimizing English is not beneficial, since course materials and exams are written in English. In item 3.2 regarding students' preference for the use of English only, the majority of respondents (74%) disagreed. Further, in item 3.3 64% of the students supported Arabic-only instruction, whereas 27% did not, citing the problem of course materials. As to putting restrictions on the use of English in lecturing (item 3.4), 60% of the students disagreed, whereas 22% supported the idea of having some type of control over the language of instruction in the university.

Table 3.3: Students' language preferences, expressed quantatively.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
3.1	I would like my professors to minimize their use of English in lecturing.	14	28	**42**	**15**	24	19	**43**
3.2	I would prefer if the professor chose to use only English in the lectures rather than mix English with Arabic.	7	8	**15**	**11**	39	35	**74**
3.3	I would prefer that my professor spoke only Arabic in the lectures.	22	42	**64**	**9**	13	14	**27**
3.4	I wish there were restrictions on the use of English in the lectures offered in this university.	8	14	**22**	**18**	30	30	**60**

*SA= Strongly Agree   A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree   TD= Total Disagree

Table 3.3A: Students' language preferences, expressed qualitatively.

Qualitative responses
• The use of Arabic should be maximized in the university.
• The use of English should be minimized.
• English can not be dismissed completely from instruction.
• Arabic-only instruction is preferred but not a practical demand.
• Encourage Arabization but not abandon English.
• The use of Arabic only eases comprehension and expression tasks for students.
• There is a lack of familiarity with Arabic scientific terminology.
• Restrictions on the use of English create barriers and block channels of knowledge.

Hence, with regard to the issue of language preference students show sentimental and

instrumental attachment to their native language, Arabic. Citing some problems in

comprehension and ease of expression due to the use a foreign language in their studies,

they called for the maximum possible use of Arabic in instruction. The data also show that as students understand the importance of English in their fields of study and consider the various aspects that influence the extent of Arabization, they have a preference for a gradual move toward Arabic-only instruction. However, their awareness of the need for English does not conflict with their preference for Arabic and calls for Arabization.

Students' perceived functions of CM:

The fourth issue raised by the questionnaire concerns the perceived functions of code-mixing. Tables 3.4 and 3.4A below illustrates the data obtained in this regard.

Responses to item 4.1 show that most students consider the use of English necessary in their courses. In item 4.2 while 53% of the students think that professors use English to fill in lexical gaps whenever they fail to find Arabic terms, 38% feel that professors tend to use English words even when the Arabic equivalents are accessible to them. On whether or not there are Arabic terms for all the English terminology used in the lectures (item 4.3), 42% maintained that such terms existed and were well within the capacity of the Arabic language. However, 44% disagreed, basing their opinion on their own experience and unfamiliarity with much the equivalent Arabic terminology. Responses to item 4.4 show that most (74%) students felt that code-mixing occurred deliberately in the professors' speech as part of the lesson plan. Students believe that becoming familiar with English terminology is one of the course goals that lecturers try to attain. For item 4.5, the data shows that while 51% of the students believed that professors code-mix because they personally value or prefer this particular style of speech, 30% were of the opinion that CM is used due to necessity, practicality, or merely from habit.

Table 3.4: Perceived functions of code-mixing, expressed quantatively.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
4.1	The use of English with Arabic in this course is inevitable.	27	48	75	11	11	3	14
4.2	The professor uses English words when he/she can not find the equivalent terms in Arabic.	22	31	53	9	28	10	38
4.3	There are Arabic terms for all the English terminology used in the lecture.	11	31	42	14	30	14	44
4.4	The professor consciously mixes English with Arabic to attain the goals of the lecture.	28	46	74	15	8	3	11
4.5	The professor chooses to mix English with Arabic in the lecture as a personal preference.	25	26	51	19	22	8	30
4.6	English is more sufficiently sophisticated than Arabic for studying the topics introduced in this course.	37	24	61	7.0	27	5	32

*SA= Strongly Agree A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree   TD= Total Disagree

Table 3.4A: Perceived functions of code-mixing, expressed qualitatively.

Qualitative responses

- Scientific studies are dependent on English.
- Being functional in technical and scientific domains requires a knowledge of English.
- Most materials and references are available only in English.
- English terminology is accessible, more familiar and better established than the Arabic translated terminology.
- CM is a practical solution for the existing language situation in scientific domains.
- At present, CM is a better alternative than the use of Arabic only or English only in instruction.

With regard to the efficiency of English compared to Arabic for the study fields examined (item 4.6), respondents held different views: 61% of the students agreed that English more adequately covers their studies due to the unavailability of Arabic materials and references. Thirty-two percent rejected the idea of English being superior to Arabic, maintaining that adopting English in particular fields does not imply any deficiency in Arabic in these fields.

Students' views on the functions of CM reflect a deep understanding of the language situation in their fields of study. They perceive CM as a practical solution and a middle grounds for the complex language situation in their domains. Students perceived CM as a strategy that serves to fill lexical gaps and to solve the problem of unavailability or unfamiliarity with the Arabic equivalent in technical terminology. CM was also seen to serve as preparing students to be functional in their studies and careers which require some knowledge of English.

Students' reaction to CM:

The fifth category of the questionnaire consisted of eight items soliciting data about students' reaction to code-mixing when it occurs in lectures. Tables 3.5 and 3.5A below summarize the results in this regard. Responses to item 5.1 show that 76% of the students feel that their professors' use of English is imposed by the lecture situation and that they have to accept it as part of their program of studies. Responses to item 5.2 indicate that 53% of the students are able to cope with their professors' code-mixing and furthermore benefit from that mixed-mode of instruction. However, to other students (33%), the case is different and the professors' code-mixing is perceived as a problem. When students

were asked if they felt challenged by their professors' mix of English with Arabic (item 5.3), results reflect a diversity of opinion; 36% felt challenged and burdened by their professors' CM because it entailed additional tasks of decoding or translating.

Table 3.5: Students' reaction to code-mixing, expressed quantatively.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
5.1	When my professor mixes English with Arabic in the lecture I have no option but to accept.	33	43	76	16	5	3	8
5.2	The professor's mixing of English with Arabic is not a problem to me.	19	34	53	14	23	10	33
5.3	I feel challenged when the professor mixes English with Arabic in lecturing.	12	24	36	24	25	15	40
5.4	I get frustrated when the professor mixes English with Arabic during the lecture.	22	11	33	16	13	38	51
5.5	It takes me time to get used to the mix of English with Arabic in lectures.	35	36	71	12	11	6	17
5.6	I do not mind my professors' use of English in lecturing, if English occurs in their speech only as parts of sentences rather than complete sentences.	28	34	62	13	15	9	25
5.7	I do not mind my professors' use of complete English sentences while lecturing in Arabic.	8	23	31	16	34	19	53
5.8	When the professor mixes English with Arabic in the lecture I tune out.	11	33	44	16	22	18	40

*SA= Strongly Agree A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree TD= Total Disagree

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Table 3.5A: Students' reaction to code-mixing, expressed qualitatively.

Qualitative responses
• The use of English is not imposed by lecturers in particular.
• Perceived as one aspect of studies in scientific fields.
• CM sometimes adds difficulties to students in studying their topics.
• Because of the insufficient background knowledge of English it takes students time to get used to CM in lectures.
• The use of English should not exceed terminology.
• The use of English in instruction requires tolerance and extra effort on the students' part.

Forty percent of the students accepted CM as one aspect of their studies, not separately challenging from the other tasks demanded by the courses. As to whether or not CM causes frustration to students (item 5.4), CM was found to cause frustration to only 33% of the student respondents, though 51% disagreed on such perception of CM. Nevertheless, it is indicated by the responses to item 5.5 that it takes time for most of the students (71%) to adjust and become familiar with the mixed-code instruction. Results obtained for items 5.6 and 5.7 reveal student attitudes toward the type of mix in terms of the elements being rendered in English. For item 5.6, 62% of the students find the switching of segments of sentences to English acceptable, whereas 25% seem to be dissatisfied with such language mixing. For item 5.7, while 31% of the students did not mind their professors' use of complete English sentences, 53% were unfavorable to such sentence switching. This suggests that students seem to have more tolerance for short intrasentential code-mixing. The last item 5.8 in this category addresses a possible overall reaction. CM was found to have a tune-out effect on 44% of the students. To others

(40%) however, the effect was different, demanding closer attention and greater concentration on the students' part.

It is evident from the data that CM is not perceived as being imposed by the professors in the lecture situations, but it is rather perceived as a consequence of other situational factors beyond the control of lecturers. It is also found that the mixed mode of instruction is a source of hardship to some students. Yet, students differ in their extent of tolerance for CM and they eventually seem able to adapt and accommodate to this style.

Students' views of their lecturers who mix English with Arabic.

The sixth category of the questionnaire, consisting of four items of inquiry, concerned the issue of students' view of the mixers (their professors). Tables 3.6 and 3.6A below present student responses and views on this particular issue. The percentages of responses to item 6.1 show that 55% of the students call for their professors' use of Arabic only while lecturing, whereas 30% do not demand such an adjustment. As to whether the professors were seen to be conscious of their verbal behavior of CM (item 6.2), the data reveal that 48% of the students perceived this behavior as deliberate on the part of the professors for academic reasons. While 31% felt that it was unconscious, more of a habit, or possibly automatic behavior, 21% of the students found it difficult to speculate on this question. Responses to item 6.3 show that 24% of the students linked their professors' CM to poor mastery of the Arabic language, though 67% disagreed on this link and rejected the idea that native-Arabic professors could be incapable of using the Arabic language when required to do so. These respondents claimed that there were numerous logical reasons for professors' CM behavior other than a language deficiency.

For item 6.4, concerning the professor's acknowledgment of student problems caused by his/her code-mixing, only 8% of the students agreed. The majority (78%) of students perceived their professors as unaware of the problems which students might suffer.

Table 3.6: Students' views of their professors who mix English with Arabic.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
6.1	The professor should consider adjusting his/her speech during lectures so that it is all in Arabic.	21	34	55	15	16	14	30
6.2	The professor is aware that he/she is mixing his/her Arabic with English.	11	37	48	21	20	11	31
6.3	The professor could have used Arabic only, if he/she mastered Arabic better.	9	15	24	9	28	39	67
6.4	The professor knows that some students have problems with his mixing of English with Arabic.	2	6	8	14	33	45	78

*SA= Strongly Agree   A= Agree   TA= Total Agree   SD= Strongly Disagree
 N= Neutral   D= Disagree   TD= Total Disagree

Table 3.6A: Students' views of their professors who mix, expressed quantatively.

Qualitative responses
- Professors are not blamed for CM even if it causes problems. It is the students' responsibility to be prepared for the language demands of their studies.   - Professors are perceived as generally aware of their CM.   - CM could be a speech habit in the fields of study examined.   - Professors are able to manipulate their language(s) as they want.   - Professors do not realize the student difficulties caused by CM in instruction.

The data on students' views of their professors who mix English with Arabic reveals the influence of the students' culture on their opinion. Although students considered CM as a problem, they did not see their professors as the source of this problem. Professors were viewed as competent communicators who are conscious of what and how they are delivering their lectures, and that they deliberately mixed both their languages to attain educational goals. This perception is typical of the Arab culture in which teachers are viewed as knowledgeable, elderly and are to be paid great consideration and respect. In other words, professors cannot be a source of a problem or confusion. The data shows that while students had some difficulties with their professors' use of English they felt that the source of such difficulties was their own insufficient background in English. Moreover, professors were perceived as not being aware of the students' English language problems.

The representativeness of the examined lectures:

The seventh category consisted of four items. It was designed to elicit data on how representative of other lecture situations in the university were the examined speech events. Tables 3.7 and 3.7A illustrate the data obtained in this regard.

Table 3.7: Students' perception of the extent to which the lectures examined were representative of others.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
7.1	The amount of the mix of English with Arabic exhibited in the lecture is similar to that in other lectures that I have attended in my university carrier.	22	43	**65**	**11**	21	3	**24**
7.2	The amount of the mix of English with Arabic exhibited in the lecture is more than the mix in other lectures that I have attended in my university career.	14	12	**26**	**16**	45	13	**58**
7.3	The amount of the mix of English with Arabic exhibited in the lecture is less than the mix in other lectures that I have attended in my university career.	7	23	**30**	**21**	37	11	**49**
7.4	The way English is used with Arabic in this lecture is similar to that in other lectures	15	36	**51**	**21**	24	4	**28**

*SA= Strongly Agree A= Agree   TA= Total Agree   SD= Strongly Disagree
N= Neutral   D= Disagree   TD= Total Disagree

Table 3.7A: Students' views on the extent to which the lectures examined were representative of others.

Qualitative responses
• CM that occurred in the examined lectures is generally similar to that which occurs in other lectures in the same department.
• Among lectures, it is difficult to compare CM styles and extent of use.
• Each professor has his/her own style of CM.
• Patterns of CM are topic bound.

The percentages of response received for item 7.1 indicate that most students (65%) considered the extent to which CM occurred in their examined lectures was similar to that in others. Only 24% thought otherwise. Responses to items 7.2 show that while 26% of the students felt that the use of English with Arabic in the examined lectures was more than that occurring in other lectures, 58% disagreed. For item 7.3, on the language mix exhibited being less than that occurring in other lectures, 30% of the students agreed, whereas 49% disagreed. With regard to how English is used with Arabic, 51% of the students felt that professors mix English with Arabic in the same way as exhibited in the particular lectures examined; 28% thought that it is used differently depending on the professors' style or the particular topic presented in the lecture; and 21% seemed to have found this item difficult to decide on.

The data on this issue (how representative the examined lectures were of others) reveal that students viewed the language mix exhibited in the particular lectures examined as

generally similar to that in others. Some students felt that patterns of CM vary among

their professors due to difference in their speech styles. Others thought that the patterning

of CM is to an extent dependent on the topic being studied. For example, when the topic

is mathematically oriented, professors would cite equations and provide lengthy

explanations using pure English; in cases of other topics professors just insert a few

English words or phrases in their Arabic-based speech.

Perceived effects of CM on students' progress:

The last group of items included in the questionnaire was designed to address the

issue of the perceived effects of CM on students' progress. Tables 3.8 and 3.8A below

present the results obtained.

Table 3.8: Perceived effects of CM on students' progress, expressed quantatively.

No.	Items	% of responses*						
		SA	A	TA	N	D	SD	TD
8.1	When the professor mixes English with Arabic extensively, I often do not understand the lecture.	7	21	28	12	35	25	60
8.2	My grades would be higher in this course if the instruction was in Arabic only.	42	20	62	18	14	6	20
8.3	Lectures in which both Arabic and English are used demand more of my time trying to understand than lectures in Arabic only.	32	35	67	15	5	13	18
8.4	The course would be easier if the lectures were conducted in Arabic only.	18	46	64	16	9	11	20

*SA= Strongly Agree   A= Agree   TA= Total Agree   N= Neutral
D= Disagree   SD= Strongly Disagree   TD= Total Disagree

Table 3.8A: The effects of CM on students' progress, expressed qualitatively.

Qualitative responses
• Translating takes time and slows down learning.
• There are some difficulties created by the use of CM that affect the overall course achievements.
• CM is one aspect of the study topics.
• CM helps in learning English.
• CM has delayed positive effects on students' education and career.

Responses to item 8.1 show that for a minority of students (28%), the professors' frequent code-mixing interferes with students' understanding of the lecture. However, the majority (60%) did not feel that it had such influence. Most students did not perceive CM as a separate aspect of their studies; and so to them, any difficulties in understanding are linked to the topic or the nature of the study and not particularly to the use of CM. With regard to the effect of mixed-mode instruction on student grades, responses to item 8.2 reveal a tendency among students (indicated by the greatest percentage of 62%) to link the possibility of better achievements and higher grades in their courses to an Arabic-only mode of instruction. Citing advantages like ease of comprehension and expression, they felt that receiving instruction in their first language must be of a positive influence on their overall achievement. Moreover, from the responses to items 8.3 and 8.4, it is evident that most students (67% in item 8.3 and 64% in item 8.4) tend to link Arabic-only instruction to shorter time demands for studying and to greater ease in course work. Students felt that if they were to receive instruction only in Arabic, they would be saved the extra efforts and processes of decoding they usually go through in their studies.

It is evident from the data that CM in lectures interferes with students' progress. Students explained that receiving instruction in the language with which one is fully familiar is not the same as receiving instruction in a language with which one is only partly familiar. They further pointed out that what makes the learning situation more critical is that the elements expressed in English during the lecture are usually the basic concepts and essential content (information) around which the lecture is organized. However, despite the language difficulties encountered, students felt that they were learning English through their studies and through their professors' use of CM. Thus they felt that they are benefiting and preparing themselves to face their future language and field demands.

Students' suggestions:

As students discussed the various issues raised by the questionnaire they proposed suggestions that they felt would support the situation on different levels. Table 3.9 below presents a summary of these suggestions.

Table 3.9: Students' suggestions.

Qualitative responses
• English language teaching programs should be improved.
• More efforts in translation and Arabization should be taken.
• Professors should be made aware of students English language problems.
• Both English and Arabic have roles in achieving some national goals; these roles should be stressed for better understanding of the needs.

Students blamed the public school system for not being adequate in preparing students to meet their university English language demands. They strongly suggested that efforts

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should be taken to improve the present English language teaching programs at both school and university levels, so that they suit the particular needs of students. Another suggestion seen as important in supporting the teaching/learning situation was that professors should be made aware of the students' language problems so that they can provide the necessary assistance. Moreover, students felt that they have a duty to be able to function in all fields and serve the country in its national language, Arabic. Therefore they stressed the role of English in gaining knowledge and maintaining advancement and the role of Arabization in establishing and keeping the country's national identity.

2. Data From Discussions With Professors:

The researcher's discussions with professors over the issue of code-mixing in the university provided the study with data that shed light on the examined situation from an additional perspective. The summary of the points raised in these discussions are presented in Table 3.10 below. The data obtained disclose the professors' role and attitudes toward code-mixing . These attitudes and views are significant because they have an influential role in molding the students' attitudes toward the language of instruction.

With regard to the issue of professors' awareness of their own mix, the results show that professors are conscious of their use of English along with Arabic while lecturing. They maintain that their CM is generally limited to specialized terminology and a few incidence of verbal readings of short texts (for example reading a few sentences, an equation, or a paragraph from a required reading).

Table 3.10: Professors' views on code-mixing in the university instructional settings.

Main Issues	Professors' Views
1. Professors' awareness of their own code-mix.	- generally aware of their mixing; - some code-mixing is intended and some is not; - aware that most of the mixed elements are nouns and noun phrases (terminology); - however, not always aware of their use of full (or long) English utterances.
2. Professors' perception of their students' ability to handle the mixed mode instruction.	- students can handle it successfully; - students are aware of professors' coping strategies and can make use of them; - students have their own learning strategies to deal with CM in instruction and can always use their 'usually well-developed' skill of memorization as a last resort; and - it is a time-related problem for students that resolves itself within the first year or so.
3. Professors' coping strategies.	- do a lot of repetition and modification of language; - monitor the pace of their speech; - use visual aids and handouts; and - sometimes offer translations and language explanations.
4. Professors' views on Arabic as a language.	- Arabic is a beautiful prestigious language, a source of pride; - it is part of one's identity and heritage; - it is a living language that is not, nor ever was dead, as claimed by some; - it can be extended and used in the fields of science, and technology; - the use of Arabic should be encouraged in teaching and learning.
5. Causes of code-mixing in the university instructional settings.	- there is a world-wide inclination to use English; - most publications and materials in science and technology available exist in English; - educators and academics should take efforts to support the move toward Arabization; - knowledge is not confined to a one language, and - language should not be a barrier in knowledge.

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The data obtained on the issue of students' ability to learn through mixed-mode instruction reveal that professors see their students employing certain learning strategies, and seem confident in their students' ability to solve the language problems successfully. While professors acknowledged their students' language difficulties, they explained that they recognize and accommodate to some of their students' learning strategies. Nevertheless, they argued that problems of learning through English or mixed codes are only temporary and would gradually dissolve as students develop suitable learning strategies, or when they become more familiar with their studies and to the professors' individual speech styles.

This data set is also informative about the professors' coping strategies in such teaching situations. According to the data obtained, professors asserted that they often offer some assistance to their students in order to achieve the lecture goals. They stated that in order to help overcome language problems, they usually adjust their speech, depend on more explicit material (visual aids and handouts), translate into Arabic, or provide extra explanations.

With regard to the professors' views on the Arabic language, they expressed favorable attitudes. They asserted their respect for the Arabic language which they considered a source of pride and as part of their identity. They argued that Arabic has been and will be for ages to come a living language that can be used in any field. Furthermore, they tended to recommend and encourage the maximum use of Arabic in the university instructional settings.

The other issue that arised in the discussions concerned the reasons that lead to CM in instruction. Among the causes considered by the professors is the international tendency toward using English in science and technology. Another cause is the unavailability of teaching/learning materials in Arabic. However, professors seemed to hold themselves, as educators and academics, partly responsible for that developed mixed-language situation. They claimed that they have a role to play in order to maintain and save the use of Arabic in scientific and technical domains. A concluding point in the discussion of this issue was that language should not be a barrier in the path of gaining knowledge and maintaining advancement, yet in the same time, knowledge should not confined to one language.

3. The Materials Examined:

Examining some course materials shed light on the linguistic tasks or demands the use of English may present to students. The course materials collected and examined for the purpose of this study were the following:

- *Handouts*: They were mostly in the form of notes prepared by the instructors, sometimes accompanied by a few photocopied pages of published material. Some handouts were also in the form of course notes provided by the different departments at the beginning of the course. Most of the collected handouts were written completely in English. A few handouts were written mostly in Arabic with the use of some English (written) terminology.

    It was revealed that the professor-prepared handouts were detailed, explicitly written and made simple for students to understand and follow during the lectures.

The result of this was that most students did not need to make extensive lecture notes of their own.

- **Textbooks** : Prescribed books that are published in Western countries in English. They are the type of material that are likely to be used as textbooks and references at universities elsewhere in English-speaking environments.

  It was also found that while students are required to use textbooks and published materials (papers, references, and journal articles) they are confronted with linguistic tasks that they might not be able to fully manage. The type of published material used by students in their studies is one that is intended for an English-speaking audience and does not account for users with limited English language capability. Students have to read and understand their topics through the medium of English. Furthermore, they do not only have to understand the content, they also have to grasp the form so that they become able to process, produce, or apply what is learned (in English) when necessary in their studies or for exam purposes.

- **Specialized dictionaries**: Students tended to use and sometimes rely on specialized dictionaries that provide translations of words and terms.

  Specialized dictionaries seemed to serve in finding translations of English words that students encounter in their study materials; however, they do not always provide enough explanations about the range of meanings, nor about word use. Such dictionaries provide definitions that are sometimes confusing as they are presented out of context. Students do not tend to rely heavily on dictionaries as they find them impractical and time consuming.

- *Exams and term papers*:. Exams and term papers are the usual type of materials used for evaluation in the learning/teaching situations examined. On the exam papers, the headings (course title and number, department, date, term, and instructor's name) were written in English. The exam questions in the sample collected were written either in English only, or in a mixture of Arabic and English. However, with regard to the language in which students were to write their answers, there were no written instructions provided.

The term papers were written by students in both Arabic and English together. The choice of language for writing the term papers seemed to be unrestricted. Some students presented term papers written completely in English, others limited their use of English to some phrases and referential terms.

With regard to exams and term papers, it was found that, as far as language is concerned, they are sometimes challenging. For exam purposes, first, students are expected to have read and understood the assigned English readings. Taking the exam involves additional linguistic tasks. They have to understand the questions that are written in English, or using some English; then as required, they must answer correctly and accurately using English (partly or fully). This, therefore requires some knowledge of English, and particular language skills, that are hardly simple.

- *Student Notes:* Notes were taken during the lecture. Some students wrote detailed notes, others wrote the titles of topics raised in the lectures and had just a few words and terms under each. Much of these notes were comments and explanations of

concepts discussed in the lectures, along with Arabic translations of some of the terminology used. Generally, these notes were mostly written in English.

4. Field Notes:

This set of data is comprised of notes based on the observations of three lectures given by the departments where the study was conducted. These notes were organized under two main headings: *lecturers' performance* and *students' behavior*. Table 3.11 presents a summary of the notes taken on the lecture situations.

Table 3.11: Notes on lecture situations.

Lecturer Performance	Student Behavior
• Controlled and dominated the speech event.	• Most students arrived early and were seated before the lecturer came.
• Lecturing took the form of formal presentations.	• Showed respect for authority of lecturer.
• Used transparencies and lecture handouts.	• Seemed to place positive value on effacement and silence.
• Wrote the introduced concepts and new English terminology on the boards.	• Showed deference to lecturers.
	• Followed and compared between lecture and notes.
• Provided translation of terms.	• Copied what lecturers wrote on the boards.
• Read parts of texts to students.	
• Did a lot of repetition and speech modification.	• Sometimes asked lecturers to repeat an explanation.
• Asked a lot of comprehension-check questions.	• Answered the lecturer collectively when asked.
• Offered to answer questions at the end of the lecture.	• Asked few questions.
• Did not allow for much discussion.	

The data reveal that the teaching/learning contexts at both Garyounis University and Al-Arab Medical University seem to be very much teacher-centered. Lectures were

largely monologues. Professors took the speaker role through-out the lectures and gave very limited opportunities for their students to participate. During the lectures, while professors were using source material that may have been beyond the level of their students, they attempted to adapt both the conceptual and the linguistic level of the material. As they were simplifying and explaining what was being taught, they were also adjusting and modifying their language in several ways: they spoke slowly, repeated the English words, wrote the new words or concepts on the board, and provided Arabic translations. To confirm that their students were following and understood them, professors extensively used comprehension-check questions, to which they sometimes received short group responses.

With regard to the audience, it can be said that the student role and attitudes toward teaching and learning is very much typical of Arab society. The data show that student behavior seemed to be influenced by their culture with its emphasis on respect for one's elders and teachers. Thus appropriacy determines that students show loyalty, respect and deference. For students , the lecture atmosphere is not as informal as that in the West. When professors started to speak noise diminished, students followed, took notes and listened quietly. Eating, drinking, chewing gum, talking or leaving the room while the professor is speaking are considered somewhat offensive to the speaker. Student raise their hands for permission to comment or ask a question, otherwise it would be an inappropriate interruption. Generally, professors do not invite much student participation and students do not tend to ask a lot of questions.

CHAPTER 4

Findings and Conclusions

Findings:

This study was designed to investigate aspects of code-mixing in a university scientific and technical teaching/learning context in an Arabic-speaking country. More specifically it measured the extent to which CM existed in the speech of a small group of university lecturers; it examined the susceptibility of grammatical categories to being rendered by English; and it examined the students' attitudes toward CM in their university instructional settings. Findings for each of the addressed questions are provided in this section of the paper. These findings are drawn from a synthesis of all the data sets on which this study was based. Furthermore, due to the multi-aspect nature of the examined phenomenon of CM, the findings as presented below, tend to raise important related issues and questions for further research.

The extent to which CM is a feature in the speech of lectures:

The response to the first question addressed, concerning the extent to which CM has featured the language of instruction, was based on an analysis of the recorded speech. CM was defined as the verbal behavior of embedding English words, phrases, sentences, or constituents in Arabic-based instruction. The present study reveals that CM was a dominant feature in the speech of the lecturer participants involved in this study. The phenomenon of CM was found to constitute 52% of the speech exhibited in the lecture

situations examined. This picture serves to provide an idea about the extent of the use of CM. However, in the absence of any norms or base-line studies, it does not provide a basis upon which one can draw conclusions on whether this extent of use is excessive or not. Such conclusions would demand an account for numerous related issues (linguistic, sociolinguistic, educational, national, and also international) and that is far beyond the scope of this research. Moreover, because of the different specifics of studies that investigate CM (for example the languages or language varieties involved, the particular sociolinguistic context of the study, and the participants' characteristics), it is difficult to compare the findings of this study with the findings of others.

Although the language policy at both universities in which the data for this study were collected (Garyounis and Al-Arab University) decrees that the language of instruction is Arabic, in practice, English is being used along with Arabic in lecturing. This situation is not unique. A lot of research on language contact (for example Hannigan, 1986; Arden-Close, 1993; Kachru, 1994; Truchot, 1997; Flowerdew, and Miller, 1992; 1995; 1996, 1997; Mustafa and Al-Katib, 1994) report the use of English to varying extents at nominally non-English medium universities around the world, particularly in scientific and technical subjects. In Truchot's (1997) discussion of the use of English in scientific branches, he explains that scientists, researchers and practitioners in these fields tend to function as members of an international community, and share a single common language; that language, for many reasons, has come to be English. Trauchot also adds that the extensive use of English in scientific fields sometimes makes the use of national languages difficult. Some countries make efforts to maintain up-to-date scientific and technical

terminology, others do not favor such language engineering. In this regard, Wijnands (as cited in Truchot, 1997) states that *"A consequence of a laissez-faire attitude is that it reinforces the shift toward the use of English in higher education and industry"* (p. 67).

The grammatical categories susceptible to being rendered into English:

The second question addressed concerned the grammatical categories susceptible to being rendered in English. Having demonstrated that CM occurred frequently in the lectures examined, this study has also explored a grammatical aspect of CM in order to find answers to the addressed issue. Upon examining the distribution of English elements by grammatical category, it was found that the majority (58%) of the English elements (that occurred in the mixed type of utterances) were at the level of single nouns. The noun phrase category was found to have the next highest (34%) tendency for being rendered in English, then adjectives (4%), and then clauses (3%). With a percentage of only 1% all the other grammatical categories (single verbs, verb phrases, adjective phrases, adverbs, prepositional phrases, and conjunctions) were almost prohibited from being expressed in English.

When examining the literature for findings of other investigations that have considered the issue of grammatical categories in their exploration of CM, some similarities were found. Studies show that the noun and noun phrase categories have the highest tendencies for being rendered in English (Berk-Seligson, 1986; Poplack, 1980; Poplack, Wheeler, and Westwood, 1989; Mustafa, and Al-Khatib, 1994). These studies also show variations in

the susceptibility of other word classes or grammatical categories to English. Scotton (1989) report that nouns have been the largest percentage of switches in many studies of code-mixing.

It is worth noting that while the present study addressed particular issues of CM, it has also uncovered an aspect other than those intended. It revealed that many of the elements expressed in English consisted of terminology and referential terms. These elements can be described as scientific or technical words, semi-scientific or semi-technical words, and other words and phrases which are not specifically scientific but, belong to the phraseology of science (Herbert, 1965). This aspect of CM however, calls for more research.

Students' attitudes toward CM in the university instructional settings:

In response to the addressed question regarding students' attitudes toward CM in the speech of lecturers, findings of the present study can be summarized and discussed with consideration to three sub-issues: students' attitudes toward Arabic, students' attitudes toward English, and their attitudes toward CM. The assumption here is that students' attitudes toward Arabic and their attitudes toward English interact to form their attitudes toward CM where the two languages are combined in a single spoken unit.

Attitudes toward Arabic:

To the participants (students and professors) of this study, Arabic was reported as Haugen (1971, p. 288) stated, who described one's native language as being " *much more*

than an instrument; among other things it is also an expression of personality and a sign of identity." Participants expressed pride, love and respect for the Arabic language, which they regard as one of their greatest cultural treasures. Professors and students reported having a desire to re-assert the role of Arabic and the Arab character of their society and also an esteem for the language in terms of the broader ethnic unity symbolized by it. Above all, Arabic was reported as the language of The Koran, which is not to be tampered with or improved upon. In addition, Arabic is sufficient to be used in all fields, including science and technology. Most participants supported this belief by citing historical facts about major contributions made in algebra, arithmetic, alchemy, chemistry, physics and medicine by Arab scientists working in the Arabic language. They expressed the view that Arabic should be widely used, and that international scientific reports should be regularly translated (including all foreign terms) into Arabic to guarantee its optimum use. While participants expressed a desire for Arabizition they acknowledged that the Arabic language academies, which were established to develop Arabic so that it could become the language of science and technology, have done very little toward this end. Participants are thus found to favor the use of their own native language, Arabic, as the medium of instruction because they are sentimentally, ideologically, and instrumentally attached it, and have additional rational reasons for believing it should be used.

Attitudes toward English:

Quirk and Widdowson (1985) point out that in some countries, such as The Netherlands or Spain, English is used for external purposes such as trade and science. In

other countries like India and Pakistan it is used alongside national and regional languages for internal purposes such as administration, broadcasting and education. in Libya, English is mainly used for external purposes and therefore it is a foreign language. Abbott et al. (as cited in Al-Haq and Smadi, 1996) have claimed different motivations for the use of English. They made a distinction between the instrumental and sentimental uses of the language. In this view, according to the findings of the present study, English remains instrumentally motivated in the universities' instructional settings. Participants distinguished between the different aspects of the English language: the spiritual aspect (the Western cultural component of the language), and the instrumental aspect of the language. Zughoul and Taminian (1984) report that Arabs generally tend to publicly reject Western culture and values and view them as corrupting elements to their Arab Moslem cultural values. The participants of this study did not report that the use of English in academic settings necessarily carried threatening values. To them, English is acknowledged to be a world language that is spoken by billions; it is a language that happens to be the preferred code used for a great deal of scientific and technical knowledge; and it is a vehicle for knowledge. However, Participants do not believe in the superiority and universality of the English language and culture as the only language of civilization and advancement. Students expressed confidence in their own identities and ability to filter out any polluting values that might be carried with English. They expressed awareness of some circumstances of the language situation in their fields of study, including obstacles to Arabization and the unavailability of Arabicized materials, and so tended to emphasize the role of English as a means of technological transfer and

advancement in their own scientific community and its contribution to society. Hence, the need and use of English are instrumentally motivated where cultural loading is minimized. Such perception and awareness of the need for English does not conflict with the students' strong call for Arabization, nor does it affect their loyalty and adherence to their country, culture and national identity. Instead, according to the findings of this study, this attitude, perception and awareness seem to stand behind students' strong motivation to master English and learn through English, so that they achieve their short-term and long-term goals as such to gain knowledge in order to benefit society and protect the country from backwardness in the fields of science and technology.

Fellman (1973) claimed that Arabs are not only antagonistic toward Western values, but also antagonistic towards Western languages. The findings of this present investigation would appear to contradict this claim. The Arab participants in this study are found to acknowledge the practical value of the English language and have neutral to positive attitudes towards it for instrumental purposes. Similar conclusions were reported by Al-Haq and Smadi (1996) in their investigation of attitudes toward English among Arab university students in Saudi Arabia, and also by Zughoul and Taminian (1984) who examined Arab student attitudes in Syria. These studies found that Arab university students have positive attitudes toward English for the instrumental role it plays in their education.

Attitudes toward code-mixing:

In light of the student responses to the questionnaire and discussion between the researcher and students, which assisted in exploring the reasons behind the questionnaire responses, students' attitudes toward CM were found to be rather positive. Students expressed understanding and awareness of many factors and language issues that relate to their professors' CM while lecturing. This awareness to a large extent seems to have shaped their attitudes toward the examined phenomenon.

Participants in this study reported an attachment to their native language, Arabic; a consideration for the difficulties in processes of exclusive Arabization; as well as an understanding of the role of English and its usage in their fields of study. CM then was perceived as a product of necessity. Among students, acceptability of CM in instruction was the general trend (responses to item 1.2 of the questionnaire revealed that CM was an acceptable style of speech to the majority of students, 74%). This trend reflects students' tendency to accommodate that style of speech and the mixed-mode of instruction in this context. Furthermore, it is evident from the data (for example: responses to item 4.1, where 75% of the students felt that the use of English with Arabic in their courses was inevitable; and item 4.4, where 74% saw that CM was deliberately engaged in to attain lecture goals) that students perceive CM as serving a communication strategy by which academic goals are facilitated and achieved.

While the findings of this study indicate that students seemed to face some difficulties in their studies caused by the professors' code-mixed speech (reflected in the discussions and responses to items of category 5 concerning students' reaction to CM and category 8

concerning the perceived effects on students' progress), it is also revealed that students have a tolerance for this linguistic aspect of their studies. They even tend to link their English language problems more to their own inadequate school preparation and background in English rather than to their professors' speech performance. The findings of this study further indicate that while students showed understanding of some of the difficulties and obstacles in Arabization processes, they perceived CM as a temporary practical solution for the language situation in their university studies and expressed their willingness to benefit and learn through it.

Upon comparing the professors' views on code-mixing with those of their students', the findings of this study reveal points of similarity and others of mismatch between the two participant groups. Regarding professors' awareness of CM, both professors and students agreed that mixing English with Arabic while lecturing is more of a choice and consciously engaged in for academic purposes. Both groups realized that elements of terminology or referential terms is what constitute most of the English employed by professors during lectures. On this particular aspect, since our data show that most of the English elements in the mixed utterances were terminology, participants' views hold true. However, professors seemed less alert to their use of English when it extended beyond the level of individual terminological references. Students on the other hand were aware and expressed their dislike of such extended use.

With regard to the students' ability to manage learning through an Arabic-English mixed mode of instruction, professors drew on their teaching experience and their own understanding of the learners in supporting their views. They seemed confident in their

students' ability to accommodate and adapt to CM, and also benefit from this style of speech. Professors expressed awareness of difficulties that students face in their initial encounters with English when it is employed in their studies, but they perceived the situation as self-resolving or as a time-tied problem that eventually reduces in magnitude. Students also report that in spite of some difficulties, they can effectively manage to learn through mixed-mode instruction. In congruence with the professors' views, they report that getting adjusted and adapting to the use of English in their studies takes time and effort but the difficulties are only temporary. Surprisingly, most of the students (78%) did not perceive their professors as being aware of the language problems that students encounter in their studies. However, students do not tend to blame their professors for this situation. They either blame themselves and take responsibility for being unable to meet with ease the language demands required at their universities, or blame the school system for their inadequate language preparation. The tendency to withhold direct blame or even not to hold professors responsible for problems arising out of the teaching/learning situation, is typical of the Arab culture and others (for example the Confucian Chinese culture) where the elders, especially the teacher, is considered on a par with one's father in terms of demanding loyalty and deference (Flowerdew and Miller, 1995).

Based on the notes taken during the observation of lectures and discussions with professors, professors expressed understanding of the language problems among students and stated that they (professors) employ a number of coping strategies to help their students. These coping strategies include repetition, translations, language modification and the use of notes, handouts and visual aids. While the data collected (recording and

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transcription of professors' speech and direct observation) further confirm that such teaching strategies did in fact take place, students' perception of their professors as unaware of the language difficulties seems to be questionable. One explanation for this is that the strategies employed by professors may not adequately address the difficulties experienced by learners.

Professors viewed the Arabic language in a similar way to their students. Both stressed their intimate sentimental and ideological attachment to their native language, the language of The Koran. They also asserted their belief that Arabic is capable of handling modern sciences. Zughoul and Taminian (1984) explain that the intimate relationship between Islam and Arabic is reflected in the attitudes of Moslems all over the world and particularly of Arabs.

The views of professors regarding some of the causes behind CM in the university instructional settings were very much similar to those of their students. Considering the word-wide inclination towards English in the fields of science and technology and problems cited by the informants, of the unavailability of Arabic materials and references, professors tended to find CM justifiable. Moreover, in support of the use of Arabic in science and technology, professors felt that they (professors) are not doing what is expected of them (work of Arabization and translation) to help in maximizing the use of Arabic in their academic settings. Students saw that support for Arabization must be provided by greater efforts from the language academies across the Arab world. Finally, professors and students asserted that knowledge should not be confined to one language, and that language should not be an obstacle in the path of knowledge. That is to say,

language learning should be encouraged and scientific knowledge should be made available in many languages.

The exploratory nature of the present investigation served to shed light on additional aspects of CM that might have also played a role in shaping the participants' attitudes. Synthesizing the various sets of data used in this study, it is evident that CM in the contexts examined was perceived as *'transactional'* or *'situational'* (Blom & Gumperz, 1972). The behavior of CM seemed to be imposed by the situational demands of the examined speech events. Apparently, it was taken for granted that it was a necessity or rather determined by the register of the domains examined. Furthermore, while the type of CM found in the context of this study is characterized by frequent occurrence, community acceptance, and positive evaluation, according to Scotton's (1980, and 1989) views, it could be described as an 'unmarked' choice. That is, it carries no hidden sociolinguistic meaning or intention. However, the findings of this study supports Gardner-Chloros' (1991) argument that code-mixing is sometimes a product of necessity rather than choice.

Conclusions:

This study has established that the phenomenon of code-mixing of Arabic and English is a common feature in some of the the lectures studied at two Libyan universities. Upon examining the extent of use of CM by the teaching professors, CM was found to make up 52% of their speech while lecturing.

The study also shows that the English elements embedded in the speech units analyzed were mostly nouns and noun phrases (58% nouns and 34% noun phrases). Other word

classes (adjectives, clauses, adjective phrases, verbs, verb phrases, adverbs, conjunctions and prepositional phrases) found were of comparatively rare frequency of occurrence (all together constituted 8%). Thus, it can be concluded from this investigation that the order of the grammatical categories susceptible to being rendered by English is found to be as following (from high to low): nouns, noun phrases, adjectives, clauses, adjective phrases, verbs ; verb phrases, and then adverbs and others. It is also worth noting that most of these English elements are field-specific terminology.

With regard to the students' attitudes toward code-mixing, the study reveals that students have neutral to positive attitudes toward this phenomenon. Such attitudes result from their knowledge and awareness about the present role of English in university education, about the repercussions of the current Libyan national language policy and the difficulties in achieving and maintaining the goal of exclusive Arabization of higher education. The students' positive attitudes toward the use of English, however, do not conflict with their favorable attitudes toward their native language, Arabic. Rather they are accompanied with a strong call for Arabization. Hence, students are motivated by the aim of balancing between educational advancement and technological modernization on the one hand and the establishing and maintaining of their national identity on the other. The study revealed an objective positive perspective to the issue of using English along with Arabic in academia, which is contrary to the view found in public discourse in Libyan society (Al-Gallaly, 1989).

While this study addressed specific, predetermined issues, it also raised a number of issues and questions as a by-product. For example: To what extent is scientific and

technical terminology available in Arabic? To what extent is this accessible to professors and students? How effective are lectures that are delivered in a mixed-mode and how would effectiveness be measured? Such questions, and others call for further research.

Attitude towards languages, national and foreign, is a complex concept involving many different facets and it is not an aspect that is easily measured (Baker, 1992). This is one problem in attitude studies. The sample population and instruments used for eliciting data in this study and the research conditions and speech sample are all limited by circumstance and therefore the findings of this study cannot be regarded as generalizable.

Implications:

Having presented the findings of this investigation, the question of implications for language planing and education comes into play. The study offered opportunities for insightful discussions and constructive dialogues. In the researcher's view, the present study provides implications for: English language educators and course designers; students; university professors in Libya; and also for national language policy makers.

One emerging theme in this investigation was that it is the students' poor English which was regarded as being responsible for difficulties in the learning/teaching situations examined and which therefore needs to be improved. Language instructors and course designers responsible for the preparation of students for university-level studies might profitably take into account the particular post-secondary language needs of students. Special efforts will be needed to develop and improve ESP and EAP courses at the

university level, so that students are better prepared for the language demands of their individual fields of study.

As this study reveals that students have an instrumental motivation to learn English, then it follows that the instrumental value of English language learning should be promoted in English language teaching situations and acknowledged within national and institutional policy. Research suggests that *"by highlighting the value of English as a tool, students and teachers will then share a common and explicit rationale for English language learning"* (Che Dan, Haroon, and Smith, 1996, p. 233).

University professors are not expected to function primarily as language teachers. However, they need to be made aware of the role they may have to play while lecturing (adapting the linguistic and the subject matter content to the level of students), and how these roles may differ from lecturing in purely first-language (Arabic) contexts. Moreover, professors should be made aware of their students' linguistic problems and learning strategies, so that they try to adjust their lecture delivery accordingly. The *'language across the curriculum'* movement (Bullock report, 1975) has highlighted this issue. It emphasizes the role that the language of teaching plays in the process of learning and acquiring any kind of knowledge; and that language is not only the province of the language teachers but of all teachers (Carre, 1981). It suggests that, in order to secure better learning by students, teachers of all subjects should take responsibility and pay attention to language in their teaching.

Since English is of important instrumental value in education, members of society, especially students, need to acquire it in order to further their knowledge in technical and

scientific fields. If English is not readily available for at least some sections of the population, the advancement of scientific research and technology will be limited (Graddol, 1997). Therefore in designing a national language policy, academic and developmental issues should be given high consideration. Also, in order to allow the Arabic language a chance to develop in the fields of modern science and technology, more efforts should be taken on a national and international scale to translate reports into Arabic and to produce scientific and professional terminology. Furthermore, in planning language policies it should be considered that the world-wide spread of English is a product of the internalization of societies and the globalization of exchanges (Truchot, 1997; Graddol, 1997; Kachru, 1988, 1994). As a consequence, social, economic and linguistic conflicts might occur. Solutions for such problems which can be found within a single country are usually limited (Truchot, 1997).

Finally, while this study contributes to understanding of code-mixing as a language contact phenomenon in academic settings, it might also allow researchers to compare other cases of code-mixing and fill a gap in the literature of sociolinguistic research.

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Appendix A

QUESTIONNAIRE

Dear student,

This questionnaire is basically concerned with the phenomenon of mixing English with Arabic in the university instructional settings. More precisely, it investigates your opinions and attitudes towards your professors use of English words, phrases, sentences, etc. while they are lecturing in Arabic. The questionnaire includes items that refer to the specific lecture you have just attended as well as others that concern other settings. Please read the questionnaire items carefully, and show your extent of agreement/disagreement to each item by putting (✓) mark under one of the five answers provided (strongly agree, agree, neutral, disagree, and strongly disagree).

No.	ITEMS	ANSWERS				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Arabic is a prestigious language.					
2	Mixing English with Arabic in the university instructional setting is an acceptable style of speech to me.					
3	Reports of scientific and technical knowledge originally written in English should be translated to Arabic.					
4	Mixing English with Arabic in lectures is a sign of being in tune with the times.					
5	Mixing English with Arabic poses a threat to the Arabic language in the domain of science and technology.					
6	Mixing English with Arabic is a common phenomenon in the lectures I have attended in this university.					
7	The professor was frequently mixing English with Arabic during the lecture.					
8	The professor seldom mixes English with Arabic in his lectures.					
9	I would like my professors to minimize their use of English in lecturing.					
10	I would prefer if the professor choose to use only English in the lectures rather than mix English with Arabic.					
11	I would prefer that my professor speaks only Arabic in the lectures.					
12	The use of English with Arabic in this course is inevitable.					
13	While lecturing in Arabic the professor's use of English is limited to parts of sentences (e.g.: words, terminology, or phrases) rather than complete sentences.					
14	The professor uses complete English sentences while lecturing in Arabic.					
15	I wish there were restrictions on the use of English in the lectures offered in this university.					
16	The professor uses English words when he/she can not find the equivalent terms in Arabic.					
17	English is used in the university instructional settings as an instrument for technology and information transfer.					
18	There are Arabic terms for all the English terminology used in the lecture.					
19	The professor consciously mixes English with Arabic to attain the goals of the lecture.					
20	The professor chooses to mix English with Arabic in the lecture as a personal preference.					
21	English is more sufficiently sophisticated than Arabic for studying the topics introduced in this course.					

No.	ITEMS	ANSWERS				
		Strongely Agree	Agree	Neutral	Disagree	Strongly Disagree
22	When my professor mixes English with Arabic in the lecture I have no option but to accept.					
23	The professor's mixing of English with Arabic is not a problem to me.					
24	I feel challenged when the professor mixes English with Arabic in lecturing.					
25	I get frustrated when the professor mixes English with Arabic during the lecture.					
26	It takes me time to get used to the mix of English with Arabic in lectures.					
27	I do not mind my professors' use of English in lecturing, if English occurs in their speech only as parts of sentences rather than compete sentences.					
28	I do not mind my professors' use of complete English sentences while lecturing in Arabic.					
29	The professor should consider adjusting his/her speech during lectures so that it is all in Arabic only.					
30	The professor is aware that he/she is mixing his/her Arabic with English.					
31	The professor could have used Arabic only, if he/she mastered Arabic better.					
32	The professor knows that some students have problems with his mixing of English with Arabic.					
33	The amount of the mix of English with Arabic exhibited in the lecture is similar to that in other lectures that I have attended in my university carrier.					
34	The amount of the mix of English with Arabic exhibited in the lecture is more than the mix in other lectures that I have attended in my university carrier.					
35	The amount of the mix of English with Arabic exhibited in the lecture is less than the mix in other lectures that I have attended in my university carrier.					
36	The way English is used with Arabic in this lecture is similar to that in other lectures.					
37	When the professor mixes English with Arabic a lot , I often do not understand the lecture.					
38	When the professor mixes English with Arabic in the lecture I tune out.					
39	My grades would be higher in this course if the instruction was in Arabic only.					
40	Lectures in which both Arabic and English are used demand more of my time trying to understand than lectures in Arabic only.					
41	The course would be easier if the lectures were conducted in Arabic only.					

42- Are there any comments that you would like to add regarding the use of mixed Languages (Arabic and English) in lectures that you have attended during your university studies?

Distribution of the three types of utterances by the language used in each lecture