

**THE UNIVERSITY OF DANANG**  
**UNIVERSITY OF FOREIGN LANGUAGE STUDIES**



**LÊ NGUYỄN TY NA**

**AN INVESTIGATION INTO MORPHOLOGICAL  
AND PHONOLOGICAL FEATURES OF  
GRAPHEMES IN NATIVE SPEAKERS AND  
VIETNAMESE LEARNERS OF ENGLISH**

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## Chapter One

### INTRODUCTION

#### 1.1. Rationale

Language plays an integral part of our everyday life and it is known as a system of communication using sounds that are put together following certain rules, resulting in meanings that are intelligible to all those who use that language. Thus, not only is language a medium of communication, but it is also a system of units of meaning including sentences, clauses, phrases or groups of words, and words. Even words can be deconstructed into an individual sound called the phoneme, and graphemes are the individual letters or groups of letters in written language that represent these single sounds, like the graphemes <s> and <oo> in ‘spoon’.

However, language learners can find graphemes confusing due to the fact that many different graphemes can be used to represent the same phoneme. For instance, the /aʊ/ phoneme can also be represented by two letter graphemes such as <ow> in ‘now’ or the four-letter graphemes <ough> in ‘bough’.

It is true that Vietnamese is phonemic, with one letter or the same combination of letters (grapheme) per sound or phoneme, English has a complex phonic code; its graphemes can consist of one to four letters and different graphemes can correspond to the same phoneme and vice versa. Because of this, Vietnamese learners of English and other English learners confront plenty of difficulties when they start to spell and attempt to speak it.

Upon being aware of these challenges, I engage in a study in English and Vietnamese graphemes in terms of their morphological and phonological features to have a clear look into their effects on

graphemes. This will help young English learners, including native English learners and Vietnamese learners, master how letters are used to encode speech sounds in the written language.

For these reasons, with a view to providing native English speakers and Vietnamese learners of English with a snapshot of morphological and phonological aspects of graphemes so that they can better understand and make better use of graphemes, I have decided to work on “**An investigation into morphological and phonological features of graphemes as experienced by native English speakers and Vietnamese learners of English**” as the topic of my research paper.

## **1.2. Justification for the Study**

## **1.3. Aims of the Study**

## **1.4. Objectives**

- To identify the morphological and phonological features of graphemes on encoding graphemes experienced by native English speakers and Vietnamese learners of English;

- To analyze the effects of phonological features of graphemes on the encoding process of the silent graphemes, vowel grapheme, consonant doublets and consonant clusters with different positions of phonemes in words and syllables; and examine the effects of morphological features of graphemes in terms of the inflectional plural morphemes.

## **1.5. Research Questions**

The study tries to answer the following questions:

1. What are the morphological and phonological features of graphemes as experienced by native English speakers and Vietnamese learners of English?

2. What are the effects of morphological and phonological features on wrong encoding problematic graphemes made by native English speakers and Vietnamese learners of English?

### **1.6. Hypotheses**

The first hypothesis or intrinsic difficulties hypothesis is that some phoneme-grapheme mappings are harder to learn and use than others and affected by the phonological features of graphemes.

A second hypothesis or context difficulty hypothesis is that young learners are affected by the context in which a phoneme-grapheme correspondence occurs.

A third hypothesis is that some morphological markers like inflectional plural morphemes corresponding to graphemes <s> and <es> affect the encoding processing. These graphemes serve as a guideline for learners to predict in encoding graphemes.

### **1.7. Scope of the Study**

The focus of the study is primarily on the analysis of morphological and phonological features of graphemes in native English speakers and Vietnamese learners of English. Semantic issues will not be dealt with and are thus put beyond the scope of this study.

### **1.8. Organization of the study**

The thesis is composed of five chapters as follows:

Chapter 1 - Introduction

Chapter 2 - Literature Review and Theoretical Background

Chapter 3 - Research Methodology

Chapter 4 - Findings and Discussion

Chapter 5 - Conclusions and Suggestions

## **Chapter Two**

### **REVIEW OF LITERATURE AND THEORETICAL BACKGROUND**

#### **2.1. Review of Literature**

Hockett and Venezky have demonstrated that there is high predictability in grapheme phoneme correspondences if rules are sought in higher-order units rather than in the single letters.

Gibson, Pick, Osser, and Hammond have indicated, furthermore, that the letter-sequences generated by these rules function as units in perception, even when they are meaningless nonsense sequences.

Treiman, Berch and Weatherston conducted a research into the children's ability to spell words by using phoneme-grapheme correspondences.

Nunes, Bryant and Olsson, in “Learning Morphological and Phonological Spelling Rules” discovered that morphological awareness assisted children to learn about spelling patterns based on morphemes.

In Vietnam, studies have also been carried out by Đinh Lý Vân Khanh and Giang Tang in order to help learners perceive the difference of graphemes between English and Vietnamese.

#### **2.2. Theoretical Background**

##### ***2.2.1. Definitions of Terms***

###### *2.2.1.1. Graphemes*

A grapheme is the smallest unit of a writing system of any given languages. An individual grapheme may or may not carry meaning by itself, and may or may not correspond to a single phoneme of the spoken language.

###### *2.2.1.2. Phonemes and Related Terms*

**A phoneme** refers to a linguistic unit within the spoken

language. Phonemes can represent a sound or one single unit of speech. The replacement of one of these minimal units can completely change the meaning of the word; for example, /m/ and /p/ change the word from men to pen.

### **Phoneme-grapheme correspondence rules**

These rules refer to the set of generalizable sound-to-letter relations. For example, the sound /s/ is <s> in ‘seat’, <c> in ‘city’ and <ss> in ‘pass’. This is often referred to as a knowledge of the alphabetic principle and is defined as a distinctive graphical representation of letters used to symbolize each phoneme or speech sound in oral language.

#### *2.2.1.3. Morphemes and Related Terms*

A **morpheme** is the smallest meaningful unit in a language, such as ‘man’, or a word element, such as -ed in ‘walked’, that cannot be divided into smaller meaningful parts.

### **Allomorph**

Richards, Platt & Weber [27, p.9] stated that an allomorph is any of the different forms of a morpheme. An allomorph can also be defined as a variant of a morpheme that occurs in a certain definable environment.

## **2.2.2. Related theories**

### *2.2.2.1. Phonological theory*

#### *a. Generative phonology (GP) Theory*

In generative phonology, the level of the phoneme is redefined to match the deeper level of abstraction aimed for in the most efficient conception of phonological processes. It is the task of the phonological rules to account for the predictable aspects of pronunciation, whether they relate to alternate pronunciations of the

same basic morpheme or different phonetic forms that a sound can take. These rules, made to look like "mathematical formulas," provide an explicit means of capturing the general principles of various phonological processes: assimilation, dissimilation, deletion, insertion and metathesis.

*b. Chomsky–Halle’s distinctive features*

*2.2.2.2. Morphological theory*

*a. Overview of Morpheme*

The function morphemes contain *derivational* morphemes and *inflectional* morphemes. English had only eight inflectional affixes. They are all suffixes. Two inflectional morphemes can be attached to nouns, possessive case (‘s), plural (s/es). Four inflections can be attached to verbs, past tense (ed), present participle (ing), past participle (en), 3rd person singular (s). Two inflections can be attached to adjectives, comparative (er), superlative (est).

*b. Optimality Theory – Item and Arrangement Model by Hockett (1954)*

According to the Item and Arrangement (IA) model, a language is viewed as consisting of a list of components that follow certain patterns or arrangements [2]. Consider, for example, these three plural nouns: ‘words’, ‘books’ and ‘classes’ and three are variant forms of the morpheme /-s/ namely /z/, /s/ and /ɪz/ that signify the meaning of plurality.

***2.2.3. A Snapshot of of Graphemes in English and Vietnamese***

*2.2.3.1. A Snapshot of Morphological Features of Graphemes in English and Vietnamese*

*2.2.3.2. A Snapshot of Phonological Features of Graphemes in English and Vietnamese*

**2.3. Summary**

## Chapter Three

### RESEARCH DESIGN & DATA COLLECTION

#### 3.1. Research Design

This piece of research mainly takes a descriptive approach with quantifiable data taken from a survey questionnaire because it best served to answer the questions and the purposes of the study.

#### 3.2. Research Method

#### 3.3. Data collection

##### *3.3.1. Settings and Participants*

The research data was collected from 200 English learners, both native and Vietnamese, participated in the survey, divided equally between two schools.

##### *3.1.2. Methods of Data Collections*

Data supporting the research were collected in this way:

- The questionnaires were issued to the population of 200 students at Green Shoots International School and Goet Language Center. To facilitate the survey, the researcher made clear all the questions posed to students to get rid of students' confusion with the instructions in the questionnaires.

- Part 1 was designed for testing the students' encoding silent graphemes, vowel grapheme, consonant doublets and consonant clusters in initial, medial and final position in words and syllables, which were intended to cause potential problems. This free spelling part consisted of 30 recorded words.

- Part 2 consisted of 10 multiple choices questions designed for testing the students' actual perception of inflectional plural morphemes such as -s/es in some challenging cases

- Literacy level of participants: Both participants are at their

beginner level. To clarify, they have letter knowledge. It means the ability to associate sounds with letters in terms of the basic consonants and vowels that are represented by one or two letters of graphemes or by common single graphemes.

- English level: they have ability to understand and exchange information on familiar topics in a very simple way. They can write a simple message and gain their spelling skill through accumulating vocabularies in topics and building up the phoneme-grapheme correspondence. They have little experience in spelling.

### **3.4. Procedures of Study**

### **3.5. Data Analysis**

Data were categorized, as follows:

- In terms of morphological and phonological features of some problematic graphemes;

- In terms of morphological features, the data were categorized by types of errors by wrong encoding graphemes in terms of the inflectional plural morphemes according to Cook [63].

- In terms of phonological features, data were also categorized by type of errors made by encoding silent graphemes, vowel grapheme, consonant doublets and consonant clusters with different positions of phonemes in words and syllables

### **3.6. Reliability and Validity**

### **3.7. Summary**

## Chapter Four

### FINDINGS AND DISCUSSIONS

#### 4.1. Morphological Features of Graphemes Experienced by Native English Speakers and Vietnamese Learners of English

##### 4.1.1. Types of Errors

##### 4.1.2. Morphological Features' Analysis

###### *a. Insertion*

Native English speakers insert the grapheme <e> or <i> in the grapheme <s> to make the inflectional plural morpheme, while Vietnamese learners of English spell the inflectional plural morpheme <s> correctly. To clarify, native English speakers face some difficulties in adding <s> or <es> in inflectional plural morphemes because of many rules. In addition, the inflectional plural morphemes have the same graphemes <es> and <s>, but the pronunciation is different. This causes learners to have a wrong mapping in the pronunciation stage, and native English learners simply try to encode the grapheme to match the pronunciation of these inflectional plural morphemes. In the case of Vietnamese learners of English, they have good performance in spelling the inflectional plural morpheme <s> due to the fact that the grapheme <s> in Vietnamese represents the phoneme /s/ only.

###### *b. Omission*

In omission errors, native English learners tend to omit grapheme <s> of the inflectional plural morphemes <es> or <s>. For instance, they spell 'prize' for the actual word 'prizes' or 'cloth' for 'clothes'. The cause can originate from the fact that they are lack of awareness in perceiving the marker of the inflectional plural morphemes <es> or <s>. To clarify, inferred from Generative Theory

[5], the morpheme <es> will be added to the words if the words end with graphemes such as <ch>, <sh>, <ss>, <z> or <x>. Similarly, Vietnamese learners of English often reduce the grapheme <e> or <s> in the inflectional plural morphemes <es> or <s>. For example, they encode ‘priz’ for the standard word ‘prizes’ and ‘cloth’ is spelled instead of the actual word ‘cloths’. Vietnamese participants find these spelling difficult because it is hard to remember and master spelling. Moreover, Vietnamese does not have the inflectional morphemes, the function words ‘những’ or ‘nhiều’ are used to show plural meaning in Vietnamese.

*c. Substitution*

In substitution errors, both participants replaced the grapheme <s> with the grapheme <z> such as ‘peez’ or ‘phiz’ for the actual word ‘peas’. In addition, it can be seen that native English speakers encode the graphemes that match the pronunciation of the inflectional plural morphemes. For instance, they choose the grapheme <iz> and spell ‘prisiz’ for the inflectional plural morpheme <s> in the actual word ‘prices’. Another example concerns the grapheme <ce>; it is replaced for the inflectional plural morphemes <s> because two graphemes have the same pronunciation. In addition, Vietnamese learners of English also replace the inflectional plural morpheme <s> with the grapheme <i>. In general, this error stems from a lack of awareness of the rule in selecting allomorphs and their pronunciations. From the wrong phoneme-grapheme mapping, participants fail to recognize the marker of the inflectional plural morphemes and as a result, select incorrect allomorphs.

To clarify, regarding morphological features of graphemes, Vietnamese combines separated morphemes corresponding to their

graphemes based on their meaning relationship to form a new word. In English, on the other hand, according to the Item-and-Arrangement (IA) model of Hockett, a word is viewed as a set of morphemes that include a root with its corresponding morpheme affixes. It is this difference that makes Vietnamese learners of English confused by the three allomorphs, /-s/, /-z/, and /-iz/; their perception of the different phonemes or sounds makes them spell these differently, too.

According to Generative Theory [5], it is believed that /-s/, /-z/, and /-iz/ are three allomorphs of the inflectional plural morpheme because:

**- They are in complementary distribution:**

- /-s / occurs only after the voiceless consonants /p, t, k, f, θ/;
- /-iz / occurs only after the sibilant consonants /s, z, ʃ, tʃ, dʒ, ʒ/
- /-z/ occurs after voiced sounds, including all vowels and voiced consonants except /z, dʒ, ʒ/.

**- They all have the same meaning, either lexical or grammatical:** /-s/, /-z/, /-iz/ all refer to ‘plurality’ and all mean ‘more than one’.

**Selection of allomorphs**

The three allomorphs /-s/, /-z/ and /-iz/ of the inflectional plural morpheme are phonologically conditioned since each can occur only when a certain clearly defined condition occurs. In this case, it can be seen that the conditioning factor is the phonetic nature of their preceding phoneme. This means that, if learners understand the facts of distribution or the rule, learners can accurately predict

which of the three will occur in any place where any one of them could occur [41].

Native English learners also have problems in this area. However, unlike for Vietnamese learners of English, the causes do not derive directly from their lack of knowledge about this situation, but rather from their habit of enunciating all plural forms in the same way, /s/. Therefore, they are biased towards omitting the grapheme <e> in <es> in some cases. Their habit of a phonetic error creates an error in mapping to the appropriate grapheme.

*d. Transposition*

In transposition errors, native English speakers interchange two contiguous sounds such as when digraph <ea> in ‘peas’ is changed into <ae> in ‘paes’; in contrast, Vietnamese learners of English change the position of the inflectional plural morphemes <s> to become ‘pesa’ for the actual word ‘peas’. In addition, both native English speakers and Vietnamese learners of English use the consonant cluster grapheme <st> to encode the inflectional plural morphemes <s> following the grapheme <t> in ‘prints’. The cause of this error is that the less attention to the pronunciation of the inflectional plural morphemes, then participants try to find the grapheme that shares the similarities in the pronunciation to encode.

In conclusion, both participants faced some obstacles in encoding inflectional plural morphemes. They tended to insert another grapheme in front of the inflectional plural morpheme <s>; to omit one grapheme of digraph <es>; to replace the inflectional plural morphemes with other graphemes to match the pronunciation; and to interchange these morphemes due to the fact that these morphemes have the same graphemes <es> and <s> while the

pronunciation is different. This caused learners to have incorrect morpheme-grapheme mapping in the pronunciation stage. In addition, there are a lot of rules for young learners to remember as encoding the inflectional plural morphemes <s> or <es>.

Based on the analysis of types of errors in terms of morphological features, it can be inferred that the morphological features of graphemes play a great role as a signpost for learners to predict in their encoding process. In addition, these features demonstrate that the grammar functions of morphemes and the selection of graphemes in terms of the inflectional plural morphemes adhere to the fixed rule. Learners practice regularly and the spelling performances will be more fluent due to the development in the mental graphemic representations because these morphemes can be decoded following the fixed rules.

## **4.2. Phonological Features of Graphemes as Experienced by Native English Speakers and Vietnamese Learners of English**

### ***4.2.1. Types of Error***

### ***4.2.2. Phonological Features' Analysis***

#### ***a. Silent Graphemes***

The silent grapheme <e> occurring at the end of the first syllable or second syllable such as 'make', 'kite' or 'include', was lost in the spelling of both native English learners' and Vietnamese learners of English. Both participants were more accurate on the silent grapheme <e> at the end of the first syllable than the second syllable. Native participants performed better than Vietnamese participants in this case.

Words like this are highly regular in English; however, it also remains more problematic for beginners and learners who do not

adhere to a rule even if they knew it previously. The cause may come from a lack of awareness about phoneme-grapheme correspondence. Consequently, the situation becomes worse in the case of a silent grapheme; here, the grapheme <e> is not pronounced in speech of sound. It makes pronunciation unpredictable and can cause problems for beginners. It can be clarified that the phonological feature of the grapheme <e> in English sometimes expresses the phonological feature of the phoneme /e/. It is a vowel and is often located in the medial position of words and syllables. In a special case of silent <e>, the phonological feature of grapheme <e> demonstrates the previous grapheme that comes along with it. Therefore, grapheme <e> does not appear in the pronunciation of the word. That causes a problem in phoneme-grapheme correspondences and may have led Vietnamese learners to wrong encoding. However, most silent graphemes come from previous pronunciations of the word or the etymological root of the word, so actually the pronunciation is quite predictable when learners are aware of it and practice spelling regularly.

#### *b. Vowel Graphemes*

With regard to the position of vowels in words, participants performed best at the initial vowel of the first syllable; next best at the final vowel of the second syllable; and worst at the medial vowel in the second syllable. There was little difference between the performance of the medial vowel in the first syllable and the second one. Native English learners did considerably better with their vowels than the Vietnamese. Truly, as Schlagal [32] said, “vowels are more difficult to spell than consonants because English vowels typically have more alternative spellings than do consonants.” For

instance, the vowel phoneme /i/ is represented in writing by many graphemes and digraphs such as <i> in ‘kiss’, <e> in ‘secret’, <ey> in ‘donkey’, <y> in ‘system’ and <ui> in “build,” depending on their positions in words and syllables.

Furthermore, the phonological features of vowel and consonant graphemes also have great effects on encoding these graphemes. It is clarified considerably based on the phonological features of their phonemes as the cause of this intrinsic difficulty. According to distinctive features of Chomsky and Halle, vowels differ from consonants in two very important ways. First, vowels always have a continuant feature. This means they are produced without closure in the oral cavity, while consonants have a consonantal feature. To clarify, consonants are produced with significant obstruction of the oral vocal tract. Second, consonants typically occur in syllable marginal positions, while vowels form the very core of the syllable and occur in syllable central positions. As a result, the phonological features of vowels cause vowels graphemes that are harder to recognize than consonants graphemes in general. Moreover, as mentioned above, with regard to the position of the vowel, the medial vowel is always the hardest.

Moreover, one grapheme was often omitted in vowel doublets by native participants, such as ‘weg’ for the word ‘week’. It can be clarified that participants did not know the correct phoneme-grapheme correspondence, especially the vowel doublet <ee> is commonly used to stand for the long vowel phoneme /i:/. Because of this, they tended to produce the single common grapheme <i> for the actual vowel doublet <ee>. In addition, some graphemes were replaced with similar graphemes from the participant’s mother

tongue by Vietnamese learners of English, such as ‘**wok**’ for ‘**walk**’ and ‘**danki**’ for ‘**donkey**’ because they perceived the pronunciation of this grapheme incorrectly; as a result, they found the nearest similar grapheme to match the pronunciation of the phoneme. Particularly, Vietnamese sometimes spelled ‘**ocor**’ for the word ‘**occur**’. This case is due to the fact that Vietnamese is a tonal language. Vietnamese learners of English simply try to replace the actual grapheme <u> by a Vietnamese grapheme <o>, which helps their wrong word was pronounced like the right pronunciation.

Furthermore, Vietnamese learners of English spelled ‘**quig**’ for ‘**week**’ because English and Vietnamese both have many initial consonants that are the same; therefore, both participants could easily spell them, except for the situation where Vietnamese does not have the grapheme <w>. In that case, Vietnamese learners of English tended to spell <qu> in Vietnamese instead of <w> in English to match the pronunciation of the phoneme /w/. This misspelling shows the perception of the difference of grapheme in English and Vietnamese are salient to encode the phonemes that share some similarities in pronunciation between two languages.

### *c. Consonant Doublets*

Regarding the positions of consonant doublets, both native English learners and Vietnamese learners of English did better on those doublets when they were at the end of the first syllable than when they were at the beginning of the second syllable.

Participants from the two groups tended to replace the consonant doublets with their corresponding single graphemes. For instance, they spelled ‘**kis**’ for the standard word ‘**kiss**’ or ‘**ocor**’ for ‘**occur**’. The error originates from the lack of knowledge that two

identical graphemes that are adjacent to one another in a word can symbolize a single consonant (e.g. consonant doublets <cc> or <kk> for /k/, as in ‘occcur’ or ‘trekking’ and <ss> for /s/, as in ‘kiss’). As a result, learners made the wrong phoneme-grapheme mapping in the encoding process. Furthermore, the single grapheme <c> and <k> is the most common spelling of the phoneme /k/. Similarly, learners are likely to use the single grapheme <s> represent the phoneme /s/. Moreover, Vietnamese does not have consonant doublets, so Vietnamese participants preferred a common spelling or a single grapheme over uncommon ones or consonant doublets.

#### *d. Consonant Clusters*

Both groups of participants faced obstacles when they spelled consonant clusters, due to the fact that they paid less attention to the pronunciation of the final consonant cluster. Both participants were more accurate on the initial consonant of the first syllable than the initial and final consonant of the second syllable. Vietnamese participants did better on spelling consonant clusters.

It was also proved that phonological features of graphemes-consonants in blends or consonant clusters in English were two or more consonant graphemes blended together, but each grapheme symbolizes each phoneme that may be heard in the blend. However, in Vietnamese, there are digraphs that are a two-letter combination standing for one phoneme, i.e., neither letter acts alone to represent the phoneme. From the difference in phonological features of graphemes, wrong encoding grapheme appeared. Moreover, the cause of the omitting case in wrong encoding process made by participants was the deletion process. To clarify, in the light of Generative Theory [5], deletion is a phonological process that occurs

when any consonant of a cluster is omitted. The deletion of a consonant in streams of speech aims to speak more smoothly and fluidly instead of pronouncing the consecutive consonants with the difficult combinations.

Furthermore, Vietnamese participants may also face difficulties in spelling consonant clusters. They often decoded the consonant clusters related to the phoneme /k/ such as <cl> into the grapheme <c> only. For example, they would spell ‘cog’ for the actual word ‘clock’. Additionally, Vietnamese participants tended to encode most digraphs representing the phoneme /k/ with the single grapheme <c>, e.g., they spelled ‘woc’ for the actual word ‘walk’ or ‘cemit’ for the actual word ‘chemist’. The reasons of these situations stem from the fact that the phoneme /k/ in Vietnamese has just one grapheme <c> that is both an initial consonant and final consonant. As a result, the grapheme <c> is used as the most common grapheme to encode phoneme /k/ and the consonant clusters related to phoneme /k/. In addition, the phoneme /k/ is consonantal. In the larynx layer, it is voiced. In the place layer, it is dorsal in the high and back place. On the other hand, the phoneme /k/ in Vietnamese is only concerned with place and manner. It is a velar, stop and voiceless phoneme. These differences in phonological features of the phoneme /k/ account for the different perceptions of learners in pronunciation. This results in incorrect phoneme-grapheme mapping and encoding graphemes in the end.

Even though there are no consonant clusters in Vietnamese, Vietnamese participants encoded more accurately than their native partners in this case. This is due to the fact that they paid more attention to the pronunciation of the consonant cluster.

Like Vietnamese participants, native English speakers showed a propensity to omit one grapheme of digraphs representing the consonant clusters such as ‘kemit’ for the standard word ‘chemist’. In addition, they replaced digraphs representing the phoneme /k/ with their common single grapheme, such as ‘samik’ for the standard word ‘stomach’.

In particular, native participants omitted one grapheme of digraphs representing the consonant clusters <cl>, and then replaced the rest with its minimal pair /g/ such as ‘gok’ for the actual word ‘clock’. To clarify, the phoneme /g/ shares many similarities to the phoneme /k/, except for one distinctive feature: the phoneme /k/ is voiceless and the phoneme /g/ is voiced. Hence, the phonemes /k/ and /g/ are minimal pairs because they are two similar sounding words that differ in only one phonological element and have distinct meanings.

### **4.3. Summary**

## Chapter Five

### CONCLUSIONS

#### 5.1. Conclusion

First and foremost, the morphological features of graphemes act as a signpost or marker for learners to follow in the difficult situation of different pronunciations of the same morpheme. It means that these features are used not only to express the grammatical functions of morphemes but also to be considered as a prediction in pronunciation. Moreover, the perception of morphological features builds a firm foundation for mastering types and functions of morphemes that are represented by graphemes in words. In this way, learners can predict the spelling of words. Learners can also predict the pronunciation according to the rules of morphological assimilation in Generative phonology theory [5].

Secondly, the phonological features of graphemes express fully the phonological features of phonemes that they represent. To clarify, the vowel doublet <ee> is often used to represent the long vowel. When the consonant doublets only represent their single phonemes even they are symbolized in digraphs, and two individual sounds are also represented by the consonant clusters. There is an exception in the case of silent grapheme <e> when it represents the previous phoneme in a sequence of sound. In addition, it cannot be denied that perceiving the graphemes assists learners in mastering the phonological features of phonemes. Based on this, learners can specify phonemes (segments) and classes of phonemes (categories). When learners understand the root of this issue from its pronunciation, the process of decoding phonemes to encoding graphemes will be better. Vietnamese learners of English also

realized the distinction in phonological features in both English and Vietnamese simultaneously, thus reducing their errors in encoding graphemes in both languages.

Thirdly, regarding the encoding performance of problematic graphemes experienced by native English learners and Vietnamese learners of English in terms of phonological and morphological features, there are three hypotheses. In light of the Generative theory of Chomsky–Halle [5], Optimality theory of Hockett [14] and the phoneme-g correspondence rule [7], the findings satisfied and gave appropriate verification of the three hypotheses. All hypotheses were verified by the participant’s practical spelling performance.

To clarify, in terms of phonology, the intrinsic difficulties in encoding vowel graphemes and consonant doublets, and the context difficulties in encoding silent graphemes, vowel grapheme, consonant doublets and consonant clusters with the positions of phonemes in syllables affected the spelling process directly. The former difficulties were clarified that the lack of awareness of the phonological features of phonemes caused the wrong phoneme-grapheme mapping from the pronunciation stage. In addition, there are a variety of graphemes that represent the same phoneme and the phoneme-grapheme correspondence is complicated to remember. As a result, young learners face more obstacles. Furthermore, it is the great difference in phonological features between the languages that confuses Vietnamese learners of English, and some intrinsic difficulties from phoneme-grapheme mapping that native English learners confront. The latter difficulties were demonstrated that the phonemes at the edge of the words were always easier to spell than the medial position. Additionally, there was a tendency for learners

to spell the consonant better than the vowel. In terms of the position of phonemes in words, learners were more confident in spelling the initial phonemes of the first syllable than those of the second syllable. Nevertheless, the final phonemes of the second syllable offered learners a significant advantage in decoding over those of the first syllable. Moreover, the perception of the phonological features of graphemes is a contribution to have the right encoding performance in this situation.

As regards inflectional affix morphemes for plural nouns, some morphological problems arose because native English learners and Vietnamese learners of English did not concentrate on the rules when they added the grapheme <s> or <es> to the root of these allomorphs and the pronunciation of them. As a result, they added the graphemes <s> for all words, inserted some unrelated graphemes or overlooked allomorphs and replaced them with other graphemes that shared similarities in order to match the pronunciation. Based on this, the morphological features of these graphemes are considered as a signpost to predict the pronunciation and the morpheme-grapheme correspondences. For example, if the singular noun ends in *-s*, *-ss*, *-sh*, *-ch*, *-x*, *o*, *or -z*, learners will add grapheme <es> instead of grapheme <s> to the end to make it plural. Another particular example is if the noun ends with *f* or *fe*, grapheme <f> is often changed to grapheme <ve> before adding grapheme <s> to form the plural version. Furthermore, the pronunciation can be predicted according to Generative Theory [5]. Consequently, learners should pay more attention to these morphological issues, especially the morphological markers with grammatical functions. These morphological markers play essential roles in guiding learners to

encode accurately from phonemes. Moreover, the semantics and context of sentences containing these allomorphs are clues for learners to spell correctly; however, further analysis of this issue was beyond the scope of this study.

## **5.2. Implications for Teaching and Learning Translation**

### ***5.2.1. Implications of the Study***

Some implications are drawn during the study of this paper:

In the process of language learning, it is expected that learners should be more active in mastering the phoneme-grapheme correspondences with frequent practice. In phonology, it has been proved that spelling performances are affected by the position of phonemes in words and syllables. Therefore, the more learners deal with this issue, the more proficient they will become. In morphology, allomorphs such as the common inflection affixed -s/-es in this study should be considered by learners, as well as other seven types mentioned in Chapter 2. Besides, teachers can use sound blending so that learners can recognize each sound and encode step by step into the correct grapheme.

Furthermore, to help learners overcome spelling difficulties, the researcher suggests that teachers apply the Orton-Gillingham approach (O-G approach) to their teaching. This approach condenses the spelling of the sounds into graphemes, which accelerates the process of learning to spell. Students are taught rules and generalizations that help make reading and spelling much easier.

### ***5.2.2. Limitations of Study***

### ***5.2.3. Suggestions for Further Research***

The researcher also anticipates that the automatic speech recognition (ASR) will be developed intensively in terms of

recognizing some problematic graphemes in language learners in Vietnam. It would thereby enhance the phoneme-grapheme mapping in encoding some problematic graphemes. Furthermore, mobile and computer applications are promising methods for young English learners to practice their spelling performance through interactive lessons and targeted educational games. Hence, these applications can raise morphological and phonological awareness for learners to encode problematic graphemes correctly.