

Original Paper

Investigating the Effect of Mother Tongue on the Iraqi Undergraduates' Use of English Segmentals and Syllables

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Abstract

This study investigates the effect of mother tongue on the Iraqi undergraduates' use of English segmentals and Syllables. English segmentals and Syllables are two basic topics that are studied under the domains of phonetics and phonology. Those Iraqi undergraduates consist of Iraqi EFL learners (the two terms are used interchangeably in this study). English segmentals and Syllables involve consonants, vowels, diphthongs, consonant clusters and vowel clusters. The problem of the study is that EFL Iraqi students have no capacity to recognize English consonants and syllables. However, the following questions are focused upon in this study:

- 1) What are the English consonants and vowels which are not recognized by Iraqi undergraduates under the effect of their mother tongue?*
- 2) What are the types of consonant and vowel clusters which are not recognized by Iraqi undergraduates under the effect of their mother tongue?*

The aims of the study include investigating the effect of learners' mother tongue on their recognition of English segmentals and syllables, knowing whether Iraqi learners at the university level face difficulties in the recognition of consonants and vowels, ensuring whether EFL Iraqi students have difficulties in the recognition of consonant clusters and vowel clusters, and determining whether the difficulties faced by Iraqi EFL learners are caused by the learners' mother tongue.

It is hypothesized that Iraqi EFL undergraduates do not recognize some English consonants, English vowels, diphthongs, some types of consonant clusters and vowel clusters. In addition, it is hypothesized that the incorrect answers of Iraqi learners' recognition of consonants, simple vowels, diphthongs, consonant clusters and vowel clusters are more than the correct ones.

To achieve its aims and verify its hypotheses, the study adopts a quantitative method of investigation. The study chooses a sample for the present study, designs the test containing items concerned with consonants, vowels, and consonant clusters and vowel clusters. It includes only a recognition question. After applying the test on 100 undergraduate students of fourth stage/Department of English/College of Education for Humanities/University of Thi-Qar, the study arrives at some conclusions, some of which include that most Iraqi EFL learners find difficulty in recognizing some consonants, they appeared to be efficient in recognizing some simple vowels and diphthongs, they have the capacity to distinguish only some consonants but they are unable to recognize other consonant clusters and they appeared to be also inefficient in recognizing all vowel clusters.

1. Introduction

1.1 Problem of the Study

After a long period of English language learning and studying, university Iraqi EFL students cannot accurately manipulate to recognize consonants and vowels and syllables and their structures. It is worthy to mention that Iraqi undergraduate students have no capacity to recognize English consonants and syllables due to their lack the ability to perceive such phonetic and phonological units. However, the following questions are focused upon in this study:

- 1). What are the English consonants and vowels which are not recognized under the effect of the undergraduates' mother tongue?
- 2). What are the types of consonant clusters which are not recognized under the effect of the mother tongue?
- 3). What are the types of vowel clusters which are not recognized under the effect of the learners' mother tongue?

1.2 Aims of the Study

This study aims at:

- 1). Investigating the effect of the learners' mother tongue on their use of English segmentals and syllables.
- 2). Knowing whether Iraqi learners at the university level face difficulties in the recognition of consonants and vowels.
- 3). Ensuring whether EFL Iraqi students have difficulties in the recognition of consonant clusters and vowel clusters.
- 4). Determining whether the difficulties faced by Iraqi EFL learners are caused by the learners' mother tongue.

1.3 Hypotheses of the Study

It is hypothesized that:

- 1) Iraqi undergraduates do not recognize some English consonants correctly.
- 2) Iraqi university learners do not recognize some English vowels correctly.

- 3) Some diphthongs are not recognized by the sample of the study.
- 4) Iraqi EFL undergraduates face difficulty in recognizing some types of consonant clusters.
- 5) Vowel clusters are not correctly recognized by the sample of the study.
- 6) The correct answers of the undergraduates' recognition of consonants are more than the correct ones of vowels.

1.4 Procedure of the Study

The following procedure is followed in the research:

- 1). Presenting a theoretical background regarding consonants, vowels and syllables and their structures as well as some related terms.
- 2). Selecting the sample for the present study.
- 3). Designing the test, questions concerning consonants, vowels, consonant clusters and vowel clusters as recognition.
- 4). Describing and analyzing the data under investigation.
- 5). Arriving at some conclusions and recommendations.

1.5 Value of the Study

The present study is predicted to be important for Iraqi EFL undergraduates. Moreover, it can be counted as a device for those who are partially or wholly, concerned with the study of speaking as one of the essential skills of English language. Moreover, this work may be considered as a background knowledge for learners to devise the essential methods and strategies that can help them overcome the difficulties that may face in the concerned area.

1.6 Limits of the Study

The method adopted in this study is a quantitative research type that is utilized in analyzing the data collected. As for the sample, it includes (100) EFL Iraqi students who study at the department of English, College of Education for Humanities, University of Thi-Qar. However, the current study includes the recognition of English consonants and vowels, and syllables.

1.7 Definitions of Related Terms

The following concepts will be frequently employed in the thesis:

I. Mother Tongue

Mother tongue is remarkable for the speed with which it takes place. It generally occurs for all children providing strong support for the idea that there is an innate predisposition in the human infant to acquire language (Yule, 2010, p. 170). Besides, Bussmann (1999, p. 629) claims that the term mother tongue refers to an umbrella term for:

- (a) the natural acquisition of one's first language,
- (b) the natural acquisition of a second or multiple languages,
- (c) second language acquisition in a formal learning environment,
- (d) the relearning of one's first language in therapy (language disorder).

- 1) Segmentals:

Crystal (2011, p. 426) states that segment refers to any discrete unit that can be identified, either physically or auditorily, in the stream of speech. In this respect, Bussmann (1999, p. 1038) defines a segment as a result of linguistic analysis that attempts to isolate minimal linguistic units, such as phones, morphs, syllables, from a language or speech continuum.

2) Iraqi EFL Learners

According to Mariño (2019, p. 34), a non-native speaker is someone who uses and knows a second (foreign) language at any time. Since non-native speakers are distinguished from native speakers, the concept of the non-native speaker should be based on distinctiveness rather than weaknesses. That is, they should be regarded as bilinguals rather than as incompetent natives. It has been established that individuals who speak two languages frequently have different proficiencies that demonstrate the complexity of their own cognitive processes, and that the ways they use resources for actual life advantages and interaction reveal the various abilities they can have if speaking a second language.

Moreover, Richard and Schmidt (2010, p. 397) illustrated that non-native speaker indicates a language user for whom a language is not their first language. The language use of non-native speakers has been a focus of attention to determine such things as the effects of non-native accents on intelligibility, attitudes towards NNS accents, and the role of NNS accents as a marker of the speaker's identity.

3) Test

According to Bachman (1999, p. 20), a language test is a systematic method and a means of checking the students' answers through the elicitation of certain behaviour to make inferences about certain characteristics of an individual. Additionally, Richards and Schmidt (2010, p. 591) affirm that the term test means any procedure for measuring ability, knowledge, or performance.

2. The Segmentals and Syllables in English with Reference to Arabic

2.1 Consonants

2.1.1 Definitions of Consonants

Phonetics is a field of linguistic study which studies the articulation, perception and anatomy of speech sounds. Thus, it is either concerned with the description of all existing sounds or it describes the sounds of a specific language, English, Arabic, etc. (Betti, 2002a, p. 1).

Phonetically speaking, consonants are sounds made by a closure or narrowing in the vocal tract so that the airflow is either completely blocked, or so restricted that audible friction is produced. A consonant is a speech sound where the air-stream coming from the lungs is either completely blocked (stops), partially blocked (nasals), or where the opening is so narrow that the air causes audible friction (fricative). With some nasals, the air-stream is blocked in the mouth but is allowed to escape through the nose (Richards & Schmidt, 2010, p. 56). From a phonological point of view, they are units which function at the margins of syllables, either singly or in clusters (Crystal, 2011, p. 103).

A consonant is a speech sound made by partial or complete closure of part of the vocal tract, which obstructs air flow and causes audible friction in varying amounts (Harris & Hodges, 1995, p. 42). On this

ground, Thorum (2013, p. 287) considers that a consonant is produced when the vocal tract is either blocked or so restricted that there is audible friction ([k], [s], etc.).

Additionally, Nicolosi et al. (2004, p. 81) point out that a consonant is a conventional speech sound made with the vocal folds vibrating or not vibrating by certain successive constructions of articulatory muscles which modify, interrupt, or obstruct the expired air stream so that its pressure is raised.

2.1.2 Classification of English Consonants

Consonants, as stated by many writers such Dang and Ruitter (2005, p. 165) and Brinton and Brinton (2010, p. 36) can be described in terms of three factors, namely, voicing, place of articulation and manner of articulation.

2.1.2.1 Voicing

Carr (2008, p. 190) defines voicing as the vibration of the vocal cords. Fully voiced sounds are produced with vibration of the vocal cords during the articulation of the sound, as in the [v] in heavy. In English, there are nine voiceless consonants and fifteen voiced consonants. The voiceless consonants, word-initial stops are fully voiced if the vocal cords vibrate prior to the release of the stop closure. Many phonologists point out that the voiced/voiceless dichotomy alone is insufficient to distinguish between the full ranges of laryngeal contrasts in human languages. One needs, at least, to distinguish between the following:

- (a) fully voiced stops, in which the vocal cords are vibrating prior to the release of the stop closure, as in the French word *bain* ('bath'): [bɛ̃];
- (b) voiceless unaspirated stops, as in the French word *pain* ('bread'): [pɛ̃];
- (c) voiceless aspirated stops, as in the English word *pad*: [p^hæd].

It has been pointed out that, although English spelling conventions represent words such as *bed* with the grapheme, the sound in question is not, in fact, a fully voiced stop, but an unaspirated voiceless stop, unlike the stop at the beginning of the French word "*bain*". The contrast among French stops is thus a contrast between fully voiced and voiceless unaspirated stops, while the contrast in most varieties of English is between voiceless aspirated and voiceless unaspirated stops (Carr, 2008, p. 189).

2.1.2.2 Places of Articulation

Ladefoged and Disner (2012, pp. 119-122) illustrate that place of articulation means when one produces a sound, sometimes his/her tongue touches her/his lips and sometimes only the lips come together and make sound, sometime his/her tongue touches his/her soft palate or back part alveolar tongue, etc. So, this touching of places in the vocal tract of speech organs is called place of articulation. Of course, not all consonants are made by touching, i.e., glottal /h/ is made in the glottis. The following is a list of the different places of articulation:

a) **Bilabials**

Bilabials are the consonants which are produced by two lips. When we produce this sound, we can only use both lips. So, the lips help to produce bilabial sounds. The English sounds [p], [b], and [m] are the bilabial sounds. Examples: [p] spin, [b] bed, [m] man (Rogers, 2000, p. 39).

b) **Labio-dentals**

Labio-dentals are the consonants which are articulated by using both the lower lip and the upper front teeth. In bilabial sounds, we use both of our lips but in labio-dental, we use only our lower lip with the upper front teeth to produce sounds. The English sounds [f] and [v] are the labio-dental sounds (Carr, 2013, p. 19). Examples: fan [f], van [v].

c) Dentals

Dentals are the consonants produced by inserting the tongue with the upper set of teeth. The English sounds [θ] and [ð] are the dental sounds. Example: [θ] thing, [ð] this (Catford, 1994, p. 90).

d) Alveolars

Alveolars are the consonants articulated with the tip or blade of the tongue against the alveolar ridge that is located behind the upper teeth. English and Arabic alveolar sounds are /d/, /t/, /s/, /z/, /l/, /n/, /r/. Examples: stop [t], debt [d], run [n], suit [s], zoo [z], loop [l] (Clark and Yallop, 1995, p. 39).

e) Palato-alveolars

Palato-alveolars are produced by placing the tongue blade close to the hard palate behind the alveolar ridge. The tongue tip may feel as if it is just barely behind the alveolar ridge. Simply said that, when one touches the palate between his/her palate and alveolar ridge, he/she is producing palato-alveolar sounds. The English sounds [ʃ] and [ʒ] are palato-alveolar sounds. Example: sheep [ʃ] and occasion [ʒ] (Clark & Yallop, 1995, p. 39).

f) Retroflex

In the production of the retroflex sounds, we have to curl with tongue up. In the English, [ɻ^w] is the only retroflex sound. Example: *red, ride, run, rope* (Davenport & Hannahs, 2005, p. 57).

g) Palatal

The back part of the tongue goes and touches palate and produces palatal sounds. In the English, [j] is the only palatal sound. Example: yet, yes (Davenport & Hannahs, 2005, p. 57).

h) Velars

The back part of our tongue goes up and touch the soft palate is velar. The English sounds [k], [g], [ŋ] are velar sounds. Example: “king [k], get [g], ring [ŋ]” (Rogers, 2000, p. 42).

i) Glottal

Glottal is the deepest place of articulation. In pharynx, we have glottis or epiglottis, this sound is produced in the glottis. The English, [h] is the only glottal sound. Example: “*happy, hot, hit, hang, hug*” (Ladefoged & Disner, 2012, p. 122).

2.1.2.3 Manners of Articulation

Katamba (1989, pp. 6-7) describes manner of articulation as the nature and extent of the obstruction involved because sounds made at the same place of articulation—and which are both voiced or voiceless may differ depending on the manner in which the airstream is modified. That is, it deals with the way in which the air escapes the mouth. The following is a list of some of the manner of articulation explained below:

a) Plosives

In the production of plosives, the air stops in the mouth causing a complete closure, and then released with force causing a slight plosion (explosion). Plosive sounds are /p, b, t, d, k, g/. There are four phases in its production which are **Closing phase, Compression phase, Release phase and Post-release phase** (Roach, 2009, p. 26).

b) Fricatives

In the production of fricatives, the articulators narrowing the air passage and let the air escapes gradually with frication, causing a 'hissing-like' sound, such as /f, v, θ, ð, ʃ, ʒ, s, z, h/ (Katz & Assmann, 2019, p. 21).

c) Affricates

Affricates are rather complex sounds, because they begin as plosive (the air stops in the mouth), and end as fricative (the air leaves gradually with friction) (Ashby, 2011, p. 12). Affricative sounds are /tʃ, dʒ/.

Nasals

Nasals are produced when the soft palate (velum) is lowered closing the way to the oral cavity where airflow escapes through the (nose) nasal cavity. The nasal sounds in English are /m, n, ŋ/.

d) Lateral Approximant

In the production of the lateral, the air leaves the mouth through the sides of the mouth because the center of the tongue is in complete contact with the roof of the mouth (alveolar ridge). Lateral Approximant is /l/. Lateral approximant can be light and dark /l/.

e) Approximants

Approximants occur where the articulators approach each other but not in close, direct contact, the approach is incomplete (approximant approach). Approximants are /r, w, j/ (Katamba, 1989, p. 7).

2.1.3 A Comparison between English and Arabic Consonants

Alsha'lan (2020, p. 2) states that the English consonant sounds differ from the Arabic ones regarding places of articulation. Some of the English consonants do not exist in Arabic and vice versa. However, both languages share the common palatal /j/. Arabic speakers find it difficult to pronounce /v/ sound and use /f/ instead. They also substitute /t/ and /d/ for /θ/ and /ð/. Arab speakers cannot pronounce the flap /s/ but stress the written /tt/. In English, /t/ is an aspirated alveolar but is considered non-aspirated denti-alveolar in Arabic. As for /r/, it is always pronounced in Arabic but sometimes deleted in British English. Moreover, /ʔ/ exists in Arabic as a consonant but it exists as an alternative pronunciation to /t/ in intervocalic positions in English.

Iraqi Arabic is one variety of Arabic that is used by the Iraqi people: educated and non-educated to communicate with each other. It is like other varieties which have their own phonetic and phonological systems with a number of consonants and vowels (Jasim & Sharhan, 2013, p. 5; and Betti & Igaab, 2019, p. 230).

Generally, there is a difference in the number of phonemes in Iraqi Arabic phonology which re cited by phonologists. Within Iraqi Arabic phonology, there are 39 phonemes: 8 monophthongal vowels and 31 consonants. There are 3 short vowels /i, u, a/, 5 long vowels /i:, ee, a:, o:, u:/, 12 voiceless consonants and

19 voiced ones. They are /p, b, f, ʔ, D, S, ʃ, T, ʈ, ʧ, x, ǧ, h, H, t, k, g, q, ʔ, j, d, ʁ, m, n, l, r, w, y/. The voiceless bilabial plosive /p/ is deleted in the phonemic inventory of Nasiriya Iraqi Arabic since it has not been used by the Nasiriya Iraqi people (Abdul-Sattar, 2015, p. 10; and Betti & Igaab, 2019, p. 230).

In Modern Standard Arabic, there are 36 phonemes, out of which twenty-eight are consonants, six are vowels (three short and three long): /a/, /i/, /u/, /a:/, /i:/, /u:/, and two are diphthongs: /aj/ and /aw/. English has twenty vowel phonemes, of which eight are diphthongs.

The following table describes the Arabic consonants:

Table 1. Arabic Consonants (Adopted from Sabir & Alsaeed, 2014, p. 185)

S.No.	Phonetic symbol	Arabic letter	Three-term label	Example
1	B	ب	Voiced bilabial plosive	ħub(love)
2	T	ت	Voiceless denti-alveolar plosive	tətabIq(match)
3	D	د	Voiced denti-alveolar plosive	daxII(inner)
4	K	ك	Voiceless velar plosive	kita:b(book)
5	ʒ	ج	Voiced palate-alveolar affricate	ʒuʒ(hunger)
6	Q	ق	Voiceless uvular plosive	qəməɾ(moon)
7	L	ل	Voiced alveolar lateral	la: (no)
8	M	م	Voiced bilabial nasal	mətəɾ (rain)
9	N	ن	Voiced alveolar nasal	nu:r (light)
10	F	ف	Voiceless labio-dental fricative	fən (art)
11	θ	ث	Voiceless inter-dental fricative	θəlaθəh (three)
12	ð	ذ	Voiced inter-dental fricative	ðəki(intelligent)
13	S	س	Voiceless alveolar fricative	su:q (market)
14	ʃ	ص	Voiceless velarised alveolar fricative	ʃəħħəh(health)
15	Z	ز	Voiced alveolar fricative	ruz (rice)
16	ʃ	ش	Voiceless palate-alveolar fricative	ʃəms (sun)
17	X	خ	Semi-Voiced uvular fricative	xəsəɾəh (lose)
18	ɣ	غ	Voiced uvular fricative	ɣuba:r (dust)

19	ħ	ح	Voiceless pharyngeal fricative	ħima:r (donkey)
20	H	ه	Voiceless glottal fricative	hawa:ʔ (air)
21	R	ر	Voiced alveolar trill	rəb (lord)
22	Σ	ع	Voiced pharyngeal frictionless continuant	çəql (mind)
23	J	ي	Voiced palatal semi-vowel	jəd(hand)
24	W	و	Voiced labio-velar semi-vowel	wahid (one)
25	ʦ	ظ	Voiceless velarised denti alveolar plosive	ti:n (soil)
26	ʢ	ض	Voiced velarised denti- alveolar plosive	ðəçi:f (weak)
27	ð	ظ	Voiced velarised alveolar fricative	ðərf (envelope)
28	ʔ	أ	Voiceless epiglottal plosive	faʔr (rat)

Below is the description of these consonants:

a) Bilabials

Bilabials are articulated with the upper and lower lips approaching or touching each other. English /p/, /b/, and /m/ are bilabial stops but in Arabic /p/ sound is not available, For example: /p/-pit/pit/ in English /b/-bit/bit/ in English, بلع /baliy/ in Arabic. It is going to be a negative transfer to the similar Arabic consonant /b/. This occurs before the interference between English and Arabic consonants. /m/ in “me” and مدرسة /mədrasa/ (school) (Chouchane, 2016, p. 89).

b) Labiodentals

Labiodentals are articulated with the lower lip touching the upper set of teeth. English /f/ and /v/ are bilabial fricatives, For example: /f/ occurs in both English and Arabic -fan in English, فنة /fana/ “class” but in Arabic/v/- van is not found in Arabic. Also, negative transfer occurs to the nearest Arabic sound /f/ (Sabir & Alsaeed, 2014, p. 34).

c) Dentals

Dentals are articulated with the tip or blade of the tongue inserted between the upper and lower set of the teeth. English /θ/ and /ð/ are dental fricatives. There are actually a couple of different ways of forming these sounds; the tip of the tongue can approach the back of the upper teeth, but not press against them so hard that the airflow is completely blocked. The blade of the tongue can touch the bottom of the upper teeth, with the tongue tip protruding between the teeth—still leaving enough space for a turbulent

airstream to escape. This kind of /θ/ and /ð/ is often called inter-dental in Arabic. Examples: /mθl/ (Hago & Khan, 2015, p. 56).

d) Alveolars

Alveolars are articulated with the tip or blade of the tongue touches the alveolar ridge, the ridge immediately behind the upper teeth. The English stops /t/, /d/, and /n/ are formed by completely blocking the airflow at this place of articulation. In Arabic /t/, /d/ are called denti-alveolar e.g., /t/ - ʔittī ʃal/ “call”, /d/- /təqəddom/ “advance” (Rogerson-Revell, 2011, p. 55).

/s/ and /z/ occur under in fricatives/s/ /səriʔ/ “bed”, /z/ /mauzəh/ “banana”, /n/ (alveolar nasal) /n/ ʔnaʕIm/ “Soft” /r/(alveolar trill) /r/

/rəml/ “Sand” and /l/ (alveolar lateral) /l/ ʔla:/ “no” (ibid).

e) Velarised alveolar

/S/ ʔ articulated with the blade of the tongue approaches closely the alveolar ridge, it approaches the upper front teeth in Arabic (Ibn-Jinni, 1944, pp. 52-53). Example in Arabic is/rəqs/ “Dance”.

f) Velarised denti-alveolar

/ʔ/, /ð/ and /ð/, these sounds are pronounced in very different manner, non-native speakers are not pronounced perfectly and clearly (ibid).

g) Palato-alveolars

/ʃ/ and /dʒ/ are articulated with the blade of the tongue behind the alveolar ridge and the body of the tongue raised toward the palate (Bite, 2013, p. 32).

h) Palatals

Palatals are articulated with the body of the tongue approaching or touching the hard palate. English /j/ is a palatal approximant—the tongue body approaches the hard palate, but closely enough to create turbulence in the airstream. Example: /j/ /ħəyat/ ʔħəyət/ “Life” (Bite, 2013, p. 33).

i) Labio-velars

Labio-velars are articulated with both the lips and the soft palate example: ʔ w/ in /ʔswəd/ “Black”.

Velar: articulated with the body of the tongue touches the soft palate, or velum. In English /k/, /g/, and /ŋ/ are stops. Examples for velar consonants/ k /- /kItab/ “book”, and / g / does not occur in Arabic (Bite, 2013, p. 33).

j) Uvulars

Uvulars are articulated with the back of the tongue and uvula e.g., /q/ qittəh/ “cat”, /ɣ/ /ɣəbi/ “idiot” and /x/ in /ʔx/ “brother”. Pharyngeal:/ħ/ and /ʕ/ articulated with the back of the tongue and pharynx, for example: /ħ/ /mʊ ħərrIk/ “engine” and /ʕ/ /ʕnzə/ “goat” (Zarka, 2013, p. 67).

k) Glottal

The glottis is the opening between the vocal folds. In /h/sound, this opening is narrow enough to create some turbulence in the airstream flowing past the vocal folds. For this reason, /h/ is often classified as a glottal fricative. Example for glottal /h/, / mauzəh/ “banana” (ibid).

2.1.3.1 Phonetic Differences

The English voiceless plosives have aspirated allophones when the plosives occur initially in accented syllables. Thus /p/, /t/ and /k/ are heavily aspirated in words like “pencil” /pensl/, “potato” /pə'tetəʊ/ and “account” /ə'kaʊnt/ respectively. The voiceless plosives that occur in Arabic are unaspirated in whatever phonetic environments they occur. Native speakers of Arabic are therefore likely to use the unaspirated variety of /p/, /t/ and /k/ in their English speech in whatever phonetic environments they occur. This is likely to affect the intelligibility of their English only when they speak to native speakers of English who tend to hear an unaspirated voiceless plosive as a voiced plosive. Within the Arabic-speaking world, this allophonic substitution does not create any problems of unintelligibility. The major allophones of /t/ and /d/ in English are alveolar plosives (Al-Ani, 1970, p. 122).

On the other hand, the major allophones of /t/ and /d/ in Arabic are denti-alveolar plosives. Therefore, it is very common to hear Yemeni learners of English saying [ti:n] instead of [di:n] and [dn] instead of [tn], replacing the alveolar plosives by the more familiar denti-alveolar plosives. This again does not cause any problems of unintelligibility within the Arab world because they do make a distinction between the English [t] and [θ] and [d] and [ð] since [t], [d], [θ] and [ð] are four distinct phonemes in Arabic (Wahba, 1998, p. 65).

The English phoneme /dʒ/ has the allophone [dʒ], the voiced palato-alveolar affricate. The Arabic phoneme, on the other hand, has one major allophone which is a voiced palatal affricate. Arabic speakers of English who pronounce the Arabic letter as an affricate are likely to use the palatal affricate in their English speech. This again, except to the ears of a trained phonetician, does not cause any problem of unintelligibility (AlYaqoobi, et al., 2016, p. 33).

There are however, a vast majority of Arabic speakers who pronounce the Arabic letter /dʒ/ as a voiced plosive. The affricate (either palatal or palato-alveolar) just does not occur in their speech at all. These people face a major problem because they systematically substitute [dʒ] in English words by [g], resulting in a lot of confusion and sometimes total unintelligibility. Thus, they say [gʌmp] for jump, [gɒn] for John, [frɪg] for fridge, [bæg] for badge. Minimal pair distinctions like “bag”, “badge”, “egg”, “edge” just do not occur in their speech at all (Heltai, 1988, p. 78).

Arabic speakers who have no [g] at all in their Arabic dialects are confronted with a serious problem. Since they have a voiced palatal affricate and not a voiced velar plosive in their Arabic speech. The sound [ŋ] does not occur at all in the speech. Most of these replace the English [g] by their voiced palatal affricate and so the orthographic ‘n’ which occurs before the affricate, is automatically pronounced as [n]. It is not uncommon to hear “finger” pronounced [fɪndʒə] and “hunger” pronounced [hʌndʒə]. These people do face serious problems of unintelligibility as far as their English speech is concerned (ibid).

The English phoneme /r/ has a wide variety of allophones in native varieties of British English. It is pronounced variously as [r] (a voiced post-alveolar frictionless continuant in word-initial position), [r] (a voiced post-alveolar fricative in word-medial position preceded by /b/, /d/ and /g/), [r] and [ɾ] (a voiced alveolar tap in the intervocalic position and when /r/ is preceded by /θ/). On the other hand, the phoneme

/r/ in Arabic has just two allophones [ʔ] and [r], a tap and trill, both articulated as alveolar sounds. The tendency on the part of native speakers of Arabic when they speak English is to use the tap variety [ʔ] wherever /r/ occurs in an English word (Al-Ani, 1970, p. 78).

2.1.3.2 Phonological Differences

In English, [p] and [b] belong to two different phonemes because the two sounds contrast with each other in innumerable minimal pairs like /pin/-/bin/, /pull/-/bull/, etc. On the other hand, in Arabic, the two sounds are in complementary distribution. [p] occurs only word-medially when the following sound is voiceless. /sabt/ = [sapt] (Saturday), /ʔabkar/ = [ʔapka] (proper noun) and /habs/ = [haps] (prison) can be cited as examples. The voiced plosive [b] occurs in all of the phonetic environments like word-initial (as in /bmt/ (girl) which is [pmt]), inter-vocalically (as in /kabi:r/ (big) which is [kabi:r]), word-medially but in non-intervocalic position (as in /ʕamba/ (papaya) which is [ʕamba]) and word-finally (as in /kita:b/ which is [kita:b]). Native speakers of Arabic learning English as a foreign language have therefore the tendency to substitute [b] for [p] in their English speech when [p] occurs initially, medially (both intervocalic and non-intervocalic) and finally. It is not at all uncommon to hear “pill” pronounced [bɪl], “supper” pronounced [subər], “compose” pronounced [kəmbo:z] and “cap” pronounced [kæb] in English speech of native speakers of Arabic. This is a serious sound substitution because this phonemic substitution is bound to make the English speech of native speakers of Arabic totally unintelligible (Umm Muhammad, 1993, p. 17).

The voiceless palato-alveolar sound [tʃ] occurs in English and it is a separate phoneme since it contrasts with [t], [ʃ] and [dʒ]. In fact, the series “chin”, “tin”, “shin” and “gin” establish the phonemic status of all the four sounds listed above. In classical Arabic, the voiceless affricate sound /tʃ/ just does not exist, even as allophones, but the sound does form a part of some dialects like Nasiriya Iraqi Arabic, /ʔint/ (I was) (Betti, 2007, p. 399). The natural tendency on the part of native speakers of Arabic learning English as a foreign language is to substitute the [tʃ] sound by [ʃ], the fricative articulated in the same place and which does form part of the sound system of Arabic. Thus chin is [ʃin] in Arabic English, /cheat/ is [ʃi:t] and /catch/ is [kæʃ]. The three examples listed above (chin—shin, cheat—sheet and catch—cash) are minimal pairs establishing the contrast between [tʃ] and [ʃ].

Such minimal pair distinction is obliterated in Arabic English because of the total or partial absence of the affricate [tʃ] from the sound system of Arabic. This, like the [p], [b] substitution discussed above, is an example of a serious sound-substitution which ought to be remedied if Arabic English has to be intelligible (ibid).

In English the voiced alveolar nasal [n] and the voiced velar nasal [ŋ] belong to two separate phonemes because of the existence of minimal pairs like “sin and sing”, “win and wing”, etc. In Arabic, on the other hand, the two sounds are allophones of the same phoneme, [ŋ] occurring only before [k] and [q], and [n] occurring elsewhere. So, native speakers of Arabic learning English have no problem whatever in pronouncing words like “bank”, “uncle”, “hunger” and “finger” because these words fit neatly into their native Arabic phonological system. But they do have a problem while pronouncing

words like “sing” and “singing”. They pronounce these words with a [ŋg]. But this pronunciation does not lead to unintelligibility. So a teacher of English need not bother too much about this substitution (Alsiraih, 2013, p. 33).

The voiced labio-dental fricative [v], occurring in English as a phoneme is distinct from its voiceless counterpart [f]. These are minimal pairs like fat and vat, establishing the phonemic status of [f] and [v]. In Arabic, both classical and colloquial, the voiced fricative [v] just does not occur. Many native speakers of Arabic, therefore, have the tendency to use [f] in place of [v] in whatever position in a word [v] occurs. Thus, one hears [fa:st] in place of [va:st], [li:f] in place of [li:v], [‘i:fən] in place of [‘i:vən], etc. This, needless to say, is a serious sound-substitution since it occurs as a result of interference. The sounds [s] and [z] occur in both Arabic and English and in both the languages the minimal pairs like “sip—zip” (English) and [mɪsma:r] (nail) and [mɪzma:r] (flute) (Arabic) (Alotaibi & Mohammed, 2010, p. 39).

The voiced palato-alveolar fricative [ʒ] has phonemic status in English, though its frequency of occurrence is limited and is also restricted to the word-medial and final positions. Because of its total absence from the phonological system of Arabic, Arabic speakers of English tend to replace it by [ʃ], its voiceless counterpart. Thus, one may hear words like “occasion”, “measure”, “leisure” and “pleasure” with [ʃ] in them. This substitution does not affect the intelligibility of Arabic English and therefore need not cause serious concern to teachers of English to native speakers of Arabic. The phoneme /r/ is a source of difficulty to many Arab learners of English. In Arabic, the phoneme /r/ has just two allophones, the tap [r] and the trill [r]. In English, on the other hand, the trilled [r] does not occur at all and the tap [r] occurs in English intervocalically and after [θ]. The other three allophones of /r/ ([r], the voiced palato-alveolar frictionless continuant, [r], the voiced post-alveolar fricative and [r], the voiceless post-alveolar fricative) just do not occur in Arabic therefore, Arabic speakers of English use the tap variety [r] wherever /r/ occurs in English. Further, in English, /r/ is pronounced only when orthographic r or rr is followed by a vowel (ibid). The production of English consonants is almost confined to the oral cavity of the vocal tract, except for the glottal fricative /h/, and the glottal stop /ʔ/ (for those of speakers of English who use it). By contrast, the Arabic consonants occupy the whole dimension of the vocal tract. Seven Arabic consonants are produced in the back (laryngeal, pharyngeal and uvular) regions of the vocal tract: /ʔ, h, ʕ, ħ, ʁ, χ, q/ (Al-Jallad, 2019, p. 44).

Arabic has a number of emphatic consonants, which have multiple articulation; the secondary one is raising the back of the tongue towards the velum, in addition to their primary point of articulation. These are /S/, /F/, /ð/ ظ, and the alveolar lateral fricative /ð/ ض. English has eight stop consonants, two of which are affricates. They are organized in four homorganic pairs (with the same place of articulation). In each pair, one is a voiced consonant and one is voiceless: /b, p, /t, d, /g, k/ and /dʒ, tʃ/. Arabic has eight stop consonants, only three of them are homorganic: /b/, /d, t, tʃ/, /dʒ/, /k/, /q/, and /ʔ/ (Al-Jallad, 2019, p. 41).

2.2 Vowels

2.2.1 Definition of Vowels

Crystal (2011, p. 517) mentions that vowels are sounds produced without a complete closure in the mouth or a degree of narrowing which would make audible friction; the air escapes evenly over the centre of the tongue. In the production of vowels, the air escapes solely through the mouth. These vowels are said to be oral; if some air is simultaneously released through the nose, those vowels are nasal, e.g., dean /di:n/. Additionally, in a phonetic classification of vowels, reference would generally be made to two variables, the first of which is easily describable, the second much less so:

- (a) the position of the lips—whether rounded, spread, or neutral;
- (b) the part of the tongue raised, and the height to which it moves, (ibid).

Besides, Roach (2009, p. 78) states that vowels are the class of sounds which make no obstruction to the flow of air. They always occur at the centre of a syllable, and it is rare to find any sound other than a vowel which is able to stand alone as a whole syllable. In terms of phonetics, each vowel involves a number of features that distinguish it from other vowels. These have the shape of the lips, which may be rounded, as /u:/, neutral, as in, /ə/ or spread, as in, /i:/.

2.2.2 Description of Vowels

Skendera and Burleigh (2011, p. 32) maintain that tongue and lip movements result in varying shapes of the mouth, which can be described in terms of the following four criteria:

(1) Part of the Tongue Raised or Lowered (Tip, Central, Back)

Vowels can be changed by moving the tongue up or down, or moving the lower jaw up or down. Usually, we use some combinations of the two sorts of movement, but when drawing side-of-the-head diagrams, it is usually found simpler to illustrate tongue shapes for vowels as if tongue height were altered by tongue movement alone, without any accompanying jaw movement (Roach, 2009, p. 11).

(2) Closeness/openness (High, Low, Mid)

Closeness/openness refers to the distance between the tongue and the palate. If the tongue is high, as in the last sound of the word “bee”, it is close to the palate, and we therefore speak of a close vowel. If the tongue is low, as in the third sound of the word “starling”, the gap between it and the palate is more open, and we speak of an open vowel. Between these extremes, there are three intermediate levels: If the tongue is in a mid-high position, i.e., a bit lower than high, the resultant sound is a mid-close vowel, or half-close vowel. If it is mid-low, i.e., a bit higher than low, we hear a mid-open vowel, or half-open vowel. A vowel that is made with a tongue height somewhere between mid-high and mid-low is simply called a mid- vowel (Skendera & Burleigh, 2011, p. 32).

(3) Frontness/backness

Frontness/ backness refers to the part of the tongue that is raised to the highest. If it is the front of the tongue as in the last sound in “bee”, we speak of a front vowel. If the back of the tongue is raised to its highest as in the middle sound in “goose”, the resultant sound is a back vowel. Between these extremes,

we recognize one intermediate position: If the centre of the tongue is raised highest, as in the second sound of the word “bird”, we speak of a central vowel.

(4) The shape of the lips

The lips can be either spread, neutral, or round. English does not utilize this contrast very much. As in most other languages, the spreading of the lips usually correlates with frontness, and lip-rounding with backness. This means that there are no two vowel phonemes in English that differ only in the shape of the lips (Skendera & Burleigh, 2011, p. 32).

2.2.3 Position of Vowels Regarding Cardinal Vowels

The cardinal vowels are often said to be vowel qualities produced at certain very peripheral points in the vowel space, such as cardinal vowel. In this regard, Richards and Schmidt (2010, pp. 66-67) elaborate that cardinal vowel system refers to any of the vowels in the cardinal vowel system. The cardinal vowel system was invented by Daniel Jones as a means of describing the vowels of any language. The cardinal vowels themselves do not belong of any particular language, but are possible vowels to be used as reference points.

2.2.4 Nature of Vowels

In so far as whether vowels are made without glide from one vowel to another, Skendera and Burleigh (2011, p. 36) categorize vowels into three main types which are pure vowels, diphthongs and triphthongs:

2.2.4.1 Pure Vowels

These are vowels which are made without any glide from one vowel to another. There are (12) pure vowel. They are also called monophthongs. They can either be short or long.

2.2.4.2 Short Vowels

Roach (2009, p. 16) adds that short vowel is only relatively short. Vowels can have quite different lengths in different contexts. Each vowel is described in relation to the cardinal vowels. The symbols for these short vowels are: /e, ə, ɚ, ɪ, ʌ/ which are not presented in Arabic. Additionally, Skendera and Burleigh (2011, p. 36) maintain that the quality of the English long and short vowels remains relatively constant while they are being pronounced, i.e., the speech organs do not usually change their position during articulation. These vowels are therefore called pure or plain vowels, or monophthongs

2.2.4.3 Long Vowels

These are the vowels which tend to be longer than the short vowels in similar contexts. These vowels tend to be long, the symbols consist of one vowel symbol plus a length mark made of two dots: Thus they are:

/i:, ε:, a:, o:, u:/. The five long vowels are different from the seven short vowels not only in length but also in quality. If one compares some similar pairs of long and short vowels, for example /i/ with /i:/, or /u/ with u:, or /æ/ with /a:/, it can be seen distinct differences in quality as well as in length. For this reason, all the long vowels have symbols which are different from those of short vowels (Roach, 2009, p. 16).

2.2.4.4 Diphthongs

Carr (2008, p. 43) views a diphthong as a vowel sound in which there is a transition or glide from one vowel to another within a single syllable nucleus, as in the English word [baɪ] (buy). Transitions from one vowel to another across syllable boundaries are not diphthongs; English [si:ɪŋ] (seeing) has a transition from [i:] to [ɪ], but this is not a diphthong, since the transition does not take place within a single nucleus. According to Roach (2009, p. 17), diphthongs are divided into three groups with two types of diphthongs:

- **Centering diphthongs** end in /ə/; these are /ɪə/ as in “beard” /bɪəd/, /eə/ as in “aired” /eəd/ and /ʊə/ as in “tour” /tʊə/.
- **Closing diphthongs** are of two groups; the first group is ending in /ɪ/; these are /eɪ/ as in “pain” /peɪn/, /aɪ/ as in “time” /taɪm/ and /ɔɪ/ as in “voice” /vɔɪs/, while the other one is ending in /ʊ/; these are /əʊ/ as in “home” /həʊm/ and /aʊ/ as in “house” /haʊs/.

2.2.4.5 Triphthongs

The sounds which consist of a movement or glide from a diphthong to /ə/ are called triphthongs. In terms of length, diphthongs are similar to the long vowels described above (Roach, 2009, p. 17). Additionally, triphthongs refer to a type of vowel where there are two noticeable changes in quality during a /to syllable, as in a common pronunciation of English *fire* and *tower* /faɪə/ and /taʊə/. Besides, Crystal (2011, p. 496) mentions five closing diphthongs with /ə/ added on the end; which are:

- 1) /eɪə/ as in “player” /pleɪə/
- 2) /aɪə/ as in “fire” /faɪə/
- 3) /ɔɪə/ as in “royal” /rɔɪəl/
- 4) /əʊə/ as in “lower” /ləʊə/
- 5) /aʊə/ as in “power” /paʊə/

2.2.5 Length of Vowels

Depending on length of vowels, there are short vowels, long vowels, diphthongs and triphthongs which are arranged in length as such. Triphthongs include a diphthong plus a vowel, diphthongs include a glide from one vowel into another while simple vowels, i.e., *short or long*, do not include any glide from one vowel into another (Jaegar, 2006, p. 22).

2.2.6 Classification of Arabic Vowels

There are three vowels in Iraqi Arabic called (*ḥarakāt*) literally means “movements”. They can be both short and long. The three long vowels are considered as letters in their full right and feature. While their corresponding short vowels known as diacritic signs, are symbols written either above or below a particular consonant. There is also a concept of “vowel quality” which can be interpreted as the different ranges of sounds each vowel can produce in conjunction with other letters. Similar to the way “d” can sound very differently depending on the word it’s in, like in “deep” (dēp) or “dam” (dām) (Al-Ani, 1970).

2.2.6.1 Short Vowels

Frangieh (2011, p. 12) divides short vowels in Arabic into four short vowel signs are: subdivided into fatha, kasra, damma and sukuun. Fatha, designating a short /æ/, is always written above the preceding consonant phoneme. Kasra, designating a short /i/, appears as a small diagonal line placed below a consonant. Damma, designating a short /u/, appears above the preceding consonant and sukuun is written above the word (AlJomely, 2018, p. 68).

2.2.7 Differences between English and Arabic Vowels

It was stated that all vowels are voiced and produced with no obstruction or constriction in the mouth. According to Ibn Jinni, who called the vowels huruf madd waʾistitalah (vowels) are rendered as the sounds of lengthening and prolongation and may be short (harakat) or long (huruf madd). This idea of prolongation points to the fact that Arabic vowels, being produced without constriction in the mouth, may further be lengthened, i.e., held, as long as the breath allows, and, a glottal stop begins wherever the vowels end. Long vowels are also called the sounds of softness (Ibn Jinni).

Fagihi (2012, p. 56) maintains that when the point of articulation (maxraj-ul-harf) widens (i.e., the vocal tract is not restricted) so as to keep the sound (i.e., the vowel) constantly enunciated and continued until it can no longer be prolonged, it will end by the articulation of the glottal stop (hamza). It will necessarily come to an end at this point of the sounds (huruf) which are produced with open stricture at the places of articulation are three; /a, i, u/. However, a is more open (?awsa) and softer (?alyan) than the others and for this reason it is auditorily different from both /i/ and /u/, and vice versa.

In Arabic, a long vowel can be heard with further prolongation in three cases; if it is followed by a glottal stop (hamza), if it followed by a geminate (harf mushaddad), and if it is paused upon for the purpose of recollection. On the other hand, long vowels are given alphabetical names, whereas the corresponding short vowels are actually given names that suggest phonetic distinctive features, they are called case markers (Prochazka, 1988, p. 67).

In Abdul-Rauf (1977, p. 67), it is mentioned that as in English the full sound of consonant is achieved by the application of the vowel, but there are only three vowels in Arabic. One has the value of “a” in “bat”, or “u” in “but” another has the value of “i” in “fit”, and the third has the value of “u” in “put”, they are all short. These vowels are not represented by characters following the consonants; but are represented by signs written above or below the consonants.

One of the basic distinctions in Arabic sounds is that between short and long vowels that it may make the difference between: singular and plural; as in colloquial: *جمال* /dʒamal/, *جمال* /dʒımaal/, in formal: *musa:firun* (s.) *musa:firu:n* (pl.) “traveler.” Vowels also indicate object and absence of object; as in *katabu* “they wrote” and *katabu: h* “they wrote it.” Finally, they indicate one meaning and another as in; *gamal* “camel” and *gama:l* “beauty.” (Hanna & Greis, 1972, p. 89).

Whereas the English vowels have their full place and independent existence in the English alphabet and constitute integral parts of the English words, the short vowels in Arabic are merely oral. Vowels in English and Arabic have similarities and differences. They are different in number; English has more

vowels than Arabic. They also differ in distribution; English words can begin with vowels, whereas Arabic words can only begin with consonants. Both languages have some common vowels, but at the same time, there are some vowels that are restricted to each one of them. Contrary to English which has a larger vowel system containing about nine simple vowels and seven longer vowels, Arabic has only three short and three long vowels (Kara, 1976, p. 89).

2.3 The English Syllable

2.3.1 Definitions

Phonology studies the sound system of a specific language and a branch of which is phonemics which studies the phonemes of a specific language. It studies both the segmentals and the suprasegmentals (Betti, 2002b, p. 1). It studies the syllable. The term syllable is “a unit of pronunciation usually larger than a single sound and smaller than a word”. A word can be uttered ‘syllable at a time’, like: *ne-ver-the-less*, and a best dictionary will denote where those syllabic parts exist in writing, so giving information of how a “word” can be hyphenated. The concept of syllable, in brief, is so fact to native-speakers, and is usually used in everyday interaction (Crystal, 2011, p. 467).

A syllable is “a fundamental but elusive unit in phonology”. The syllable is a phonetic unit, which is higher than the phoneme (sometimes equal to it) and which centers on a vowel. There are two exceptions to this: minimum syllables and syllables which depend on syllabic consonants. Minimum syllables may consist of only one consonant /m/, /j/, etc. Syllables which depend on syllabic consonants also do not include vowels but include only /j/, /w/ and /r/ (Betti, 2002c, pp. 31-32).

Any word has a string of several number of “syllables” or one syllable, and even speakers with no knowledge of phonetics or of linguistics usually find it easy expecting the number of syllables a word includes. For instance, people all agree that “*girl* and *salt*” have one syllable, that “*butter* and *behind*” involve two, that “*linguistics* and *kangaroo*” consist of three, that “*education* and *development*” have four, etc. (Trask, 1999, p. 200).

2.3.2 Types

Carr (2008, p. 171) maintains that the syllable can be subdivided into the onset “any consonants preceding the nucleus” and rhyme “the nucleus and any consonants following the nucleus”. The rhyme, in its turn, is subdivided into a nucleus and a coda “any consonants following the nucleus”. In this respect, Carr (2008, p. 114) illustrates that nucleus refers to mostly vowels or one of the following syllabic consonants /r/, /l/, /m/, /n/, /ŋ/. So, in the word “*but*” (/bʌt/), the onset has /b/ and the cluster /ʌt/ constitutes the rhyme that contains the nucleus /ʌ/ and the coda consonant /t/.

Carr (2008, p. 171) suggests that syllables that consist of no coda consonants are called as *open syllables*, like, *bee* (/bi:/). Besides, syllables that involve one or more coda consonants are named *closed syllables*, like, *but*. Additionally, syllables that lack an onset consonant are named empty onset syllables, like, word *eye* (/ai/). Empty onsets are denoted to be included in the process of resyllabification, whereby a consonant that might otherwise take a coda position comes to occupy a following onset position, as in the sequence *green eye*, syllabified as /gri:nai/ (where a full stop stands as a syllable boundary) (ibid).

For Davenport and Hannahs (2005, p. 65), the internal structure of the syllable is illustrated as follows:

1) Onset (O) refers to any consonants preceding the nucleus, such as, be, start.

2) Rhyme is made up of nucleus and coda.

3) Nucleus (N) is the vowel or peak of the syllable, such as, lift, pat, cut.

4) Coda (CO) refers to any consonants following the nucleus, such as, mind, text.

So, in the English syllable ‘crank’, [kræŋk], the onset (O) is the sequence of consonants [kr]. The nucleus (N) is the vowel [æ] and the coda (Co) is the sequence [ŋk], the latter two constituents comprising the rhyme (R) [æŋk].

Concerning syllable structure, it is observed the following points:

1) The grouping together of nucleus and coda to form the rhyme is not an arbitrary combination. They must share the same syllabic rhyme (nucleus + coda), whereas the nature of the onset is irrelevant; so ‘gold’ rhymes with ‘strolled’ and with ‘old’.

2) Only the nucleus is always obligatory: both the onset and the coda are optional, as in English ‘ape’ (no onset). ‘flea’ (no coda) or ‘eye’ (neither onset nor coda).

3) It is not always the case that the nucleus must be a vowel: many languages allow liquids and nasals as syllabic nucleus, as in the second syllables in the English words ‘spittle’ and ‘mutton’ (Davenport & Hannahs, 2005, p. 67).

2.3.3 Consonant Clusters in English

While phonetically, consonants are sounds made by a closure or narrowing in the vocal tract so that the airflow is either completely blocked, or so restricted that audible friction is produced, phonologically, they are units which function at the margins of syllables, either singly or in clusters (Crystal, 2011, p. 103). Ashby and Maidment (2005, p. 147) define consonant clusters as a sequence of consonants within the onset, or within the coda. Besides, Crystal (2011, p. 81) describes consonant clusters as any sequence of adjacent consonants occurring initially or finally in a syllable, such as /br-/ in *bread* and /-st/ in *best*. Brinton (2000, p. 55), in his turn, clarifies that consonant clusters are the possible sequences or combinations of sounds in a language which may begin or end a syllable. However, consonant clusters can be initial, medial or final that are explained as follows:

2.3.3.1 Initial Consonant Clusters

Initial consonant clusters consist of two or three consonants which are as follows:

1) Initial Two-Consonant Clusters

O’Connor and Trim (1973, p. 64) and O’Connor (1980, p. 64) illustrate that these are of two main kinds: A) /s/ followed by one of /p, t, k, f, m, n, l, w, j/, e.g. in “*spy, stay, sky, sphere, small, snow, sleep, swear, suit*”.

B) One of /p, t, k, b, d, g, f, θ, J, v, m, n, h/ followed by one of /l, r, w, j/. Not all of these sequences are found (e.g., /pw, dl/ do not occur). The full list is:

/p/ followed by /l,r,j/ *play, pray, pure*

/t/ /l,r,w, j/ *try, twice, tune*

/k/	/l,r,w,j/ <i>climb, cry, quite, cure</i>
/b/	/l,r,j/ <i>blow, bread, beauty</i>
/d/	/r, w, j/ <i>dress, dwell (rare), duty</i>
/g/	/l, r/ <i>glass, green</i>
/f/	/r, w, j/ <i>fly, from, few</i>
/θ/	/r,w/ <i>throw, thwart (rare)</i>
/ʃ/	/t/ <i>shriek</i>
/v/	/j/ <i>view</i>
/m/	/j/ <i>music/n/ /j/ new</i>
/h/	/j/ <i>huge (ibid)</i>

2) Initial Three-Consonant Clusters

The three-consonant cluster must be one of the following: /spl, spr, str, skr, skw, skj, stj, spj, /, such as, “spleen, spring, street, screen, squash” respectively, that is, the first element is always /s/, the second element is always one of the three fortis plosives, /p, t, k/, and the third (or last) element is again always one of the four frictionless continuants, /l, r, j, w/ (Skandera & Burleigh, 2011, p. 68).

2.3.3.2 Medial Consonant Clusters

Kreidler (2004, p. 96) points out that between two vowels in a word there may be from zero to four consonants. The number of possible consonants is greater than in word-initial or word-final position, and the number of types of clusters is also larger, as in: *problem* /prɒbləm/ and *subside* /səbsaɪd/:

(0) Zero (no consonant at all). In this case the first vowel must be a ‘free’ vowel since it ends a syllable, as in, *poet, giant*, etc.

(1) Any one consonant. Most consonants occur between a stressed vowel and an unstressed vowel and also between an unstressed vowel and a stressed vowel. For examples:

/p/ ‘copy re’pel /b/ ‘rabid de’bate

/t/ ‘metal re’tain /d/ ‘medal a’dore

(c) There may be two consonants which can be divided them into two groups.

(d) clusters of the types which also occur word-initially; when they occur between a stressed vowel and an unstressed one, the first consonant is ambisyllabic; when they occur between an unstressed vowel and a stressed one, the whole cluster is in the same syllable as the stressed vowel, such as, ‘whisper, ‘master, de’spair, etc.

(e) clusters which do not occur word-initially; the syllable division is between the two consonants, no matter which is stressed, as in, ‘cap.tain, ‘tip.sy, etc. (Kreidler, 2004, p. 99).

(f) Three consonants, which can be divided into groups:

(g) clusters which also occur initially; the first consonant must be /s/, as in, *mistress, resplendent, distress*.

(h) clusters which do not occur initially, and which can be subdivided:

(i) clusters in which the syllable division is after the first consonant (C.CC): *bel.fry, coun.try*.

(ii) clusters in which syllable division is after the second consonant (CC.C): ant.'er, emp.ty.

(iii) clusters in which the second consonant, always /s/, may be , like, cap^stan, in^stant.

Four consonants; the second consonant is always /s/, such as, instrument, obstruct.

2.3.3.3 Final Consonant Clusters

They can be two, three, or four, five, six or seven consonants as explained below:

1) Final Two-Consonant Clusters

Dang and Ruitter (2005, p. 182) state that final two-consonant clusters can be as follows:

- a) They may begin with a stop such as, hits, cups, wept, great care, pigtail, etc.
- b) They may begin with a fricative or stops such as, left, gasp, must, hidden, written, etc.
- c) They may begin with nasal such as, chance, wand, can't, sense, punch, etc.
- d) They may begin with a liquid such as, milk, pork, shelf, else, etc.

2) Final Three-Consonant Clusters

Roach (2009, p. 59) claims that there are two types of final three-consonant cluster; the first is pre-final plus final plus post-final, i.e., banks, bonds, twelfth, helped. While the second type states how more than one post-final consonant can exist in a final cluster: final plus post-final 1 plus post-final Post final 2 is again one of these phonemes /s, z, t, d, θ/, i.e. fifths, next, lapsed, etc.

3) Final Four-Consonant Clusters

Most four-final consonant clusters contain a pre-final plus a final which is followed by post-final1 and post-final2. Additionally, there are a small set of four-final consonant clusters which can be analyzed as consisting of a final consonant with no pre-final but three post-final consonants, for instance, texts, sixths, prompts, twelfths, etc. (ibid: pp. 59-60):

4) Final Five-Consonant Clusters

Most five-final consonant clusters contain a pre-final plus a final which is followed by post-final 1, post-final 2 and post-final 3. Additionally, there are a small set of five-final consonant clusters which can be analyzed as consisting of a final consonant with no pre-final but four post-final consonants. /prompt sta:t/, /bent skru:/.

5) Final Six-Consonant Clusters

Six-final consonant clusters have a pre-final plus a final which is followed by post-final1, post-final2, post-final3 and post-final4. Additionally, there are a small set of six-final consonant clusters which can be analyzed as consisting of a final consonant with no pre-final but five post-final consonants, such as, next spring /nekst sprɪŋ/, twelfth street /twelfθ stri:t/ (O'Connor & Trim, 1973, p. 77).

6) Final Seven-Consonant Clusters

Seven-final consonant clusters involve a pre-final plus a final which is followed by post-final 1, post-final 2, post-final 3, post-final 4 and post-final 5. For examples, text's stupid /teksts stju:pid/, tempts strangers /tempts streɪndʒəz/.

2.3.4 Vowels Clusters in English

Betti (2002, pp. 40-42) states that many vowel clusters can be distinguished in both English and Arabic languages. Concerning English vowel clusters, they can be illustrated as follows:

1) Short vowel + short vowel

a. /i/+/o/ beyond /bɪɒnd/

b. /u/+/i/ ruin /ruɪn/

c. /i/ +/a/ react /riækt/

2) Long vowel + short vowel

a. /i:/ + /i/ being /bi:ɪŋ/

b. /u:/ + /i/ doing /dʊ:ɪŋ/

c. /o:/ +/i/ drawing /drɔ:ɪŋ/

d. /i:/ + /e/ the end /ð:ɛnd/.

3) Long vowel + long vowel

a. /ɔ:/ + /a:/ you aren't /ju: a:nt/

4) A diphthong + a short vowel:

a. Triphthongs: player /pleɪə/

b. /aʊ/ + /i/ allowing = /əlaʊɪŋ/;

c. /əʊ/ + /i/ — going /gəʊɪŋ/

d. /eɪ/ + /o/ — chaos /keɪɔs/

e. /aɪ/ +/o/ biography /baɪɒgrəfi/

5) Diphthong + diphthong

a. /əʊ/ + /aʊ/ go out /gəʊ aʊt/

b. /eɪ/ + /aɪ/ — grey-eyed /greɪ aɪd/

c. /aɪ/ + /əʊ/ my own /maɪ əʊn/

6) Long vowel + triphthong

/u:/ + /aʊ/ — two hours = /tu: aʊə/

7) Diphthong + diphthong + diphthong + short vowel

a. /eɪ/ + /aɪ/ + /əʊ/ + /i/ May I owe it to you? /meɪ aɪ əʊ it tu: ju/

2.3.5 Consonant and Vowel Clusters in Arabic

In Arabic, most linguists (e.g., Hassan, 1990, p. 176; Swid & Sair, 2008, pp. 72-74) agree that final word syllables are of three types:

1) Sh such as ba in kataba (to write).

2) hs, such as, til in yuqatil .

3) Either shhs (long closed) when there is a stop on the final part of the syllable such as lin in dalin (lost) or shss (long, double—closed) when there is a stop on the geminated sound in a word such as bb in sabb (young man). This latter case is also found when there is a stop on two consonants from different organs of speech, such as qarr in almustaqqarr (settlement) where /q/ is uvular; whereas /r/ is alveolar. It seems

clear that final word syllable in Arabic is part of the original structure of the word itself, i.e., it is not a separate morpheme referring to polarity or whatsoever as is the case in English (Hassan, 1990, p. 173). It has been reported that not all the initial and final (Brown, 1977, p. 89) two-element clusters present problems to the Arab learners (Malick, 1957, p. 23). This is basically attributed to the fact that some of the two-element clusters have counterparts in the standard and colloquial speech of the learners. Although theoretically the clusters that do not occur in Arabic should constitute a problem, in practice this is not always true (Malick, 1957, p. 23). This could, perhaps, be attributed to the phonetic nature of the components of these clusters in that they allow a fairly good degree of co-articulation which consequently facilitates the production of the clusters. Moreover, medial clusters like the ones occurring in the following words: *April, attract, afraid, agree, ugly* and *especially*, do not pose serious difficulty because English tolerates more than one way of syllabifying them.

The real trouble stems from two-element clusters that not only because they do not exist in Arabic but also because their structural position and their phonetic nature restrict the articulatory maneuvering. On the face of it, all the three and four-element clusters are to be regarded as trouble-makers since they would not, perhaps, easily satisfy the conditions that exclude some of the two-element clusters from being difficult (Malick, 1957, p. 23). But if the same, or at least a similar, technique of splitting the two-element clusters is used with clusters greater in size then the possibility of the existence of a unified underlying procedure to counter the splitting would be quite plausible, in which case their status as greater trouble-makers might be excluded (Odisho, 1975, p. 66).

In all the above words, one epenthetic vowel is added causing not only the appearance of an additional syllable but also a radical change in the syllable arrangement of the words. The only exception is the word which contains two unabutting clusters where two alternative mispronunciations are expected. In this type of word the possibility of adding two epenthetic vowels and increasing the syllable by two is not excluded. In any case the most striking feature is that the epenthetic vowel shows a strong inclination towards occupying the same place regardless of the size of the c-luster. It is usually placed after the second element of the cluster counted in the reversed order i.e. right to left. A very similar tendency seems to function with clusters occurring initially. That is, the problem with consonant cluster can be viewed in the following points:

4) The placement of the vowel before the first element of the two-element clusters, such as, *helped* */helpit/.

5) Before the second element of the three-element clusters, which is absolutely valid for all the syllable-initial clusters of English, like, *street* */sɪtri:t/.

Thus, the problems indicate sameness in the placement of the vowel with the medial clusters. Worded differently, there is one underlying rule which governs the assigning of the place of the vowel in both the initial and the medial clusters: the vowel is placed after the second element of the cluster from the right.

In Modern Standard Arabic, there are 36 phonemes, out of which twenty-eight are consonants, six are vowels (three short and three long): /a/, /i/, /u/, /a:/, /i:/, /u:/, and two are diphthongs: /aj/ and /aw/. English has twenty vowel phonemes, of which eight are diphthongs (ALJOMAELY, 2018, p. 68).

The short vowels in Arabic are further subdivided into fatha, kasra and damma. Fatha, designating a short /æ/, is always written above the preceding consonant phoneme. Kasra, designating a short /ɪ/, appears as a small diagonal line placed below a consonant. Damma, designating a short /ʊ/, appears above the preceding consonant (ALJOMAELY, 2018, p. 68).

3. Methodology

3.1 Population and Sample of the Study

The population of the study is represented by Iraqi University students who are at the Department of English during the academic year 2021-2022. The sample of this study that is randomly selected consists of (100) male and female students from the 4th year College students, Department of English, College of Education for Humanities, University of Thi-Qar.

This is a quantitative descriptive study. The informants of this study are Iraqi non-native speakers of English with similar EFL backgrounds. Their average age is twenty two. To avoid the difference in experience which may have an impact on the results of the study, teachers and repeaters are excluded. Choosing fourth year students other than others can be ascribed to some reasons. First, conversation and linguistics are taught to them during the fourth stage of their learning. Second, fourth year students can be considered as the top of expected performance of the Department of English learners as well as they are counted as student-teachers and advanced language users.

A quantitative method is employed in the current study in terms of data collection and analysis. A quantitative study is concerned with measuring and analyzing variables to reach specific results. This method involves using and analyzing numeral data by using certain statistical (and/ or) procedures to reach some answers to the concerned questions.

The recognition of segmentals and syllables instrument includes thirty three items. Each item is in form with four options and the students are required to recognize the correct choice.

3.2 Validity and Reliability

In order to satisfy both these ends, the test has been submitted to a jury of experts in order to approve of the construction, its content validity in measuring what it intends to measure.

The jury offered some suggestions which have been taken into account. Therefore, particular items have been tempered with, others replaced. All of those experts have judged the test being valid to measure what it was designed for measuring it, it is an appropriate and practical test, and can perform the purpose behind the study.

If 75% of the jury members agree on a certain modification, this modification will be executed. This does not happen. So, there is no modification on the two sides of the test.

3.3 The Pilot Study

Prior to putting the actual administration of the main test into effect, a pilot test is applied on April 2022 to students at the University of Thi-Qar are administered to ten randomly selected learners from the population of fourth- year learners who are excluded from the subjects of the main test administration. The reasons behind the pilot test are: to arrive at the time required for answering the test, to check the clarity of the items and directions to the subjects in order to know whether some of the items/questions are in need of modification, and finally, to analyze the items to determine their effectiveness, i.e., item difficulty and item discrimination power (Gay, 2010, p. 101). The results of the pilot test indicate that the time required to answer all items is two hour and to some instruction required about the questions. The outcomes of the pilot administration are incorporated into the final version of the test. Likewise, the test was repeated two times.

3.4 Material Selection

The items that are included in the test are taken from five book sources.

These are:

- Al-Ani (1972), Arabic Phonology.
- Betti (2003), English Phonetics and Phonology.
- Roach (2009), A Little Encyclopaedia of Phonetics.
- Roach (2009), English Phonetics and Phonology: A Practical Course.

Skandera and Burleigh (2011) A Manual of English Phonetics and Phonology.

Choosing the items and the questions about these items approved by the jury members of the study who have provided some of the much appreciated modifications that have helped the researcher in formulating and conducting the final version of the test.

3.5 Test Description

The test of this study, which consists of one question established to check the Iraqi EFL learners' recognition of the segmentals and syllables, states: "*Listen to the following words carefully and tick the suitable answer*". In it, the informants listen to a group of words and sentences, produced by a native speaker and they are supposed to tick only one of the four options provided for them. This question comprises of thirty-three items as are stated below: The items of the recognition test are used to show whether the informants can recognize /p/, /v/, /ŋ/, /g/, /ʒ/, /tʃ/, /ʌ/, /ə/, /ə:/, /e/, /ɒ/, /əʊ/, /eɪ/, /ɪə/, /eə /, /ʊə /, /aɪ/, /aʊ/, /oɪ/, initial two consonant cluster, initial three consonant cluster, two final consonant cluster, three final consonant cluster, four final consonant cluster, five final consonant cluster, six final consonant cluster, seven final consonant cluster, /eɪə/, (short vowel + short vowel), (long vowel + short vowels), (long vowel + long vowel), (diphthong + diphthong), (long vowel + triphthong) respectively (see appendix 3).

3.6 Final Administration

The final version of the test was carried out in classroom on 12 of June 2022 on 100 students who are randomly selected from the 4th year students at the English department, College of for Human Sciences,

University of Thi-Qar. The students have been given only one hour to answer the questions of the test and those subjects have been given the instructions of each question. Students were asked to answer on the same paper of the test to avoid wasting efforts and to save time. They have been told not to write their names on the papers to avoid any possible embarrassment. Some of the students' answers are presented in the appendices. The researcher marked the test by using a scoring scheme that is stated in the following section.

3.7 Mathematical Tool

The mathematical tool used includes simple calculations and percentages.

4. Analysis and Discussion of the Recognition of English Segmentals and Syllables

4.1 Recognition of Consonants

In the following table, the Iraqi EFL Learners' correct and incorrect recognition of English consonants are introduced:

Table 2. The Iraqi EFL Learners' Recognition of English Consonants

No. of Item	Correct Answers	%	Incorrect Answers	%
1	44	44	56	46
2	18	18	82	82
3	33	33	67	67
4	29	29	71	71
5	34	34	66	66
6	7	7	93	93
Total	165	27.5	435	72.5

With reference to the preceding table, the total number of correct answers is (165), (27.5%) while the total number of the incorrect ones is (435), (72.5%). It is important to mention that the correct answers of item (1), which is C and constitutes (44) occurrences, which represents the highest correct answers (in this chapter, the bold type in the choices refers to the correct choice).

1) The word "pen" is pronounced as:

- a. /bɪn/ b. /ben/ c. /pen/ d. /pæn/

Regarding the total of incorrect answers, Iraqi EFL students amount to (435) where the incorrect answers of item (2) reach (82) which is the highest incorrect answer:

2) The word "veer" is pronounced as:

- a) /vi:r/ b. /fi:r / c. /vɪə/ d. /fiə/

On this basis, the second hypothesis of the study is partially rejected in that Iraqi university learners do not recognize all English simple vowels correctly because these vowels do not exist in Arabic, the learners' mother tongue. These include /ʌ, ə, ɒ, e/.

4.3 Recognition of Diphthongs

Table 4 below shows that the total number of correct occurrences is (413) and that of the incorrect ones is (387):

Table 4. The Iraqi EFL Learners' Recognition of Diphthongs

No. of Item	Correct Answers	%	Incorrect Answers	%
12	39	39	61	61
13	60	60	40	40
14	28	28	72	72
15	44	44	56	56
16	46	46	54	54
17	63	63	37	37
18	67	67	33	33
19	66	66	34	34
Total	413	51.62	387	48.38

As shown above, it is worth mentioning that English diphthongs, such as, /aʊ, iə, eə, ʊə / and also the other phonemes (like ei, ai, au, oi) are not well recognized by Iraqi EFL university learners. Thus, EFL Iraqi learners are mostly incapable of selecting or identifying the accurate answers which express the difficulty in acquiring the phonological system in the FL that has been attributed to the factors such as age of FL perceptual learning, quality and quantity of FL input, and interference from the mother tongue phonological system.

In other words, the Iraqi EFL university learners do not begin to connect the sounds of the given language to phonemes or phoneme combinations. It is good to depend on useful references, like Roach (2009), for the purpose of practising and developing these sounds. Iraqi EFL learners encounter varying degrees of difficulty in the recognition of English vowels. Thus, they have less difficulty in the recognition of diphthong. This reflects that the third hypothesis of this study is accepted: some diphthongs are not recognized by the sample of the study. These diphthongs includes /əʊ, iə, eə, ʊə/. However, the degree of difficulty shown by Iraqi EFL students tends to decrease with the increase in FL experience.

4.4 Recognition of Consonant Clusters

As seen in Table 5 below, it is shown that the correct responses are more than the incorrect ones (431 vs 369 occurrences):

Table 5. The Iraqi EFL Learners' Recognition of Consonant Clusters

No. of Item	Correct Answers	%	Incorrect Answers	%
20	73	73	27	27
21	55	55	45	45
22	55	55	45	45
23	59	59	41	41
24	59	59	41	41
25	54	54	46	46
26	43	43	57	57
27	33	33	67	67
Total	431	53.87	369	46.13

In general, this means that the Iraqi EFL learners are able to recognize some consonant clusters:

20-The two-initial consonant cluster in the word “drive” is pronounced as:

a. /dɪraɪv/ b. /deraɪv/ c. /draɪv/ d. /dɪrɪv/

Item (20) records the highest number among other items which has (73). On the other hand, item (27) represents the highest number of incorrect ones, (67) occurrences:

27-The seven-final consonant cluster in the words “the text’s stupid” is pronounced as:

a. /ðə tekɪsts stu:pɪd/ b. /ðə teksɪts stu:pɪd/ c. /ðə tekstɪs stu:pɪd/ d. /ðə teksts stju:pɪd/

This represents the highest number of incorrect ones, (67) occurrences. Thus, the Iraqi EFL learners mostly get acceptable scores to determine the appropriate responses of the concerned consonant clusters. They get good scores in items (20, 21, 23, 24, 25), i.e., two and three initial consonant clusters, and two, three, four and five final consonant clusters, respectively. This is because fourth year students of the department of English have enough competence to recognize consonant sequences. As opposed, they do not master to recognize accurate answers for items (26) and (27): six and seven final consonant clusters. This is because of their usage of putting an epenthetic vowel which causes a basic change in the syllable arrangement of the words stated in the test.

On this basis, Iraqi EFL university students have capacity to distinguish among two initial consonant cluster, three initial consonant cluster, two final consonant cluster, three final consonant cluster, four

final consonant cluster and five final consonant cluster, but they are unable to identify six and seven final consonant clusters. This leads to the confirmation of the fourth hypothesis of the study: Iraqi EFL undergraduates face difficulty in recognizing some types of consonant clusters. These clusters include namely, six and seven final consonant clusters.

4.5 Recognition of Vowel Clusters

In Table 6 below, it is shown that the Iraqi EFL learners' responses of the incorrect responses of vowel clusters are more than the correct ones (357, vs. 243):

Table 6. The Iraqi EFL Learners' Recognition of Vowel Clusters

No. of Item	Correct Answers	%	Incorrect Answers	%
28	42	42	58	58
29	29	29	71	71
30	43	43	57	66
31	44	44	56	56
32	36	36	64	64
33	49	49	51	51
Total	243	40.5	357	59.5

In addition, the Iraqi EFL learners do not have a good competence to recognize the English vowel clusters. The correct answers to recognize vowel sequences represent 40.5% only compared to the incorrect ones (59.5%) only. This means that the informants' recognition ability of vowel sequences is rather weak. item (33) reaches 49 occurrences:

33-The words "two hours" are pronounced as:

a.\tu: haurz\

b.\tu: əʊəz\

c.\tu:auəz\

d.\tu:uəz\

Of the incorrect responses, item (29) reaches (71) occurrences.

29-The word "react" is pronounced as:

a.\ri:kt\

b.\riakt\

c.\riekt\

d.\rekt\

With reference to the previous results, the Iraqi EFL learners appear to be inefficient in recognizing all vowel clusters and, thus, they are also confused in distinguishing all vowel clusters, triphthongs, short vowel + short vowel, long vowel + short vowel, long vowel + long vowel and diphthong + diphthong, long vowel + triphthongs. This is because of the unavailability of vowel clusters in Arabic, their mother tongue, and because of the ineffective and poor strategies manipulated in teaching vowel system, in general, and its clusters, in particular. This is intensified by not assigning a sufficient period of time for

teaching them. On this basis, the fifth hypothesis of the study is verified: vowel clusters are not correctly recognized by the sample of the study. This is because the Iraqi EFL university students are incompetent in recognizing vowel clusters within English words. For instance, students fail to identify the vowels within the words.

4.6 Comparison between Recognition of Consonants and Vowels

Table 7 shows that the Iraqi EFL learners' recognition of vowels are better than of consonants:

Table 7. Iraqi EFL Learners' Recognition of Correct Answers of Consonants and Vowels

No. of items	Recognition of Consonants	No. of items	Recognition of Vowels
1	44	7	13
2	18	8	54
3	33	9	16
4	29	10	16
5	34	11	44
6	7	12	39
20	73	13	60
21	55	14	28
22	55	15	44
23	59	16	46
24	59	17	63
25	54	18	76
26	43	19	66
27	33	28	42
		29	29
		30	43
		31	44
		32	36
		33	49
Total	596	Total	799
Percentages	42.5%	Percentages	42.05%

As clear in Table 7 above, the percent of Iraqi EFL learners' correct answers of consonants (42.5%) is more than that of vowels (42.05%). Therefore, the sixth hypothesis of the study is refuted, since the correct answers of vowels are more than the correct ones of consonants, but both of them are below than the average.

5. Conclusions and Recommendations

5.1 Conclusions

As a result of the theoretical and practical sides of the study, the following conclusions are arrived at:

- 1) Iraqi EFL university learners do not recognize some English consonants correctly. The results show that most Iraqi EFL learners in this study find difficulty in producing the consonants /p, v, ŋ, g, ʒ, ʃ/, with varying degrees. This is because Iraqi EFL learners are believed to use their phonemes more effectively than the English ones.
- 2) Iraqi EFL university learners do not recognize any English vowel correctly. The results reveal that Iraqi EFL university students have no capacity to distinguish all the English simple vowels. This is in harmony with what AlJomaely (2018) states: "Certain English vowels are likely to cause uneasiness when Arabic learners of English articulate and perceive them, especially if they are not found in Modern Standard Arabic; this is the case of the vowels [ɔ], [ʌ] and [e], for example. Central vowels do not exist in the vowel system of Arabic. As a result, the phoneme /ʌ/ is often replaced by /æ/ or /u/".
- 3) The Iraqi EFL university learners' inability to recognize any English vowel correctly is attributed to those vowels being not existing in Arabic, the learners' mother tongue. These include /ʌ, ə, ɒ, e/.
- 4) The results reveal that the Iraqi EFL learners appeared to be efficient in recognizing some diphthongs which are /aɪ/, /eɪ/, /aʊ/, /oʊ/ and /oɪ/.
- 5) Four diphthongs are not recognized by the sample of the study since they acquire the phonological system of their MT rather than that of EFL and interference from the mother tongue phonological system definitely occurs. These diphthongs include /ou, iə, eə, uə/.
- 6) The results reveal that Iraqi EFL university students have the capacity to distinguish only two initial, three initial consonant clusters, two, three, four and five final consonant clusters.
- 7) Iraqi EFL university learners face difficulty in recognizing some types of final consonant clusters which include six and seven final consonant clusters because of their putting an epenthetic vowel which causes a basic change in the syllable arrangement of the words stated in the test. This is related to Arabic which has no long consonant sequences.
- 8) Vowel clusters are not correctly recognized by Iraqi EFL learners. The results reveal that the Iraqi EFL learners appeared to be inefficient in recognizing them and, thus, they are also confused in distinguishing all vowel clusters, including /eɪə/, short vowel + short vowel, long vowel+short vowel, long vowel + long vowel and diphthong + diphthong.
- 9) Vowel clusters are not correctly recognized by Iraqi EFL because of the unavailability of vowel clusters in Arabic, their mother tongue, and because of the ineffective and poor strategies manipulated in teaching vowel system, in general, and its clusters, in particular, along with assigning limited periods of time for teaching them in the second year of teaching in the department of English, Colleges of Education. Diphthongs may also sometimes be mispronounced. They may be substituted by other phonemes largely as a consequence of mother tongue interference (AlJomaely, 2018, p. 69). The incorrect answers of Iraqi EFL learners' recognition and production of consonants are more than the correct ones.

- 10) The consonants, which Iraqi EFL learners do not master, are /p, v, ŋ, g, ʒ, ʃ/.
- 11) The incorrect answers of Iraqi EFL learners' recognition of simple vowels are more than the correct ones. This is because of the great difference between the phonological system of their mother tongue and that of the target language.
- 12) The incorrect answers of diphthongs are more than the correct ones in recognizing diphthongs that are achieved by the sample of the study.
- 13) The incorrect answers of the consonant clusters are more than the correct ones in recognizing consonant clusters that are achieved by the sample of the study.
- 14) The incorrect answers of the vowel clusters are more than the correct ones in the recognition of vowel clusters that is performed by the sample of the study.
- 15) The capacity of EFL Iraqi learners in recognizing vowel sounds is more than their capacity in recognizing the consonant ones.
- 16) Iraqi EFL learners' recognition of vowels is better than of consonants.
- 17) As it is clear from the previous conclusions, the mother tongue affects the Iraqi EFL university learners' recognition of consonants, consonant clusters, simple vowels, diphthongs and vowel clusters.
- 18) The differences among English and Arabic segmentals and the phonological structures of English and Arabic syllables make a kind of negative transfer in that learners try to approximate the sounds and sounds sequences which are unavailable in their mother tongue by transferring the nearest sounds. This makes an interference to the Iraqi EFL learning process. The main conclusion of the study is in harmony with Betti and al-Jubouri (2015, p. 149): The teaching of pronunciation is an important aspect of EFL methodology. Pronunciation drills are an integral part of effective EL teaching. These drills help students overcome problems that arise from the interference of the mother tongue (Betti & al-Jubouri, 2015, p. 149).

5.2 Recommendations

As a result of the theoretical and practical sides of the study, the following recommendations are made:

- 1) For University instructors, it is useful for them to focus and pay some attention to their students' use of English segmentals and syllables. Therefore, they may rely on the communicative ways of teaching and enhancing their students' use of English segmentals and syllables through teaching them the concepts of consonants, vowels, consonant clusters and vowel clusters.
- 2) Instructors should focus on the sounds and sound sequences which do not exist in the learners' mother tongue.
- 3) In the class, teachers have to make use of social media, where English is pronounced by native speakers. In these media, students can find helpful native speakers, on these media, with whom they can communicate directly and learn how to deal with the English segmentals and syllables.
- 4) It is necessary for EFL learners to understand the phonological system via the curriculum. The important thing in teaching and presenting English segmentals and syllables is knowing the differences

and similarities between MT and EFL which should be highlighted to the learners including segmentals and syllables.

5) Practice is important since it helps learners to enhance their ability in distinguishing (and producing) English segmentals and syllables.

6) Real world contexts have to be accompanied with the proposed textbook in TEFL in Iraq in order to make the role of the segmentals clearer to the learners, conversation courses ought to be added to the second and fourth year at the departments of English in Colleges of Education in Iraq to enrich the learners' speaking and listening skills and the teacher ought to use the laboratory to make the learners practise consonants and vowels (Betti & Ulaiwi, 2018, p. 88).

7) Iraqi EFL learners should review the phonetic and phonological references in order to master English phonetic and phonological system.

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Appendix 1. Symbols for English phonemes (Roach, 2012)

I as in ‘pit’ pit	i: as in ‘key’ ki:
e as in ‘pet’ pet	a: as in ‘car’ ka:
a as in ‘pat’ pat	o: as in ‘core’ ko:
ʌ as in ‘putt’ pʌt	u: as in ‘coo’ ku:
o as in ‘pot’ pot	ɔ: as in ‘cur’ kɔ:
u as in ‘put’ put	
ə as in ‘about’, əbaut	
ei as in ‘bay’ bei	
oi as in ‘boy’ boi	
iə as in ‘peer’ piə	
eə as in ‘pear’ peə	
uə as in ‘poor’ puə	
au as in ‘cow’ kau	
ou as in ‘go’ gou	

P as in ‘pea’ pi:
t as in ‘toe’ tou
k as in ‘cap’ kap
f as in ‘fat’ fat
θ as in ‘thing’ θiŋ
s as in ‘sip’ sip
ʃ as in ‘ship’ ʃip
h as in ‘hat’ hat
m as in ‘map’ map
n as in ‘nap’ nap
ŋ as in ‘hang’ haŋ
tʃ as in ‘chin’ tʃin
b as in ‘bee’ bi:
d as in ‘doe’ dou
g as in ‘gap’ gap
v as in ‘vat’ vat
ð as in ‘this’ ðis
z as in ‘zip’ zip
ʒ as in ‘measure’ me ʒə
l as in ‘led’ led
r as in ‘red’ red
j as in ‘yet’ jet
w as in ‘wet’ wet
dʒ as in ‘gin’ dʒin

Appendix 2. Symbols for Arabic Phonemes (Betti, 2007)

/f/	/fi:l/	elephant
/θ/	/θaʒib/	“fox”
/ð/	/ðabha/	“he threw it”
/D/	/DabuT/	“an officer”
/s/	/suug/	“market”
/S/	/Sabur/	“patience”
/z/	/zraar/	“button”
/tʒ/	/tʒaali/	“bank of the river”
/j/	/jmaalak/	“What is wrong with you”

/x/	/xubuz/	“bread”
/G/	/Graab/	“crow”
/h/	/hnaa/	“here”
/H/	/Hariim/	“women”
/ b /	/baab/	“door”
/t/	/timman/	“rice”
/T/	/TamaTa/	“tomatoes”
/d/	/tdanna/	“be nearby”
/D/	/Daal/	“staying”
/k/	/ka9ak/	“cake”
/q/	/qadiim/	“old”
/?/	/?ams/	“yesterday”
/d3/	/d3amaal/	“beauty”
/g/	/ga9ad/	“he set down”
/m/	/minhuu/	“Who is it?”
/n/	/nibaH/	“barked”
/l/	/limna/	“gather us”
/w/	/wajjaana/	“with us”
/j/	/jamta/	“when”
/9/	/9aali/	“high”
/r/	/ramul/	“sand”
/p/	/parda /	“curtain”
/i/	/mi9da/	“stomach”
/ii/	/biina/	“in us”
/a/	/saliim/	“healthy”
/aa/	/salim/	“safe”
/oo/	/tilifoon/	“telephone”
/u/	/ummii/	“my mother”
/uu/	/9uud/	“stick”

Appendix 3. The Test

Q1/ Listen to the following words carefully and tick the suitable answer:

- 1) The word “*pen*” is pronounced as:
a. /bɪn/ b. /ben/ c. /**pen**/ d. /pæn/
- 2) The word “*veer*” is pronounced as:
a. /vi:r/ b. /fi:r/ c. /**vɪə**/ d. /fiə/
- 3) The word “*sing*” is pronounced as:
a. /**sɪŋ**/ b. /sæŋg/ c. /sɑ:ŋg/ d. /smg/
4. The word “*glass*” is pronounced as:
a. /kla:s/ b. /**glɑ:s**/ c. /glæs/ d. /klæs/
5. The word “*pleasure*” is pronounced as:
a. /plezə/ b. /plefə/ c. /pledʒə/ d. /plazə/
6. The word “*charge*” is pronounced as:
a. /ʃærdʒ/ b. /dʒɑ:dʒ/ c. /**tʃɑ:dʒ**/ d. /kɑ:dʒ/
7. The word “*but*” is pronounced as:
a. /but/ b. /bit/ c. /**bʌt**/ d. /bət/
8. The word “*open*” is pronounced as:
a. /əʊpen/ b. /**əʊpən**/ c. /əʊpæn/ d. /əʊpɪn/
9. The word “*search*” is pronounced as;
a. /sɜ:tʃ/ b. /**sə:tʃ**/ c. /seɪtʃ/ d. /si:rtʃ/
10. The word “*set*” is pronounced as:
a. /si:t/ b. /**set**/ c. /sɪt/ d. /sat/
11. The word “*not*” is pronounced as:
a. /**nɒt**/ b. /nʌt/ c. /nɔt/ d. /næt/
12. The word “*go*” is pronounced as:
a. /gɔ:/ b. /**gʊə**/ c. /gʊ:/ d. /gɑ:/
13. The word “*name*” is pronounced as:
a. /nɪm/ b. /ni:m/ c. /**neɪm**/ d. /nem/
14. The word “*hear*” is pronounced as:
a. /**hɪə**/ b. /hɪr/ c. /hɪr/ d. /heə/
15. The word “*air*” is pronounced as:
a. /**eə**/ b. /ɪə/ c. /ʊə/ d. /i:ə/
16. The word “*tour*” is pronounced as:
a. /teə/ b. /**tʊə**/ c. /ta:r/ d. /tʊ:/
17. The word “*mine*” is pronounced as:
a. /mi:n/ b. /men/ c. /**maɪn**/ d. /mem/

18. The word “house” is pronounced as:
a. /haʊs/ b. /hɔ:s/ c. /həʊs/ d. /hʊs/
19. The word “noise” is pronounced as:
a. /nɔɪz/ b. /nɔ:z/ c. /nez/ d. /noz/
20. The two-initial consonant cluster in the word “drive” is pronounced as:
a. /draɪv/ b. /deraɪv/ c. /draɪv/ d. /dɪrɪv/
21. The three-initial consonant cluster in the word “street” is pronounced as:
a. /stri:t/ b. /sɪtri:t/ c. /stɪri:t/ d. /sri:t/
22. The two-final consonant cluster in the word “books” is pronounced as:
a. /bo:ks/ b. /bɒks/ c. /bʊkɪs/ d. /bʊkes/
23. The three-final consonant cluster in the word “midst” is pronounced as:
a. /mɪdɪst/ b. /mɪdɪst/ c. /mɪdi:st/ d. /mɪdsɪt/
24. The four-final consonant cluster in the word “sixths” is pronounced as:
a. /sɪksθs/ b. /sɪkɪsθs/ c. /sɪkɪsθɪs/ d. /sɪkɪsθɪs/
25. The five-final consonant cluster in the words “milk’s free” is pronounced as :
a. mɪlksɪfri b. **mɪlksfri** c. mɪlksɪfri d. mɪlksfri
26. The six-final cluster in the words “next spring” is pronounced as:
a. **nekst sprɪŋ** b. nekst sprɪŋ c. nekst sprɪŋ d. nekst sprɪŋ
27. The seven-final consonant cluster in the words “the text’s stupid” is pronounced as:
a. ðə tekɪstɪs stu:pɪd b. ðə tekɪstɪs stu:pɪd c. ðə tekstɪs stu:pɪd d. **ðə teksts stju:pɪd**
28. The word “player” is pronounced as:
a. \plɑɪə\ b. **\pleɪə** c. \pli:r\ d. \plɑɪr\
29. The word “react” is pronounced as:
a. \ri:kt\ b. **\rɪəkt** c. \riekt\ d. \rekt\
30. The word “being” is pronounced as :
a. **\bi:ŋ** b. \beɪŋ\ c. \bi:ŋ\ d. \beŋ\
31. The words “you aren’t” are pronounced as :
a. **\ju:a:nt** b. \jɔ:a:nt\ c. \ju:nt\ d. \ja:nt\
32. The words “my own” are pronounced as:
a. \mi: oun\ b. **\maɪ oun** c. \meɪ oun\ d. \maɪ u:n\
33. The words “two hours” are pronounced as :
a. \tu: haʊrɪz\ b. **\tu: əʊəz** c. **\tu:auəz** d. \tu:uəz\