

STRESS PATTERNS AND METALINGUISTIC KNOWLEDGE
BEFORE AND AFTER PRAXIS INTERVENTION ON THE PRONUNCIATION
OF ENGLISH DERIVATIONAL SUFFIXED WORDS BY THAI LEARNERS



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รูปแบบการลงเสียงหนักเบาและความรู้ไวยากรณ์ก่อนและหลังการแทรกเชิงปฏิบัติ
ในการออกเสียงคำที่เติมปัจจัยหน่วยคำแปลงในภาษาอังกฤษของผู้เรียนชาวไทย



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต
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KEYWORD: stress patterns, metalinguistic knowledge, suffixed words, praxis intervention, Thai learners
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This research study investigated the stress patterns and metalinguistic knowledge of Thai learners on the pronunciation of English derivational suffixed words. The study compared how the learners performed before and after the praxis intervention, where the stress placement rules of English suffixed words were explicitly taught and trained. Thirty first-year university students were selected by stratified random sampling based on their proficiency levels and were grouped into the high and low proficiency groups. They took the pre-test which was the read aloud task of the base and the suffixed words. Their performance was recorded, and the stress patterns were analysed. Then, they joined the three-week praxis intervention sessions which included the video lessons, classroom activities, and homework assignments. Within a week after the praxis intervention, the participants took the post-test by performing the read-aloud task which included another list of the base and the suffixed words, and then they did metalinguistic knowledge elicitation task. The participants were further interviewed after the post-test. They reflected on their learning performance and provided their metalinguistic knowledge regarding stress placement of English suffixed words. The results of the stress patterns revealed that the high group performed the patterns which were in agreement with the English accentual system more often than the low group. The stress error patterns performed by the Thai learners revealed the intralingual and interlingual influences. The results of learners' performance, before and after praxis intervention, showed that level of achievement in their learning was dependent on many factors such as motivation, time of exposure, and time practicing the rules and pronunciation. The results from the metalinguistic knowledge elicitation task revealed different metalinguistic knowledge between the high and low proficiency groups. The highly proficient learners used morphophonologically oriented knowledge more than the less proficient learners who used either morphologically or phonologically oriented knowledge more. The low proficient learners also gave numerous impressionistic answers. The findings exhibited that teaching materials and praxis intervention can help enhance metalinguistic knowledge and contribute to English language teaching and learning. The study also provides pedagogical implications for English language classrooms regarding English phonology and English pronunciation.

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

Creativity is a characteristic that can be illustrated in human languages such as when small discrete units are combined to form meanings.; sounds are combined to form a word, words are composed to make phrases, and phrases are put together to become a sentence. Focusing on the word level, one morpheme, the smallest unit which contains a meaning, can be attached to another morpheme to create a new word with a new meaning or with a new grammatical function. The bound morphemes that cannot stand alone as words by themselves but rather used to add to free morphemes to form new words are called affixes. In English, the two major types of affixes are prefixes and suffixes. By attaching these affixes to words, we make new words with different meanings and, sometimes, different grammatical categories. For example, we can attach the prefix {un-} to the word ‘happy’ to express the opposite meaning. Further, we can add the suffix {-ness} to change the meaning of “feeling unhappy” to “the state of being unhappy” and change the word class of the word from adjective to noun. However, adding a morpheme not only changes the meaning or category of a word, but can also change the sound segments within the word. For example, the final /n/ in the prefix {-in} is changed to /r/ when attached to words starting with /r/ like ‘regular’, which becomes ‘irregular’.

According to many studies concerning morphological knowledge in connection with phonological concepts, these two terms are seemingly related to each other. As mentioned by Szigetvári (2013), “ the morphological structure of words often influences their phonological shape.” This is exhibited when the base or stem of a word is derived by another morpheme or when words are compounded. For example, the words ‘electric’ and ‘electrician’ contain phonetic differences in

terms of both segmental (final consonant [k] becomes [ŋ]) and suprasegmental aspects (the primary stress shifts to the position before the suffix: /i'lek.trɪk/ and /,ɪl.ek'trɪʃ.ən/). The relationship between morphological and phonological processes leads to the introduction of the term “Morphophonology”.

As obvious from its name, the term morphophonology comes from the combination of linguistics terms. The first is morphology, which is the study of words and word formation. When a word is introduced into a language, the segments of sounds can be put in sequence to form a new word like [k-æ-t] as in ‘cat’ or [æ-k-t] as in ‘act’. Apart from the string of sounds that can form a new word, the base or word that is attached by a morpheme can enter the language as a new word as well. For example, the verb ‘act’, when attached by a noun-making morpheme such as the suffix {-ion}, then becomes ‘action’, which is no longer a verb. As seen in the preceding example, a morpheme not only contains the meaning, but can change the grammatical function of the word. According to Rodman et al. (2013), two important components are needed when forming a word. The first component is knowledge about the individual morpheme, concerning its meaning and its grammatical function, as mentioned previously. Another component of morphological notion involves the rules and constraints on how morphemes can be combined. To illustrate, a morpheme cannot be attached in any random order, while one morpheme can sometimes be blocked by another morpheme. For example, the word ‘unproblematic’ uses the suffix {-atic}, which must be attached to the word “problem” to form the word “problematic” before adding the prefix {un-} because the word “unproblem” does not exist.

The second term related to morphophonology is phonology, or the study of sound patterns, which is different from phonetics as the latter concerns the study the characteristics of sound units. Phonological notion instead deals with the

processes or systems of sound patterns that occur in different linguistic environments. The study of sound patterns concerns both segmental and suprasegmental features. The segmental features cover individual sounds such as consonants and vowels. The suprasegmental features include syllable structure, stress, rhythm, and intonation. According to Zheng (2013), phonology requires the study of both physical and psychological aspects. The physical aspect can be observed in phonetics or the features of speech sounds, while the psycholinguistic aspect studies the spontaneity of the sound system that is available in the language.

Research studies on the morphophonological aspects of derivational suffixed words have found that English language learners manifest various errors when they perform tasks involving stress placement in derivational suffixed words (Ali and Phil, 2017; Byun, 2014; Shemshadsara, 2011). An example of stress misplacement in suffixed words can be observed when English language learners produce stress patterns that do not conform to the English accentual system. For example, L1 Thai learners pronounce the word 'inspiration' like /ɪn'spɪ.reɪ'ʃən/ instead of /ɪn.spɪ'reɪ.ʃən/. Studies regarding learners' competence of stress placement on English polysyllabic words reveal a correlation between the learners' language proficiency and the competence of placing stress on the polysyllabic words (Isarankura, 2016; Jaiprasong and Pongpairaj, 2020). Despite previous studies, it is evident that few studies have been conducted concerning Thai learners' performance on the stress placement of derivational suffixed words. Therefore, the researcher was inspired to do this research and hypothesized that highly proficient learners would possibly perform better than less proficient learners. Moreover, the stress error patterns of English suffixed words were investigated to find and explain the factors that tended to influence learners' error patterns.

The recommendations from previous studies also concern explicit teaching regarding the stress placement rules of English suffixed words, which should be implemented in EFL instruction. The effect of explicit instruction on morphophonological awareness and English word stress has been supported by previous studies (Amer and Amer, 2011; Kuo et al., 2017; Pakjamsai and Pongpairoj, 2018), which showed that it can develop EFL learners' metalinguistic awareness and improve their performance regarding the stress placement of English suffixed words. As claimed that explicit instruction could raise EFL learners' metalinguistic awareness, some research studies have been carried out focused on the metalinguistic knowledge of EFL learners from different linguistic backgrounds (Isarankura, 2008; Ngarmwirojkit, 2012). The findings from such studies showed that learners with different linguistic backgrounds tended to use different kinds of metalinguistic knowledge. Taking this point into account, the metalinguistic awareness of Thai learners on the pronunciation of English derivational suffixed words has never been investigated. Accordingly, the researcher also investigated the metalinguistic knowledge of Thai learners with different proficiency levels to see whether there were any differences in terms of metalinguistic knowledge on the pronunciation of English suffixed words.

The present study aimed to investigate the stress patterns of English suffixed words performed by Thai learners and compare their performance levels before and after studying and practising the rules of stress placement. This study also investigated the metalinguistic knowledge regarding the pronunciation of English suffixed words after the learners received praxis intervention including explicit lessons and practice on the stress placement rules of English suffixed words.

1.2 Research questions

1. What stress patterns of English derivational suffixed words are pronounced by Thai learners?
2. What metalinguistic knowledge governs Thai learners' pronunciation of English derivational suffixed words?
3. How do Thai learners of English perform before and after the praxis intervention where they are taught and trained in the pronunciation of English derivational suffixed words?

1.3 Objectives of the study

1. To explore the stress patterns of English derivational suffixed words pronounced by Thai learners
2. To investigate the metalinguistic knowledge of Thai learners on the pronunciation of English derivational suffixed words after they are explicitly taught and trained in the pronunciation of English suffixed words.
3. To compare how Thai learners of English perform before and after the praxis intervention where they are taught and trained to pronounce English derivational suffixed words.

1.4 Hypothesis statements

1. The stress patterns of derivational suffixed words that Thai learners of English pronounce are varied. Learners with high proficiency show patterns that are more in agreement with the English accentual system.
2. Metalinguistic knowledge governing the pronunciation of English derivational suffixed words is different between learners with various proficiency levels.
3. After praxis intervention consisting of explicit teaching and training in the stress placement rules for English derivational suffixed words, Thai learners

tend to become more accurate in their pronunciation of English derivational suffixed words compared to their pronunciation before praxis intervention.

1.5 Scope of the study

The main focus of the present study was the suffixes which yielded the shift of stress within words, so derivational suffixes were selected as the stimuli in the tasks. All inflectional suffixes were excluded as they did not trigger a stress shift within suffixed words. Based on the classification of affixes (Katamba, 1993; Rodman et al., 2013), they can be divided into two classes according to their phonological effects on affixed words: 1) neutral and 2) non-neutral. To separate the types of suffixes very clearly, only the suffixes belonging to a neutral category or non-neutral category were selected for use in this study. The suffixes that can be both neutral and non-neutral were excluded in order to prevent confusion among the participants when they performed the test and when they were studying the rules of stress placement. Another point for the scope of this study is the stylistic variation of English. The researcher based the stress patterns on the transcriptions in British and American English dictionaries as these two varieties of English are the main forms given exposure in English language education in Thailand (Kongkerd, 2013; Nomnian, 2013; Prakaianurat and Kangkun, 2018). The stress patterns for each suffixed words had to be similar in both British and American English. Suffixed words showing different stress patterns between British and American English were not selected.

1.6 Definition of terms

- **Morpheme** refers to the smallest unit in a language which contains meaning.
- **Affixation** is the morphological process of adding a bound morpheme to the base or free morpheme in order to create a new word with a new meaning (Manova, 2014).

- A **free morpheme or the base** refers to the word element which can stand alone. It is the element before getting attached by another morpheme.
- A **bound morpheme** refers to an elementary unit which cannot stand alone as a word. It needs to be attached to the base in order to form a new word with a new meaning.
- A **suffix** refers to a bound morpheme that is attached to the end of a free morpheme or the base to form a new word or to change the grammatical category.
- A **derivational suffix** refers to a morpheme that attaches to the end of the base to form a new word and it also changes the grammatical category. A word that is derived by derivational suffixes is called a derivational suffixed word.
- **Neutral suffixes** refer to the suffixes which do not cause any stress shift when they are attached to the base; the position of stress remains the same, such as in ‘happy’ [‘hæp.i] and ‘happiness’ [‘hæp.i.nəs]
- **Non-neutral suffixes** refer to the suffixes which trigger a shift of stress to another position within the suffixed words. In this study, they are divided into three positions:
 - 1) **Ultimate stress** refers to the stress on the final syllable of the suffixed words, such as ‘interviewee’ [,ɪn.tə.vju‘i:]
 - 2) **Penultimate stress** refers to the stress is on the second-to-last syllable, such as in ‘addiction’ [ə‘dɪk.tʃən]
 - 3) **Antepenultimate stress** refers to the stress is on the third syllable from the last such as in ‘electricity’ [,el.ɪk‘trɪs.ə.ti]

- **Accent** refers to the potential position within the word that can be pronounced with stress as the primary stress and/or secondary stress. The accents within the words are shown in dictionaries with acute marks in the transcription. When mentioning the word “accentuation” or “word accent”, it means the action of putting stress or extra energy on the potential positions within a certain word.
- **Stress placement** refers to the action of putting stress on the positions within the word. Depending on the speaker, the stress might not fall only on the position of the accents due to special emphasis on the meaning.
- **Interlingual interference** refers to a type of errors as the result of language transfer. It is influenced by learners’ mother tongue or their first language when they are trying to produce the utterances of the target language (Kaweera, 2013).
- **Intralingual interference** refers to a type of error that is not influenced by learners’ first language. It comes from certain rules in the target language which the learners generate when they are attempting to produce utterances in the target language (Kaweera, 2013).
- **Praxis intervention** in this research refers to a form of action that requires the participants’ participation or practice. It aims to encourage participants’ awareness when they participate in activities or practice.
- **Explicit instruction** refers to the direct teaching method used when presenting the concepts, rules, and instructions to the learners.
- **Language awareness** refers to the conscious knowledge and understanding about forms and functions of language (Carter, 2003).

- **Phonological awareness** refers to the ability to consciously notice, identify and manipulate the sound units of spoken words at both segmental and suprasegmental levels.
- **Metalinguistic knowledge** refers to learners' explicit knowledge about the applicable rules in a language system which can be verbally explained, described, or noticed (Ellis, 2016; Isarankura, 2008; Ranta, 2008; Roehr, 2007).

1.7 Significance of the study

After studying research papers focused on errors in the pronunciation of derivational suffixed words, it was revealed that the previous studies did not show the characteristics of stress placement by L2 learners in detail (Ali and Phil, 2017; Byun, 2014; Jarmulowicz and Hay, 2009). Regarding this circumstance, the researcher anticipates that this study may shed additional light on the underlying factors or reasons why L2 learners pronounce suffixed words differently from the educated English or Standard English. The distinctively pronounced words can be used as examples of non-native English speakers' pronunciation for the benefit of clarifying the concepts of error characteristics and explaining the factors behind those characteristics. All the teaching materials that were developed and used during the period of the present study can be further implemented in an English classroom or even in self-study sessions with the aim of improving English learners' pronunciation and morphophonological knowledge regarding stress placement on suffixed words. Also, this research could be used as the basis for further studies regarding related topics as well as the teaching of English pronunciation and phonology.

1.8 Limitations of the study

There were some potential limitations in the present study. First, the derived words that were composed were not frequently used. Some types of derivational suffixes are not frequently used, and the number of words derived by certain types

of suffixes tends to be limited. It is difficult to draw all derivational suffixed words that are frequently used from the corpus. Consequently, some derivational suffixed words showed very high frequency while other words may show very low frequency. Another limitation about the task was that this study implemented a read-aloud task which required the pronunciation of isolated words. Thus, the findings in this study might show different results from studies which implemented communicative tasks. Another limitation of the present study was that the delayed post-test was not implemented in the research procedure due to the limitation of time.



CHAPTER 2

LITERATURE REVIEW

This chapter provides information concerning the literature review related to the topic. First, it covers the morphophonological notion of derivational suffixes. The stress patterns of English derivational suffixed words and the accentual system of Thai polysyllabic words are discussed. Next, notions regarding contrastive analysis, error analysis, and interlanguage are presented. Then, a brief summary of previous studies on the pronunciation of derivational suffixed words is presented. The last part of this chapter reviews the theory regarding metalinguistic knowledge.

2.1 Morpho-phonological aspect on English affixation

When considering the phonological effect of morphemes on word pronunciation, English affixes can be divided into two classes: neutral and non-neutral. According to Katamba (1993), the affixes of neutral class do not influence phonological change when they are attached to the base, such as {-less}, {-ness}, {-ly}, etc. On the other hand, non-neutral affixes have varying phonological effects on the base such as the changing of the consonant or vowel sounds, or the shift of the primary stress position in a word attached by affixes such as {-ic}, {-ive}, {-al} and so on. Also, some morphemes can be both neutral and non-neutral. The prefix {in-} is an example of an affix which belongs to both neutral and non-neutral classes. When the prefix {in-} is attached to a word, the final sound [n] may remain unchanged, such as in the word “incomplete”, or it will be changed to become more similar to the beginning sound of the base word, such as in “irresponsible”, “impatience”, and “illegal”.

2.2 Accentual rules of English suffixed words

Due to the phonological effect of non-neutral suffixes, sound changes can occur with both segmental and suprasegmental features. The researcher was

interested in the suffixes that entail the stress shift which causes the change and phonetic complex of the pitch, length, and vowel quality of the base words. When the suffix is added and the primary stress is shifted, the features of the strong syllable that is changed to a weak syllable needed to be changed. The feature of the strong syllable is prominent. It is pronounced with a fully stressed vowel, higher pitch, longer length, and louder sound. When the primary stress is shifted, the strong syllable will turn into a weak syllable that is less prominent or unstressed, and will also be pronounced with a weak unstressed vowel, lower pitch, shorter length, and softer sound.

Many works have studied and remarked on the rules of stress placement or the accentuation of derivational suffixed words. For example, Fox (2002) described three characteristics of accentuation of affixes by stating “some may ‘attract’ the accent and others ‘repel’ it or may require the accent to be placed on a specific ‘preceding’ syllable.” To give a clearer picture, Yiemkuntitavorn (2013) categorized suffixes based on their phonological effects on stress placement in English, as follows:

- 1) The suffixes that attract stress to themselves such as, {-neer}, {-ese}, {-ette}, {-sque} and {isque} (Tarone, 1978)
- 2) The suffixes that shift stress to the syllable before the suffixes such as {-tion}, {-cian}, {-sion}, {-ic}, {-ial}, {-ual}, {-ian}, {-ient}, {-ous}, {-eous}, {-itive}, {-itude}, and {-meter}
- 3) Counting from the last syllable of the word, stress will fall on the third syllable when certain suffixes are attached such as {-phy}, {-gy}, {-try}, {-cy}, {-fy}, {-ly}, {-ty}, {-ate}, {-ize}, and {-ary}

According to the definition of the phonological characteristics of accentuation in derivational suffixed words, WalidEnglish (2013) provided the terms for each characteristic of stress placement in derived words as follows:

- 1) Stress attracting: Suffixes attracting the primary stress to the final syllable.

These suffixes can be called ultimate stressed suffixes.

Suffixes	Examples of words and transcriptions
-aire	questionnaire /,kwɛstʃə'neə/ millionaire /mɪljə'neə/
-ee	nominee /,nɒm.ɪ'ni:/ absentee /,abs(ə)n'ti:/
-eer	engineer /,endʒɪ'nɪə/ volunteer /,vɒlən'tɪə/
-ese	Japanese /,dʒæpə'ni:z/ Vietnamese /,viɛtnə'mi:z/
-esque	romanesque /,rəʊmə'nɛsk/ picturesque /,pɪktʃə'rɛsk/

- 2) Stress shifting: A primary stress moves to another syllable in the stem

2.1) Penultimate stressing: The stress is shifted to the second-to-last syllable. (Essberger, 2020)

Suffixes	Examples of words and transcriptions
-ic	athletic /əθ'letɪk/ phonetics /fə'netɪks/
-sion	revision /rɪ'vɪʒ(ə)n/ erosion /ɪ'rəʊʒ(ə)n/
-tion	relation /rɪ'leɪʃ(ə)n/ participation /pɑː,tɪsɪ'peɪʃ(ə)n/

Penultimate stressing can also occur when the suffix starts with the letters “i”, “e”, or “u” and is followed by a vowel.

“i” followed by vowels suffixes

Suffixes	Examples of words and transcriptions
-ion	generation /,dʒenə'reɪʃən/ constitution /,kɒnstɪ'tʃu:ʃən/
-ial	essential /ɪ'senʃəl / residential /,rezɪ'denʃəl/
-ian	historian /hɪ'stɔ:riən/ librarian /laɪ'breəriən/

“e” followed by vowels suffixes

Suffixes	Examples of words and transcriptions
-eous	courageous /kə'reɪdʒəs/ erroneous /ɪ'rəʊniəs/

“u” followed by vowels suffixes

Suffixes	Examples of words and transcriptions
-ual	habitual /hə'brʊʃuəl/ intellectual /,ɪntə'lektʃuəl/

2.2) Antepenultimate stressing: The stress is shifted to the third syllable from the last syllable. (Essberger, 2020)

Suffixes	Examples of words and transcriptions
-al	critical /'krɪtɪkəl/ physical /'fɪzɪkəl/
-ity	ambiguity /,æm.brɪ'gju:əti/ humanity /hju:.'mænəti/

-logy	methodology /,meθə'dɒlədʒi/ sociology /,səʊsi'ɒlədʒi/
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Also, antepenultimate stressing can occur when the derived words are used with the suffixes {-ate}, {-ize}, {-ise}, or {-fy} and then become words with three or more syllables.

Suffixes	Examples of words and transcriptions
-ate	legitimate /lə'dʒɪtəmət/ originate /ə'ɹɪdʒənət/
-fy	simplify /'sɪmplɪfaɪ/ solidify /sə'lɪdɪfaɪ/

2.3 Accentual system of Thai syllabic words

A prosodic feature like word stress is an important feature in the English language and contains the rules or systems of the accentual position. Compared to the Thai language, it raises the question of whether Thai has its own accentual system or similar rules for emphasizing the positions within words. Some research studies have explored and examined the stressed and unstressed syllable within words in the Thai language.

Luksaneeyanawin (1983) examined the stress patterns in Thai polysyllabic words and proposed the accentual system of Thai words. The proposed system is briefly concluded as follows.

- 1) The last syllable of a word always contains the primary accent.
- 2) In monomorphemic polysyllabic words, the secondary stress will not fall on the penultimate syllable or the syllable right before the last syllable, except when the antepenultimate syllable contains a linking syllable which is always unaccented.

- 3) In words with three syllables or more, double stress patterns are favoured by Thai speakers. This means they prefer producing two stressed syllables, in which the final syllable of the words contains the primary stress, and another syllable is stressed as secondary stress. This statement is supported by the study of Surinpi boon (1985), which showed double stress patterns were produced more often than single stress pattern.

Naksakul (2013) also provided the accentual system of polysyllabic words in the following characteristics:

- 1) The number of stressed syllables attached to other stressed syllables can be as high as necessary, but can only be attached by a maximum of two unstressed syllables for an unstressed syllable.
- 2) The unstressed syllable never falls to the last syllable; in other words, the final syllable of the words must be stressed.
- 3) In case there are more than two unstressed syllables attached to a string of sounds, some unstressed syllables will be deleted or changed into stressed syllables.

2.4 Phonetic correlates of stress in Thai on the stress placement in English words

When we compare the accentual rules of English suffixed words to the accentual system in Thai, it is shown that word stress in English and Thai are different in terms of stress typology. Word stress in Thai is always fixed on the final syllable while stress in English is free so that it is not fixed on particular syllables (Isarankura, 2016; Luksaneeyanawin, 1983; Vairojanavong, 1984). Apart from the stress typology, these two languages also show some differences in terms of the characteristics of stress. As mentioned in the above section, stress can be auditorily recognized as a complex of phonetic features such as pitch, loudness, vowel length, and vowel

quality. The acoustic and auditory correlates of the features of stressed syllables can be represented by frequency - pitch, intensity - loudness, and duration - length. Though English and Thai use the same phonetic features to recognize certain stressed syllables, the main characteristics of stress in both languages are different. According to Isarankura (2016), different characteristics of stress exist in English and Thai.

“The main characteristic of stress in English is the rapid change of pitch towards a relatively higher level. On the contrary, a stressed syllable in Thai is recognizable by the longer duration of the vowel sound when compared with the same vowel occurring in an unstressed syllable.” (Isarankura, 2016: 38)

From Isarankura’s statement, it can be assumed that apart from the stressed syllable of certain English words recognized by the high pitch, the specific syllables pronounced by Thai learners with a longer duration for the vowel could potentially be recognized as stressed syllables as well.

Another noticeable point regarding the correlates of stress in Thai lies in the fact that Thai is a tonal language. According to studies of stress patterns and tones in Thai concerning the stress placement of English words (Gandour, 1979; Isarankura, 2016; Jaiprasong, 2019; Limsangkass, 2009; Pongprairat, 2011; Sankhavadhana, 1989; Vairojanavong, 1984), a Thai lexical tone is assigned to every syllable in English words which are borrowed and frequently used in the Thai context. There are five categories of Thai lexical tones as follows:

- | | | |
|---------|------|---------------|
| 1) [kā] | mid | “to be stuck” |
| 2) [kà] | low | “galangal” |
| 3) [kâ] | fall | “value” |

- 4) [ká] high “commerce”
 5) [kǎ] rise “leg”

Gandour (1979) proposed that the distribution of Thai lexical tones in English loanwords constrains the syllable structure. The tonal assignment rules for English loanwords in Thai are summarized in Table 1.

Syllable type	Monosyllabic words	Polysyllabic words	
		non-final position	final position
live syllable (a word that ends with sonorant consonants /ŋ/, /n/, /m/, /j/, and /w/ or syllables that consist of a long vowel (Limsangkass, 2009)).	mid	mid	mid / fall
dead syllable (a word that ends with obstruent stops consonants /p/, /t/, and /k/ or syllables that consist of a short vowel which always end with glottal stop (Limsangkass, 2009)).	low / high	high	high / low / fall

(Gandour, 1979; Isarankura, 2016)

Table 1: Tonal assignment rules for English loanwords in Thai

As previous studies reinforced that Thai tones are assigned to every syllable in English loanwords, it can be assumed that Thai learners will use Thai lexical tones to mark the stressed syllables when they pronounce English words. However, the tone assigned to a certain stressed syllable may not have a high pitch due to the constraints of syllable structure on the distribution of the tones.

2.5 Studies of language learners' problems

The study of second language learning has been explained by various theories for a long time. Behaviourism was the traditional and influential theory of

second language learning. A renowned proponent of this theory was Skinner (1948), who experimented by using an operant conditioning chamber called “the Skinner box”. The theory is based on the belief that behaviours can be learned through interaction with the environment. It concerns the responsive behaviours to the environmental stimuli which are reinforced repetitively. Accordingly, behaviourists hypothesized that humans could learn something when they repeated a behaviour until it became a habit. The same as when learning a language, it is believed that second language learners can acquire or learn a language when they imitate and practice the utterances of the target language again and again until a natural habit is formed.

In the belief that learners have the capacity to learn a language through imitation and repetition, the behavioural approach is often applied in language teaching. However, language learners still face difficulties when they attempt to produce the utterances in the language they are learning. This is likely due to their mother tongue not operating under the same concepts as the target language. Some linguistic items in learners’ first language do not occur in the target language or vice versa, leading to errors in L2 production. As a result of the difficulties faced by L2 learners caused by the interference of their mother-tongue, the contrastive analysis hypothesis arose.

2.5.1 Contrastive analysis

The contrastive analysis hypothesis was proposed by Lado (1957). This hypothesis supposes that a comparison of a learner’s native language with the target language will help predict and explain the difficulties in language learning. The main influential factor causing learners’ problems in the contrastive analysis hypothesis is language transfer. Koutsoudas and Koutsoudas (1962) claimed that “the process of transferring to second language habits acquired through familiarity with the native language is called interference”. Interference from learners’ mother tongue may benefit or hinder them when learning a foreign language. When the linguistic items in

learners' native language and the target language are similar, it is easier for the learners to learn. In contrast, the learners might face difficulties in learning if the linguistic items in the native language and target language are different.

For the benefit of language teaching and teaching materials design, the contrastive analysis method has been applied by linguists as well as language teachers. However, the application of the contrastive analysis hypothesis is different in practice. Wardhaugh (1970) proposed two different versions for the contrastive analysis hypothesis: the strong and the weak. For the strong version, the contrastive analysis hypothesis is applied to predict the difficulties of L2 learners. Contrary to the strong version, Wardhaugh mentioned that the weak version claims to "explain observed interference phenomena" by using linguistic knowledge for support.

Even though the contrastive analysis hypothesis is applied to predict and explain the difficulties or errors in second language learning, not all errors are accounted for by this hypothesis because some errors do not result in the interference of learners' first language. That is when the hypothesis was challenged by the phenomenal theory of generative transformationalists. The most popular and well-known hypothesis was the Language Acquisition Device Hypothesis (LAD) proposed by Chomsky (1965) who believed that children's brains behaved like a CPU or the device called "LAD" in language acquisition. Its role is to generate and process input to perform the language as an output. Therefore, some errors cannot fit into the explanation of learners' L1 interference because the errors come from the learners who formulate the rules by themselves, such as the overgeneralization of regular past tense rule applied to irregular past tense verbs like 'go - goed'. With evidence of errors supported by the language acquisition device hypothesis, it can be insinuated that contrastive analysis is not enough to figure out the source of learners' problems. This leads to the practice of Error Analysis.

2.5.2 Error Analysis

To investigate the sources of errors produced by L2 learners using error analysis, the differences between errors and mistakes should be understood clearly. According to Corder (1967), errors can be defined as incorrect linguistic forms which are systematically produced by learners, while mistakes refer to unsystematic or random forms which are linguistically incorrect by various factors such as a slip of the tongue, tiredness, or memory limitation. Error analysis is the method used for identifying and explaining the errors collected from language learners' actual production. This method can gather more sources of errors that cannot be accounted for by the contrastive analysis method (Richards, 1971).

Error analysis shows great significance for language learning and teaching. Corder (1967) provided the significance of the error analysis study in three different ways as follows:

- 1) *To the teachers, in that they tell their learners if they undertake a systematic analysis, how far towards the goal the learners have progressed and, consequently, what remains for them to learn.*
- 2) *To the researcher, they provide evidence of how language is learned or acquired, as well as what strategies or procedures are being employed during the stage of learning.*
- 3) *To the learners themselves, the making of errors can be regarded as a device that learners use to learn. It is a way the learners have of testing their hypotheses about the language they are learning. The making of errors is a strategy employed both by children acquiring their mother tongue and by those learning a second language.*

(Corder, 1967: 167)

As error analysis can cover many of the sources of errors produced by language learners, the error analysis approach is applied as a framework for investigating the sources of L2 errors. According to Corder (1974) and Ellis (1997), error analysis methods can be described in five steps as follows:

1) Collecting errors

To collect the errors that might reflect the learning process of learners.

2) Identifying errors

To identify the errors from learners' performance, it is important to compare learners' production of the correct patterns or forms in the target language.

3) Describing errors

In this step, the identified errors are described and categorized into types based on the grammatical categories or general characteristics in which the learners' production differs from the target language. Classifying errors can help researchers to diagnose learners' problems at certain developmental stages as well as to see the changes in errors over time.

4) Explaining errors

After the step of error description, this is an interesting step as the researchers need to find supportive evidence to explain the sources of errors that seem to be universally different, such as omission, overgeneralization, and language transfer.

5) Error evaluation

The last step is to evaluate how the problems affect the intelligibility of interlocution. In this case, errors are divided into two types: Global errors dealing with the overall structure and Local errors involving a single constituent.

2.5.3 Interlanguage

With the error analysis method, researchers can find and explain the sources of errors which the interlingual interference or transferring of learners' L1 to L2 utterances cannot be applied in the explanation of learners' problems, such as overgeneralization, ignorance of rule restrictions, incomplete application of rules, and false concepts hypothesized (Richards, 1971). These language behaviours are not accounted for in the linguistic structures of both learners' native language and target language. It can be assumed that these errors come from intralingual interference because the interference was caused by the rules within the target language, which were hypothesized and overused by the learners. George (1972) suggested that errors made by L2 learners might not always be part of their first language, so the intermediate processes and mechanisms of L2 learners should be considered as well. Therefore, interlanguage studies must come into play.

Interlanguage refers to the idiosyncratic language system which has been processed and developed by individual learners of a second language. According to Selinker (1972), an interlanguage structure is activated whenever language learners "attempt to produce a sentence in L2 or attempt to express meaning, which they may already have, in a language which they are in a process of learning". An interlanguage structure moves along the interlanguage continuum or the intermediate process of learners who attempt to achieve competence in the target language. To illustrate, Lennon (2009) defined interlanguage as "*a language*

intermediate between the native and the target language". Figure 1 shows the continuum of L2 learners' language.



Figure 1: An image presenting the concept of interlanguage

Frith (1978) claimed that the fossilized items produced repeatedly by L2 learners provide strong evidence of interlanguage as they are formed systematically. The interlanguage resulting in fossilized items can be influenced by different factors within or without the L2 learners as mentioned by Haggard (1967). Haggard found that “alternative language units are available to individuals and these units are activated under certain conditions”. This can be substantiated by Beebe (1984), who proposed that an interlanguage is “*a natural language, and it varies like any other natural language with the sociolinguistics setting*”. Major (1987) provided insight into the variation of interlanguage pattern from L2 learners’ production regarding the relationship of interference and developmental factors:

“A very good learner will progress very rapidly, and many interference processes will never surface...while a poor learner will progress slowly and often fossilize the patterns of language.”

(Major, 1987: 103)

2.5.4 Interlanguage and Phonology

Concerns relating to L2 learners’ pronunciation and phonology have seemingly gained little interest or indeed been neglected in second language teaching (Tarone, 1978). As maintained by Levis (2019), pronunciation is considered the “Cinderella of Linguistics”, forgotten and shut out of society, resulting in a small

number of research papers on phonology and pronunciation, as well as a minimal number of pronunciation practices in English classroom. Without concern for phonological study and the practice of pronunciation, learners may produce interlanguage utterances that deviate from the standard pronunciation of the target language. This can be illustrated by the example of the numerous L1 Thai learners who speak English with a very strong Thai accent and pronunciation, which may lead to the miscommunication between speakers because the utterances are unintelligible and incomprehensible. This can be corroborated by Limsangkass (2009) who said that “With a Thai English accent, foreigners might misunderstand, which could then lead to a communication breakdown”. Pongprairat (2011) also found that only native speakers with high exposure to L2 English accents tend to be able to understand L2 accents. To promote intelligibility and comprehensibility in L2 communication, L2 learners need to be trained in the standard pronunciation of certain languages.

Mentioning the interlanguage resulting from the fossilized items of learners' speech production, Tarone (1976) provided three possible explanations for the cause of fossilization in phonology.

1) Physiological habit formation

The habits formed when one set of sound patterns has been produced and practised for a long time could be one possible cause of phonological fossilization. Learners may find it difficult to produce a new set of sound patterns for L2 because their muscles and articulators have become used to the patterns practised and used in their L1.

2) Psychological habit formation

Krashen (1977) suggested that the learners' attempt to construct abstract theories about the language may cause fossilization. Overgeneralization can be one example of psychological habit formation when learners apply a linguistic rule in cases it is not normally applied. Tarone (1976) also claimed that language transfer is probably another cause of difficulty in L2 pronunciation, and it might form a psychological habit. To illustrate, learners may produce some sounds due to the influence of their mother tongue. They may also transfer the rules or pronunciation of those sounds into L2 production.

3) Sociolinguistic habit formation

The explanation for this type of habit formation emphasizes the lack of empathy among native speakers of a second language. Empathy plays a significant role when learners try to comprehend native speakers and adopt the pronunciation of the second language so that the native speakers can understand their message. Guiora et al. (1972) showed the improvement of L2 speakers' pronunciation when empathy among native speakers increased after they were intoxicated. As the improvement of L2 pronunciation correlates with the increasing level of empathy, it is believed that the learners who lack empathy with the native speakers, or those who do not feel like they fit in the social group may produce the fossilized patterns of pronunciation.

2.5.5 Factors affecting L2 learners' production of English

Selinker (1972) introduced five psycholinguistic processes central to second language learning which may cause the interlanguage utterances or behaviours of the language learners as follows:

- 1) **Language transfer** is the process of the native language or mother tongue of learners influencing their performance when producing the target language, which forms interlanguage.
- 2) **Transfer of training** is the process that involves interlanguage performance as a result of the training procedure, including the teaching approaches, curriculum, and materials.
- 3) **Strategy for L2 learning** is the process that concerns the approaches that L2 learners apply to learn a language.
- 4) **Strategy for L2 communication** is the process that concerns the approaches L2 learners use when communicating with native speakers of the target language.
- 5) **Overgeneralization of the target language structures** is the process wherein the L2 learners apply overgeneralized rules to the target language with any of the grammatical features.

Richards and Sampson (1974) also provided possible factors that could influence and characterize the learning system of L2 learners as follows:

- 1) **Language Transfer** refers to the interference of learners' mother tongue in target language production.
- 2) **Intralinguistic Interference** refers to the interference within the learners' processing of the language such as overgeneralization, ignorance of rule restrictions, incomplete application of use, and semantic errors.
- 3) **Sociolinguistic Situation** concerns the different settings in language use, such as the variation of a language used among homogeneous groups or heterogeneous groups, including dialects, registers, and mediums of expressing information. It shows the

relationship between learners' identity and the target language community.

4) Modality occurs in the productive outcomes rather than the perceptive ones. It is like the popularity of usage by the majority of people until it turns to be universal, such as spelling pronunciation, the confusion of written and spoken styles and the pronunciation of words that have been borrowed for a long time.

5) Age is considered one of the factors that can affect a learner's language system as supported by the concept of a critical period. It is believed that children can be ideal language learners since they acquire all the abstract linguistic rules at an early point in their lives. After this period, it is more difficult for learners to acquire any concepts.

6) Succession of Approximate Systems relates to the stability of learners' language processing system which can be shown by their linguistic performance. A successful language system could influence how long a learner can maintain linguistic ability.

7) Universal Hierarchy of Difficulty explains that some forms may be inherently difficult to learn regardless of the background knowledge of the learner. There are numerous categories of difficulty including sentence length, processing time required, and derivational complexity, as well as type of embedding, number of transformations, and semantic complexity.

Apart from these seven factors, other factors may also influence language learners' achievement in target language competence, such as motivation,

attitude, intelligence, personality, learning styles, and others (Khasinah, 2014; Sudsard, 2013).

2.6 Metalinguistic knowledge

Metalinguistic knowledge refers to explicit knowledge about the linguistic rules which can be reflected by the language learners' ability to consciously or verbally explain, describe, and correct L2 errors (Ellis, 2016; Isarankura, 2008; Kim, 2018; Ranta, 2008; Roehr, 2007). It is different from implicit knowledge which is knowledge about the linguistic structures operated unconsciously by learners (Alipour, 2014).

Many research studies point out the importance of metalinguistic knowledge in language learning. Metalinguistic skills are suggested and promoted in the classroom through explicit teaching as they can create awareness of the linguistic rules and facilitate the ability to monitor, notice, explain, and correct the errors made by language learners. With metalinguistic knowledge and skills, language learners can improve their ability and achieve target language competence more effectively (Alipour, 2014; Aydin, 2018; Ellis, 2016; Kim, 2018; Kuo et al., 2017; Nazarian and Izadpanah, 2017; Tokunaga, 2014)

According to some research studies on metalinguistic knowledge, such metalinguistic knowledge can be obtained from language learners' verbal explanation either in written or spoken form (Isarankura, 2008; Ngarmwirojkit, 2012). Learners' metalinguistic explanations are divided into two main types of reasoning: explicit and non-explicit. Explicit reasoning means the learners' explanations are related to linguistic rules such as phonology, morphology, syntax, semantics, or pragmatics. On the contrary, non-explicit reasoning indicates the learners' explanations that are not related to linguistic rules. Isarankura (2008) provided 3 sub-categories for non-explicit reasoning including Impressionistic, Guessing/Pseudo

guessing, and No reason. Impressionistic reasoning is based on the learner's feelings, instincts, or impressions concerning certain linguistic items, while Guessing type refers to reasons from the learners' guesses or strategies that the learners use for helping them guess such as eliminating improbable choices or asking for clarification. The No reason type is when learners do not provide any reasoning by keeping silent or saying that they have no idea. Irrelevant information giving is also categorized as the No reason type.

2.7 Previous studies on the production of suffixed words regarding stress placement

Certain research studies have focused on the production of suffixed words in terms of the suprasegmental aspect. Jarmulowicz and Hay (2009) researched derivational morphophonology to explore the errors performed by the English native speakers who were, at the time of the study, in the third grade. 81 third-grade students were asked to produce derived words by combining the target suffix and the base word. The results showed that the students made more stress placement errors than segmental or syllabification errors.

Byun (2014) studied the stress shift realizations in three patterns of suffixes: stress moving suffixes (the stress moving to other positions within the base), stress carrying suffixes (the stress shifting to the suffix), and neutral suffixes (the stress staying on the same position). 31 Korean ten-graders were asked to pronounce a list of words consisting of base words and suffixed words. The results showed that the students had more problems with the words attached by stress carrying suffixes or the suffixes which cause the stress to be shifted to the suffixes themselves. The results could be supported by Jarmulowicz and Hay (2009), who found that the low frequency suffixes like stress-carrying suffixes or ultimate stressed suffixes could cause problems for learners in the pronunciation of derivational suffixed words.

Ali and Phil (2017) also worked on Pakistani learners' pronunciation of derivational affixes to explore the errors that arose. 11th graders were tested by pronouncing words ending with ten different derivational suffixes. The results from this study indicated that Pakistani learners of English had seriously poor performance on the pronunciation of derivational suffixed words. The researcher concluded that the interference of the mother tongue, as well as the inadequate teaching and training of the pronunciation skills, were the important reasons that caused such poor performance.

All the previous studies mentioned above recommended that knowledge about English word stress and stress placement rules should be presented explicitly when taught to EFL learners. To show the effect of explicit teaching in the pronunciation of derived words, Amer and Amer (2011) implemented explicit instructions and showed its role in Arab students' performance on the stress placement of English words. The students were divided into a control group and an experimental group, and they received different approaches in teaching English word stress patterns. The results showed that the experimental group that received explicit teaching had a higher level of improvement.

Kuo et al. (2017) also conducted a study comparing two types of instruction on Taiwanese learners' pronunciation of English derived words, namely communicative approaches and explicit teaching approaches. The participants were divided into three groups, with each group receiving a different type of instruction: 1) explicit teaching, 2) communicative instruction, and 3) conventional instruction. After the implementation of different approaches to instruction, the students performed oral production tasks using English derived words. The result showed that both explicit and communicative instruction could help improve students' pronunciation skills on English derived words. Finally, the study suggested that both ways of

teaching should be integrated and used in the classroom. The study also recommended future study on the comparison of effects for instruction and exposure to English on the proficiency levels of learners.

In Thai context, studies by Isarankura (2016) and Jaiprasong (2019) compared the performance on stress placement of English words by Thai learners with different proficiency levels, and the results from both studies were identical. The findings showed that the learners who had higher proficiency levels could assign stress more accurately than the learners with lower proficiency levels.

Pakjamsai and Pongpairroj (2018) conducted a study to compare the effectiveness of explicit and implicit instructions for English word stress among L1 Thai learners. 18 intermediate-level Thai undergraduate students were divided into two groups and received different teaching methods: explicit and implicit. They performed a pre-test and post-test including oral production and stress identification tasks. The results revealed that, even though both teaching methods could improve learners' competence, the explicit instruction was more effective in the oral production than the implicit instruction. Using the explicit method, the rules of target language features were presented and practised explicitly in order to raise metalinguistic awareness, which enabled the learners to apply the rules, monitor their performance, and make appropriate corrections.

The explicit teaching method seemed to be more effective for EFL teaching and learning in the Thai context. According to Chamcharatsri (2013), English is taught in Thailand as a foreign language and is used only for specific fields such as business, technology, or education. In the end, Thai people still use Thai as their national language. Even though English is used in education, Thai learners still have problem with English communication, and one factor that is a leading problem concerns the teaching system in Thailand. Kongkerd (2013) provided some examples of the

problems caused by the English teaching system in Thailand. For example, teachers use the Thai language when providing English lessons. There is significant emphasis on grammar and accuracy rather than practical language skills, and the lack of success in adopting student-centeredness to encourage autonomous and extensive learning outside of the classroom. According to these examples, it could be implied that implicit teaching or communicative approaches might not be sufficient for teaching English to Thai learners. The explicit presentation of English language features and rules is needed to help learners understand and apply the knowledge they gain when making utterances and communicating in English. They will know how the utterances should be formed and pronounced if they learn and understand the rules. Therefore, explicit instruction has been shown to be more effective for EFL learners in oral production.

With the aim of helping Thai learners improve their English competence in the Thai context, this research focused on learners' problems and explaining the factors that may cause problems in English language learning in order to offer solutions for the problems. The three-week praxis intervention which includes explicit instruction and practices was used for developing learners' knowledge about linguistic rules and supporting effectiveness in improving learners' competence in English oral production.

CHAPTER 3

METHODOLOGY

This chapter discusses the research design and detailed procedures for the research. It provides details on the criteria of sampling and the selection of participants for the experiment, the tasks design, and the development of tools of the production tasks and the praxis intervention. It also describes how the data from the experiment are analysed.

3.1 Research Design

The research design for the present study was adapted from Piyapattaranop and Luksaneeyanawin (2019). The procedure was divided into four phases as shown in Figure 2. Each phase needed different research instruments to yield the data. The first phase shows the process of group sampling by using an online survey to select the participants for the experiment. The second phase presents the pre-test implementing the read-aloud task in which the participants were instructed to read aloud a set of suffixed words in isolation. The third phase describes the praxis intervention including the explicit instruction regarding the stress placement rules of suffixed words, which were reinforced by computer-aided lessons and exercises to enhance the metalinguistic awareness among participants. The fourth phase shows the post-test implementing the read-aloud task which contained another set of suffixed words, and the metalinguistic knowledge elicitation task. After the praxis intervention, a further interview was conducted to ask the participants to reflect on what they did during the praxis intervention. Interviewing about their performance on the stress patterns was used to elicit the metalinguistic knowledge in participants' pronunciation of suffixed words. The entire procedure of carrying out these four phases took around 10 weeks or approximately three months to accomplish. Figure 2 shows an overview of the research procedure.

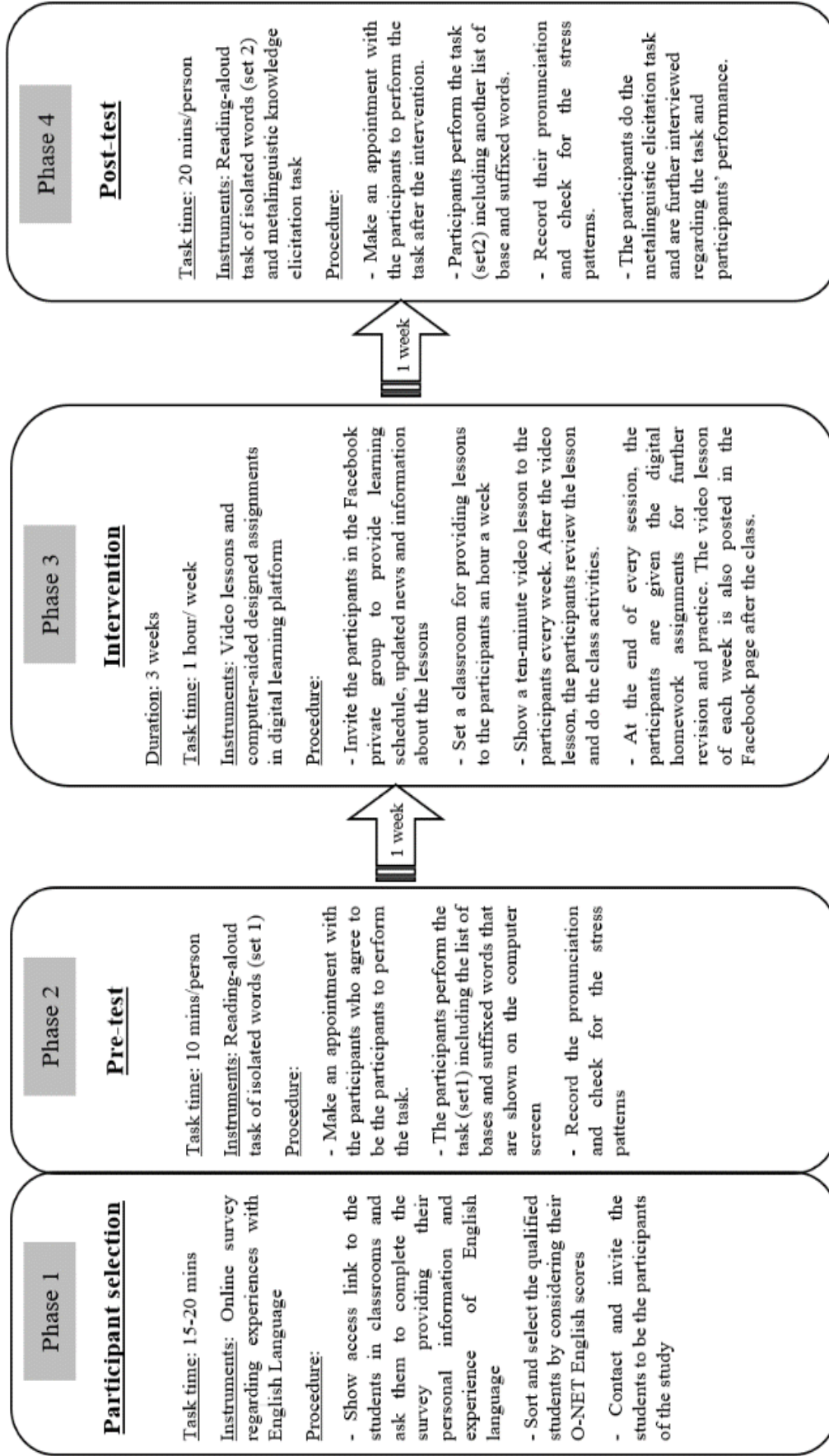


Figure 2: The procedure for the research experiment and data collection

3.2 Participant Selection

The population of the present study was selected using the systemic stratified random sampling method. The participants were selected from undergraduate students who had never taken English Linguistics courses before, especially Phonology, and had no disorders in terms of reading, listening, or speaking. Accordingly, non-English major students who had just enrolled in the university were considered the most suitable participants for the study. From among a population of 100 students at Kasetsart University enrolled in Foundation English courses during the first semester of academic year 2019, 30 students were purposively selected as participants. At the time they were tested, the participants were not taking any courses related to English Linguistics especially a course that provided Phonology lessons on stress placement for affixed words. As the researcher sought to compare the stress patterns performed by participants with different levels of English proficiency, the participants were separated into two groups: High and Low, based on their scores on an English proficiency test.

3.2.1 The instrument: An online survey

The items in the survey were derived and adapted from the questionnaire used in “Study on English in Finland 2007” which was conducted by a research team at the University of Jyväskylä (Leppanen et al., 2011). The items from the original survey were selected for the researcher’s consideration. Some parts or items that were considered irrelevant were excluded such as the part mentioning other languages besides English and the participants’ native language, or the part relating to opinions towards English in the future. The survey items were translated into Thai, so the participants who were non-English major students would feel more comfortable completing the survey. The questionnaire (shown in Appendix A) was created in an online survey form with four parts including 27 main items by using a

survey-creating platform at SurveyMonkey.com. The participants could gain access to the survey via computers or any electronic devices such as tablets or smartphones. The first part of the survey asked about the participants' background information that might be related to a language environment. The second part concerned their opinions towards the English language to see how they felt in terms of the importance of the English language. The third and fourth parts of the questionnaire focused on English language learning and the use of English in daily life, both inside and outside the classroom. The information provided in the survey was used for considering how they learned English and how much exposure to the English language they actually received.

3.2.2 The procedure for selecting participants

In this phase, the researcher applied for permission from the university and the course instructors to collect data in classrooms. The students were given the link to access an online survey relating to their experience in the English Language. In the survey, the students needed to provide their personal information, their English scores on the Ordinary National Education Test (O-NET) and their contact information. The first-year students who were not majoring in English were separated from the students from other years, ranked based on their O-NET score. Among the population of 100 students who completed the survey, 30 first-year students were selected by using the systemic stratified random sampling method based on their O-NET scores. Counting from the highest score, the first 15 students out of 100 students were contacted by the researcher to be participants in the study. The students who agreed to be part of the study were grouped into the high proficiency group. Among the high proficiency group in this study, the participants' scores ranged from 58.75 to 73 points out of 100 points. For the low proficiency group, 15 students out of 100 students counting from the lowest score were contacted to join the experiment in

the study. The students who agreed to join were grouped into the low proficiency group. The O-NET scores of the participants in the low proficiency group ranged from 16.25 to 30 points.

Some students were excluded from the criteria of participant selection if they were under eighteen years old and did not participate in all research procedure. The students who agreed to be participants in the research study could leave the research procedure at any time if they felt uncomfortable with any part of the experimental phases. In case they left; or were excluded from the experiment, the researcher would recruit another qualified student to join the experiments by using the same method as mentioned above. All participants' personal information such as names, contact information, and age was protected, and all data in every phase that the researcher obtained from the participants were reported as a whole. The participants who completed all the phases of the experiment were paid for dedicating their time to the three-month-period experiment at the end of the post-test phase. The participants who were not able to complete the entire research procedure received small gifts in appreciation of their participation in the research.

3.3 The pronunciation tasks of suffixed words

This section covers the development of test items and instruments used in the pre-test and the post-test to elicit the data regarding stress patterns and participants' performance on the pronunciation of suffixed words. First, the researcher provides information about the test development, including the instruments and criteria for selecting the test items. Then, the procedure for the pre-test and post-test phases is explained.

3.3.1 The instrument: Read-aloud tasks of suffixed words in isolation

The present study implemented read-aloud tasks containing a list of base and suffixed words in isolation. The stimuli used in this study were the four types of

derivational suffixed words. Each type of test words varied according to the phonological effect on the primary stress within suffixed words. According to the collection of suffixes in Jarmulowicz (2002), the high-frequency suffixes of each stress pattern were selected to be attached with the base words. The suffixes used in this study were categorized by grouping them into four stress patterns as follows:

- 1) **Neutral stressed suffix** *refers to* a suffix that does not cause a stress shift in suffixed words. The suffixes in this type are {-ful}, {-ness}, {-less}, and {-ly}.
- 2) **Ultimate stressed suffix** *refers to* a suffix which draws the primary stress to the suffix itself when the suffix is attached to the base. Suffixes of this type consist of {-ee}, {-eer}, {-ese}, and {-aire}.
- 3) **Penultimate stressed suffix** *refers to* a suffix in which the primary stress is placed on the second-to-last syllable. In other words, the primary stress is shifted to the position before the suffix. The suffixes in this type are {-tion}, {-ial}, {-eous}, and {-ual}.
- 4) **Antepenultimate stressed suffix** *refers to* a suffix in which the primary stress falls on the third syllable counting from the last syllable of the suffixed word. The suffixes in this type include {-al}, {-ate}, {-ity}, and {-ify}.

After the suffixes of each stress pattern were selected, the researcher looked up for the words attached by each suffix in the British National Corpus (BNC). The two suffixed words with the highest frequency in each list of certain suffixes were selected as the test items and used in two different sets of test words. The list of test words is provided in Appendix B1. As some suffixes were not frequently used compared to other suffixes on the list, some suffixed words showed very low rates of frequency. However, they still showed the highest frequency among the words within the list shown in the corpus. The suffixed words were polysyllabic and ranged from a

minimum of two syllables to a maximum of six syllables. All the base words were content words. When the suffix was attached, the meaning of the base and the suffixed word must relate. Importantly, when the non-neutral stressed suffix was added to the base, the suffixed words should show the stress shift from the base to another position according to the stress placement rules of certain types of suffixes. Each of the 16 suffixes was attached to two base words to create 2 test words in each set, meaning there were 32 suffixed words created within one set of the test word list. Those sets of 32 suffixed words with the same 16 suffixes attached to different sets of base words were created for this study.

After the 2 sets of the test word list were created, each set was used in the different phases. The suffixed word list in set 1 contained 32 suffixed words and it was used in the pre-test. The suffixed word list set 2 containing another 32 suffixed words was used in the post-test. Table 2 shows the list of suffixed words in set 1 and set 2 along with the base words. The primary stressed syllable of each word was marked with a bold text and acute accent mark to show the phonological effect after each type of suffix was attached to the words.

Types of suffixes	suffixes	Suffixed words (Set 1)		Suffixed words (Set 2)	
Neutral	{-ful}	'beauty – beautiful	'power – powerful	'suc'cess – suc'cessful	'care' – care'ful
	{-ness}	a 'ware – a ware'ness	'ill – ill'ness	'con'scious – con'sciousness	'happy' – happy'ness
	{-less}	'end – end'less	'help – help'less	'home' – home'less	'doubt' – doubt'less
	{-ly}	'usual – usual'ly	'actual – actual'ly	'probable' – prob'ably	par'ticular – par'ticular'ly
Ultimate stressed	{-ee}	'trust – trust'ee	'refuge – refu'gee	'absent' – absen'tee	'train' – trai'nee
	{-eer}	'mountain – mountai'neer	com'mand – comman'deer	'engine' – engi'neer	'auction' – auctio'neer
	{-ese}	'China – Chi'nese	Viet'nam – Vietna'mese	Ja'pan – Japa'nese	Portu'gal – Portu'guese
	{-aire}	'question – question'naire	'billion – billio'naire	'million' – millio'naire	'doctrine' – doctri'naire
Penultimate stressed	{-tion}	'educate – edu'cation	'situate – situ'ation	'product' – pro'duction	'populate' – popu'lation
	{-ial}	'industry – in'dustrial	'commerce – com'mercial	'finance' – fi'nancial	'office' – of'ficial
	{-eous}	'outrage – out'rageous	ad'vantage – advan'tageous	'courage' – cou'rageous	'instant' – instan'taneous
	{-ual}	'concept – con'ceptual	'habit – ha'bitual	'intellect' – intel'lectual	'contract' – con'tractual
Antepenultimate stressed	{-al}	'agriculture – agri'cultural	'abdomen – ab'dominal	'politic' – po'litical	'origin' – o'riental
	{-ity}	'authorize – au'thority	res'ponsible – responsi'bility	'commune' – com'munity	'active' – ac'tivity
	{-ate}	'triangle – tri'angular	'different – diffe'rentiate	'certify' – cer'tificate	'commune' – com'municate
	{-ify}	'solid – so'lidify	'detox – de'toxify	'person' – per'sonify	'object' – ob'jectify

Table 2: List of suffixes, base words, and suffixed words in word list set 1 and set 2

3.3.2 Pre-test and the post-test procedures

To investigate the stress patterns of suffixed words performed by Thai learners of English before and after praxis intervention, a pre-test and post-test were required. In the pre-test phase, the participants were asked to perform read-aloud tasks including a list of suffixed words in set 1, which was shown on a computer screen. In the post-test, the procedure was the same, but the read-aloud tasks used in this phase contained set 2 of suffixed words consisting of all the suffixed words that were created with the same design as the pre-test. Also, the suffixed words in the post-test did not appear in the materials used in the lessons for praxis intervention.

The test words were randomly put into PowerPoint slides, one word per slide, starting with the base and its suffixed word. The list of the test words in each set is provided in Appendix B2. Each word was shown on the screen within one and a half seconds after the participants pressed the Space Bar key. The suffixed words were randomly shown to prevent participants from being aware of the following suffixed words and their stress patterns. The participants were instructed to read the words into a microphone starting from the base word followed by its suffixed word. Then, their performance was recorded and checked for the stress patterns by the researcher and the inter-rater using the auditory method. First, the researcher listened to the recorded pronunciation and used IPA transcription and some symbols to mark the stressed syllables. For words which the researcher was not sure whether it was stressed or unstressed, the researcher used the Praat program (<https://www.fon.hum.uva.nl/praat/>) to show the acoustic features of stressed syllables as indicated by 'intensity or loudness' (dB), 'pitch' (Hz), and 'the length of wave form showing vowel duration' (Sec.) (Limsangkass, 2009). In addition to using Praat to help and train the researcher to detect the stressed syllables, the researcher

also conferred with the inter-rater when there were discrepancies concerning the stress patterns of certain words. Judgement on the stress patterns was from the perception of the researcher and inter-rater, so it was quite subjective. The researcher and the inter-rater would listen to the recorded pronunciation again together, and then discuss it before making a final judgement.

3.4 Praxis intervention

This section describes the development of learning materials used in praxis intervention. The researcher provides the details of the instruments including the video lessons and digital assignments. After that, the procedure for praxis intervention is discussed.

3.4.1 The Instrument: Video lessons on the pronunciation of suffixed words

The video lessons in the praxis intervention phase were created by animation software for education, called PowToon (<https://www.powtoon.com>) to attract the participants' attention as well as to save time and costs for creating teaching materials. All three video lessons focused on different content with some drills for the participants to practise (Please refer to Appendix C).

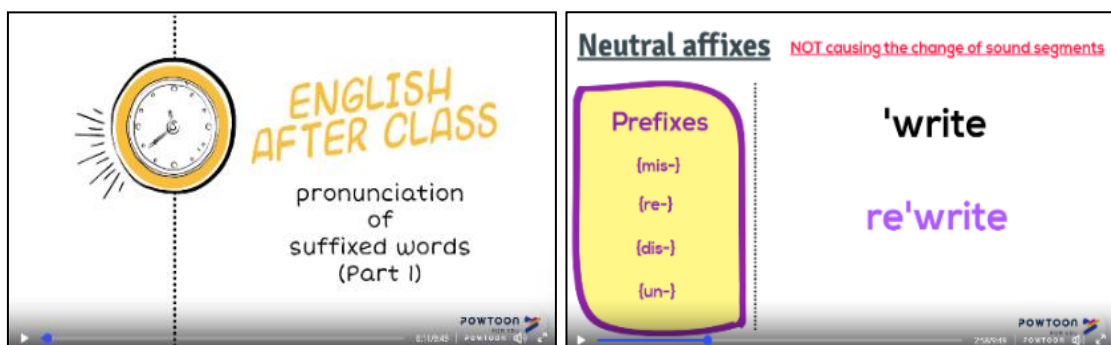


Figure 3: Screen capture of video lesson part 1

The first video introduced knowledge about affixation – how we can create new words by attaching affixes. Then, it showed the interaction between affixes and sound segments within words. Affixes including prefixes and suffixes were divided into two types: neutral and non-neutral. Some examples of affixes and words were shown and pronounced. There was a short interval between the words and the next one so that the participants could repeat the narrator's pronunciation of the suffixed words. At the end of the first video, it mentioned the change of sound segments by affixation in the suprasegmental aspect, which led to the stress patterns of derivational suffixed words in the second video. The link to video lesson 1 is provided in Appendix C.

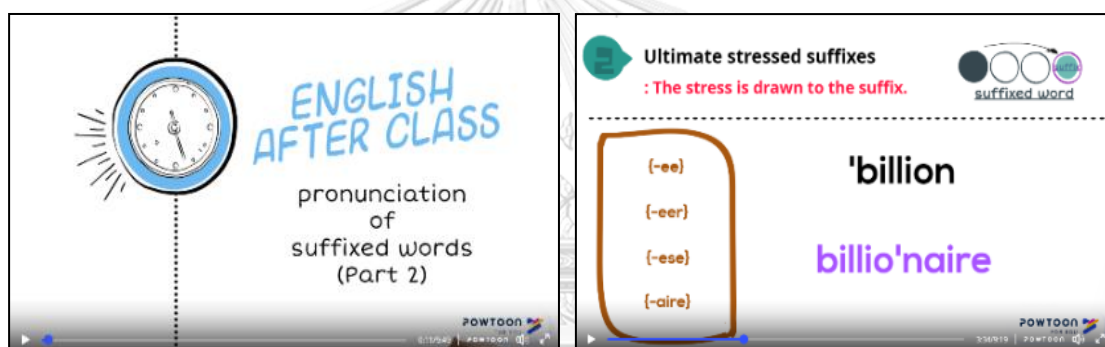


Figure 4: Screen capture of video lesson part 2

The second video provided more information about the types of affixes that could trigger changes in word stress. The suffixes which had this ability were derivational suffixes. Then, the video explained that these types of suffixes could yield different stress patterns for derivational suffixed words. The neutral stressed suffixes did not cause any stress shift. The ultimate stressed suffixes drew the stress to the suffixes, while the penultimate stressed suffixes attracted the stress to the syllable right before the suffixes. The antepenultimate stressed suffixes moved the stress to the third syllable counting from the last. After the explanation of each pattern, there were some drills for the students to practise. There was another lesson at the end of the video so the participants could practice the pronunciation

of the base and suffixed words again. The words were shown for 5 seconds with a pause to let the participants think and pronounce the words by themselves. The link to video lesson 2 is provided in Appendix C.

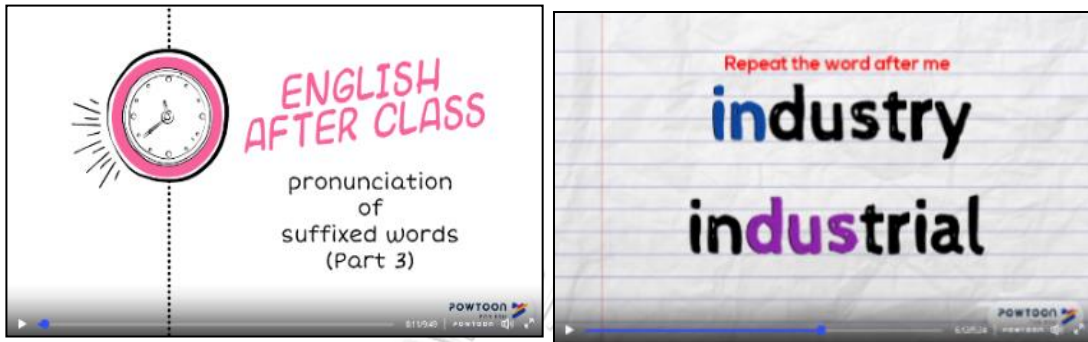


Figure 5: Screen capture of video lesson part 3

The last video emphasized the practice of pronouncing derivational suffixed words. It presented a list of suffixed words categorized by stress patterns: Neutral stressed, Ultimate stressed, Penultimate stressed, and Antepenultimate stressed. In each set, the base word was shown on the screen with the pronunciation from the narrator. Afterwards, the suffixed word of each base word was shown with a 5-second pause. The participants tried to pronounce the words with the rules that they learned from the previous videos. After all the words in each set were presented, the narrator pronounced the base and the suffixed words again; so that the participants could check their pronunciation. The link to video lesson 3 is provided in Appendix C.

3.4.2 The instrument: Computer-aided designed assignments

Seesaw (<https://app.seesaw.me/#/login>) is a digital learning management platform that helps manage a classroom as well as engage students with creative activities. The teacher can design the tasks and upload them to the Seesaw classroom. Students can access and do tasks directly in the Seesaw classroom, including type, draw, record voices or videos, and upload files in the classroom. Also, the Seesaw classroom can be accessed via computer, smart phone, or iPad, so it is

very convenient for the participants to practise and do assignment from anywhere and at any time. The assignments provided during praxis intervention contained 6 exercises (See the link to .pdf files for the exercises in Appendix C). Three exercises focused on reviewing the suffixes and the rules. Another three exercises focused on the practising of the rules as the participants needed to record their pronunciation in the exercises. All their works were shown in the Seesaw classroom which their peers and teacher could see and gave comments under their works. The appearance of the Seesaw classroom and function features in the assignments are presented in the following image:

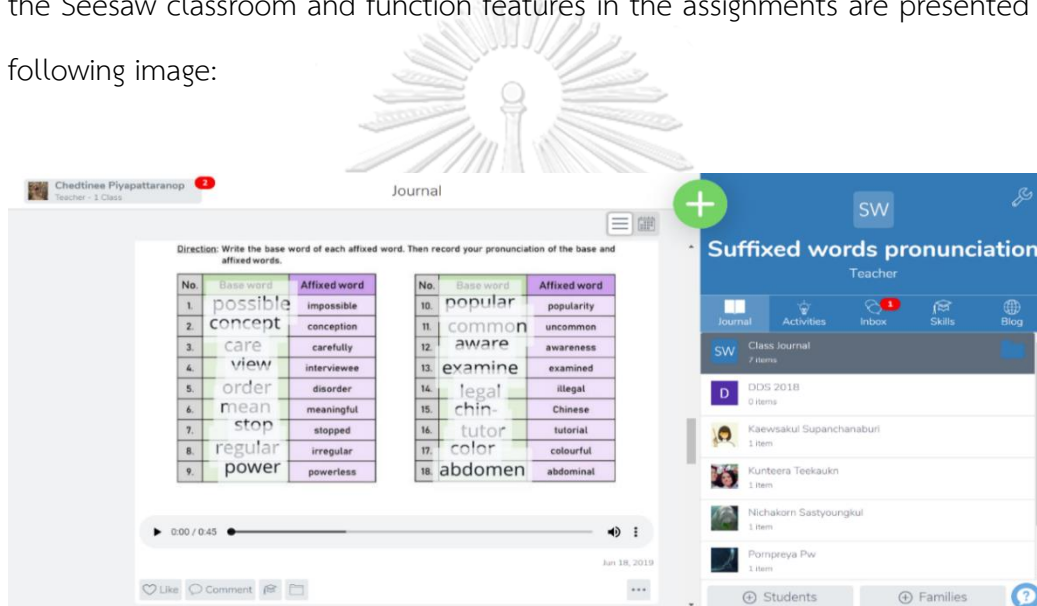


Figure 6: Screen capture of a Seesaw classroom

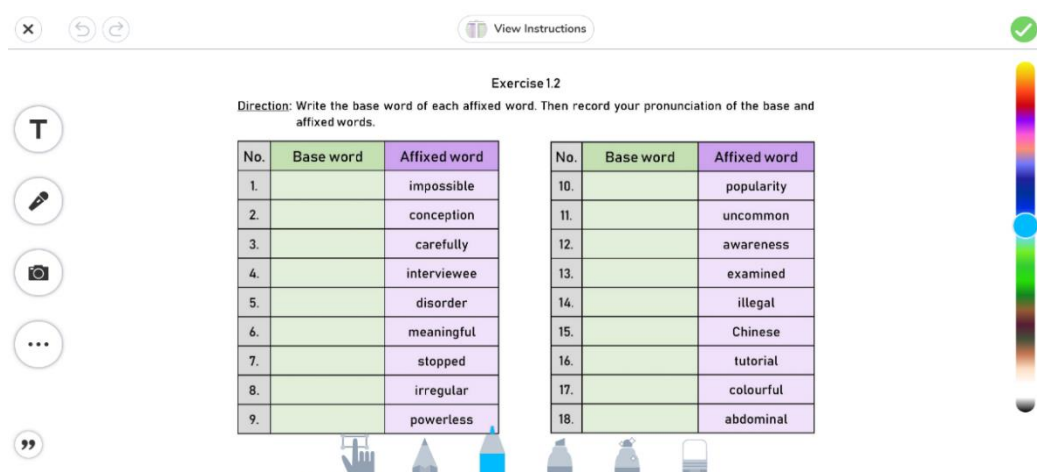


Figure 7: Function features in the task

3.4.3 Praxis intervention procedures

One week after the pre-test, the participants were expected to participate in three-week training sessions regarding the stress placement rules for suffixed words. During the three weeks of the praxis intervention phase, sessions were held once a week. In each week, the participants were required to join a class with the researcher for an hour to watch a video lesson regarding the affixation and stress placement rules of suffixed words. The video took approximately 10-15 minutes. After watching the video lesson, the participants discussed and reviewed the lesson, then did activities or simple games for revision in the classroom. After each class, the participants were given digital homework assignments for further revision and practice. All the video lessons were posted in the Facebook private group as well as in the digital classroom platform created on the website Seesaw.com (<https://app.seesaw.me/#/login>).

3.5 Error analysis

This research study aimed to investigate the stress patterns of English derivational suffixed words performed by Thai learners. The participants were instructed to perform read-aloud tasks containing a list of words in isolation set 1 for the pre-test. Then, the participants were required to join a three-week praxis intervention session where they were explicitly taught and trained in the stress placement rules of suffixed words. One week after praxis intervention, the participants were asked to perform the post-test including the read-aloud tasks for word list set 2 in order to see how they performed after they studied and practised the rules.

The researcher used the error analysis method to analyse the data regarding the stress patterns. According to the steps in error analysis (Ellis, 1997), the data were collected and analysed as follows:

1) Collecting errors

The participants' performance levels in the read-aloud tasks, both in the pre-test and post-test, were collected in a real time situation. The researcher recorded their performance with a microphone connected to a recorder. The participants' performance was recorded as Mp.3 files then converted into wave form by using the Wavepad Sound Editor program (<https://www.nch.com.au/wavepad/index.html>).

2) Identifying errors

The recorded pronunciation from participants was transcribed using the IPA (International Phonetic Alphabet). The position of stress which the participants performed were checked by the researcher and another inter-rater expert in phonetics and phonology. Transcription of participants' performance is provided in Appendix E.

3) Describing errors

After the pronunciation was transcribed, the data were grouped and categorized by the number of syllables and the patterns of stress. In each group, the performance was categorized into three main groups: the expected patterns, the error patterns, and the mispronunciation.

4) Explaining errors

In this stage, the researcher explained the sources of error stress patterns with supporting evidence from the literature review and previous studies concerning stress patterns.

5) Error evaluation

The researcher provided discussion on the participants' performance in terms of the errors and factors influencing the learners' error patterns.

3.6 Metalinguistic knowledge

Apart from the aim of investigating the stress patterns of English derivational suffixed words performed by Thai learners, this research study also proposed to investigate the metalinguistic knowledge of Thai learners concerning the pronunciation of English suffixed words after praxis intervention. This section provides the research instruments used for eliciting the metalinguistic knowledge and the procedure for collecting data during this phase.

3.6.1 The instrument: Metalinguistic knowledge elicitation task

The metalinguistic elicitation task contained a list of eight words selected randomly from the post-test. The participants were asked to read each word aloud, after which they had to explain how they pronounced the words, i.e., give the reason why they pronounced each word a certain way. The list of the words in the metalinguistic elicitation task is shown in Appendix D.

3.6.2 The instrument: List of interview questions regarding the participants' performance

The list of interview questions is shown in Appendix D. The interviews required the participants to offer reflections on the read-aloud tasks that they performed, before and after praxis intervention. Also, they were asked to share their knowledge about derivational suffixed words and stress placement rules.

3.6.3 Metalinguistic knowledge elicitation procedure

One week after praxis intervention, the participants were asked to perform the read-aloud tasks again to check whether the students learned the stress patterns of suffixed words after the lessons and the practice of the stress placement rules. The read-aloud task in this phase contained set 2 of the suffixed words that did not occur in the pre-test or praxis intervention. After the read-aloud task, the participants were asked to perform the elicitation task by spelling out their

metalinguistic knowledge regarding the pronunciation of suffixed words. They were also interviewed further regarding their performance. For the data from the interviews and metalinguistic elicitation tasks, the participants' answers were recorded and collected.

3.7 Analysing data

The data collected in the study were analysed and presented using both quantitative and qualitative approaches. Quantitatively, a T-test was used to compare the results from the pre-test and post-test of the two sample groups whether the differences were statistically significant or not. Qualitatively, the findings regarding stress patterns and metalinguistic knowledge were descriptively presented and discussed.

3.7.1 Quantitative analysis of data

For the quantitative data, the pair-sample t-test was used to compare the pre-test and post-test scores of each proficiency group to see the improvement of their performance after the praxis intervention. Also, the independent-sample t-test presented the mean scores of both proficiency groups in the post-test to compare the performance between groups.

The stress patterns performed by the participants were presented in tables using descriptive statistics showing the frequency of the patterns in percentages as well as the standard deviation between the groups. Also, histograms or bar charts were used to compare the patterns performed by each proficiency group in the pre-test and the post-test.

Data from participants' metalinguistic knowledge were presented in tables showing the frequency of each category for metalinguistic knowledge in percentages.

3.7.2 Qualitative analysis of data

The data from the pre-test and post-test were descriptively presented and discussed. For data regarding the stress patterns, the data were grouped by the number of syllables in the words and the patterns of stress. Then, the data were discussed according to the theoretical framework to investigate the factors that caused certain stress patterns. The theoretical framework regarding the metalinguistic explanation was also used to describe and categorize the reasons provided by the participants regarding their pronunciation of the suffixed words. The data from the interviews with participants and the data from the online survey regarding experience in the English language were used for discussion concerning the participants' performance.



CHAPTER 4

FINDINGS AND DISCUSSION

This chapter presents and discusses the three main findings of the study concerning the three research questions. The organization of this chapter starts from the main findings on stress patterns in the pre-test and post-test. Next, the main findings regarding the participants' performance are shown and discussed. The last section shows the findings for the participants' metalinguistic knowledge concerning the pronunciation of suffixed words after praxis intervention.

4.1 Mispronunciation

Before showing the findings for the stress patterns, the researcher would like to show the mispronunciation that occurred in participants' performance. The mispronunciation produced by the participants of both proficiency groups were found in both segmental and suprasegmental aspects as shown in the following.

1) A mixture of mispronunciation

Ex: “endless”: [ˈɹnᵐ ˈliː] [ən ˈdis]

“doubtless”: [dʊ bə ˈraːf], [ˈdəʊ tʊən]

“education”: [ɪn ˈkræː ˈtʃʌn], [dɪ ˈkɑːtᵐ tes]

2) Consonant omission

Ex: “successful”: [ˈsɑːkᵐ ˈseː fʊl]

“trustee”: [ˈtɹʌs tɪ]

3) Consonant addition

Ex: “beautiful”: [ˈbɪləʊ tə fəɪ]

“financial”: [faɪ ˈnæən ʃɪəls]

4) Consonant substitution

Ex: “conceptual”: [kən ˈsepᵐ tʃʊən]

“happiness”: [ˈhæp pɪ neɪ], [ˈhæp pɪ net]

5) Vowel substitution

Ex: “mountaineer”: [ˈmaʊ tə ˈnɜː], [ˈmaʊ^h tə ˈni^m]

“political”: [pə ˈlaɪ tɪ kəl]

6) Mispronunciation related to syllabification

- Adding syllable

Ex: “outrageous”: [ˈaʊ^h re ˈdʒɜː rʌs] [aʊ ˈre^h dʒɜː ɔs]

“questionnaire”: [ˈkwes ʃən ˈna ri]

- Deleting syllable

Ex: “instantaneous”: [ɪn træn ˈtɪəs], [ɪn ˈstæn^h ʃɪəl]

“Vietnamese”: [ˈvjɛs ˈnɑːms], [wjet ˈnis^f]

- Missyllabified syllable

Ex: “endless”: [ˈen^h dɔːls]

“helpless”: [ˈhel ˈplɪs]

Mispronunciation was excluded from the analysis of stress patterns as it reflected unsystematic items or mistakes due to many possible factors as suggested by Corder (1967)

4.2 Pronunciation of suffixed words with more than four syllables

The objectives of this study were to investigate and compare the stress patterns of English suffixed words performed by Thai learners in the pre-test and post-test. However, the stress patterns of pentasyllabic words and hexasyllabic words in this study could not be compared between the pre-test and post-test because the expected patterns did not exist in both tests. Therefore, the main findings of the pronunciation of pentasyllabic and hexasyllabic words were presented not by comparison between the pre-test and the post-test. The pentasyllabic words were these three words: agricultural, differentiate, and particularly. The hexasyllabic word in this study is the word: responsibility. The results on stress patterns of

pentasyllabic and hexasyllabic words performed by the high proficiency group and low proficiency group are shown in the following tables and charts.

Pentasyllabic words with pattern (- - | - -) or (| - | - -)

Participants & Words		Expected patterns		Error patterns								MP	
		-- --	-- --	----	- ---	----	-- --	-- -	- --	- - -	- -		
High group	agricultural	5	3	0	0	1	0	2	1	1	1	1	
	differentiate	3	7	1	0	0	0	0	0	2	0	2	
Total		30 (100%)	8 (27%)	10 (33%)	1 (3%)	0 (0%)	1 (3%)	0 (0%)	2 (7%)	1 (3%)	3 (10%)	1 (3%)	3 (10%)
Low group	agricultural	0	0	0	1	0	1	0	1	0	0	0	12
	differentiate	0	3	0	0	0	1	1	0	1	0	0	9
Total		30 (100%)	0 (0%)	3 (10%)	0 (0%)	1 (3%)	0 (0%)	2 (7%)	1 (3%)	1 (3%)	1 (3%)	0 (0%)	21 (70%)

Table 3: Stress patterns of pentasyllabic words with the expected pattern (- - | - -) and (| - | - -) and error patterns performed by both proficiency groups

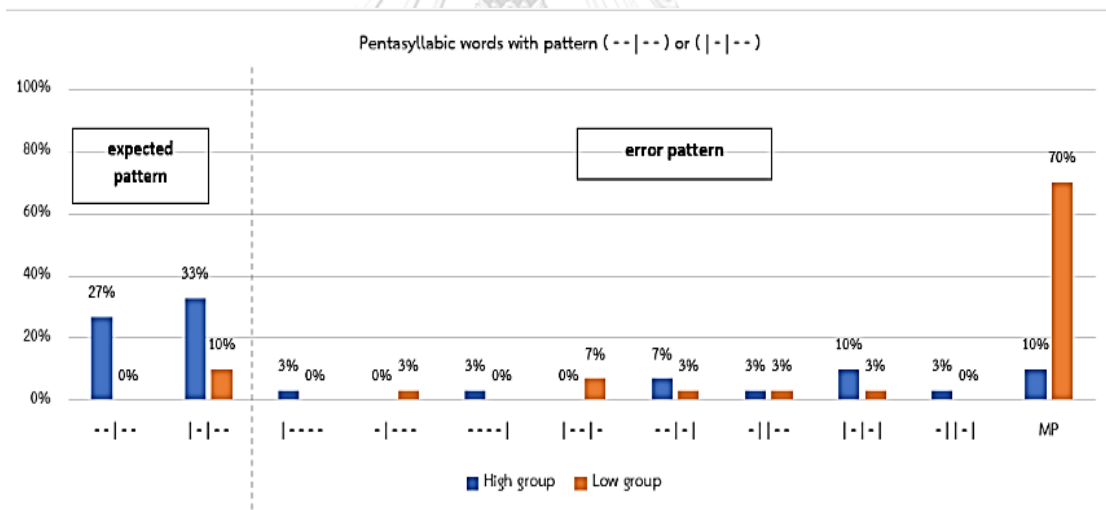


Figure 8: Histogram comparing the stress patterns of pentasyllabic words with the expected pattern (- - | - -) and (| - | - -) and the error patterns performed by the high and low proficiency groups

Pentasyllabic word with pattern (- | - - -)

Participants & Words		Expected patterns	Error patterns								MP
			- - - -	- - - -	- - - -	- - - -	- - -	- - -	- - -	- -	
High group	particularly	2	1	1	6	3	1	0	1	0	0
Total	15 (100%)	2 (13%)	1 (7%)	1 (7%)	6 (40%)	3 (20%)	1 (7%)	0 (0%)	1 (7%)	0 (0%)	0 (0%)
Low group	particularly	0	0	0	2	2	0	2	0	1	8
Total	15 (100%)	0 (0%)	0 (0%)	0 (0%)	2 (13%)	2 (13%)	0 (0%)	2 (13%)	0 (0%)	1 (7%)	8 (53%)

Table 4: Stress patterns of pentasyllabic words with the expected pattern (- | - - -) and error patterns performed by both proficiency groups

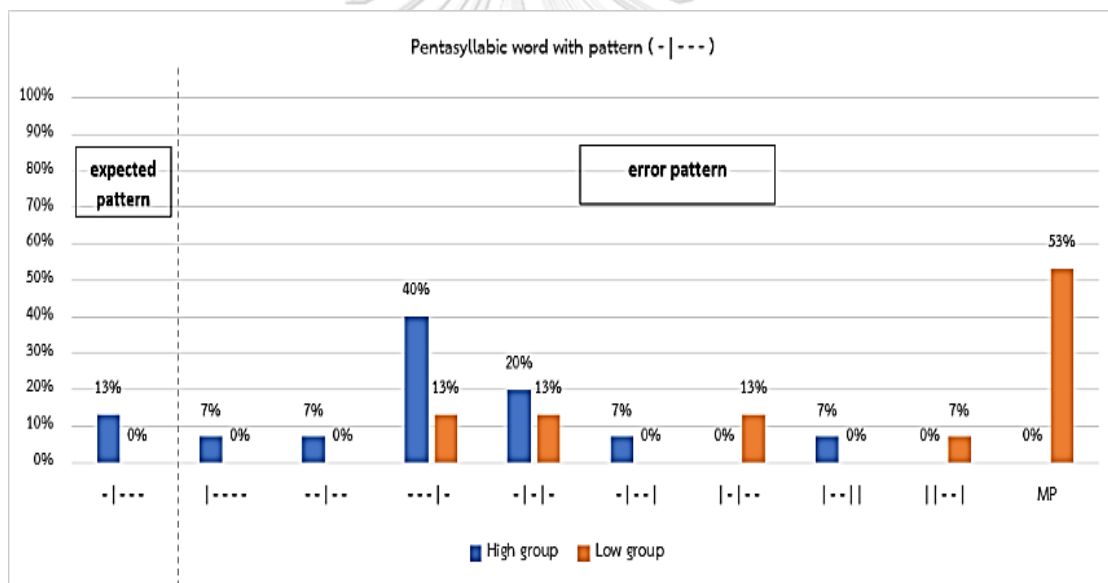


Figure 9: Histogram comparing the stress patterns of pentasyllabic words with the expected pattern (- | - - -) and the error patterns performed by the high and low proficiency groups

Hexasyllabic word with pattern (- - | - -) or (| - | - -)

Participants & Words		Expected patterns		Error patterns					MP
		--- --	- - --	- ---	---	---	---	- --	
High group	responsibility	1	2	1	1	2	5	2	1
Total	15 (100%)	1 (7%)	2 (13%)	1 (7%)	1 (7%)	2 (13%)	5 (33%)	2 (13%)	1 (7%)
Low group	responsibility	0	2	0	1	0	2	0	10
Total	15 (100%)	0 (0%)	2 (13%)	0 (0%)	1 (7%)	0 (0%)	2 (13%)	0 (0%)	10 (67%)

Table 5: Stress patterns of hexasyllabic words with the expected pattern (- - - | - -) and (- | - | - -) and error patterns performed by both proficiency groups

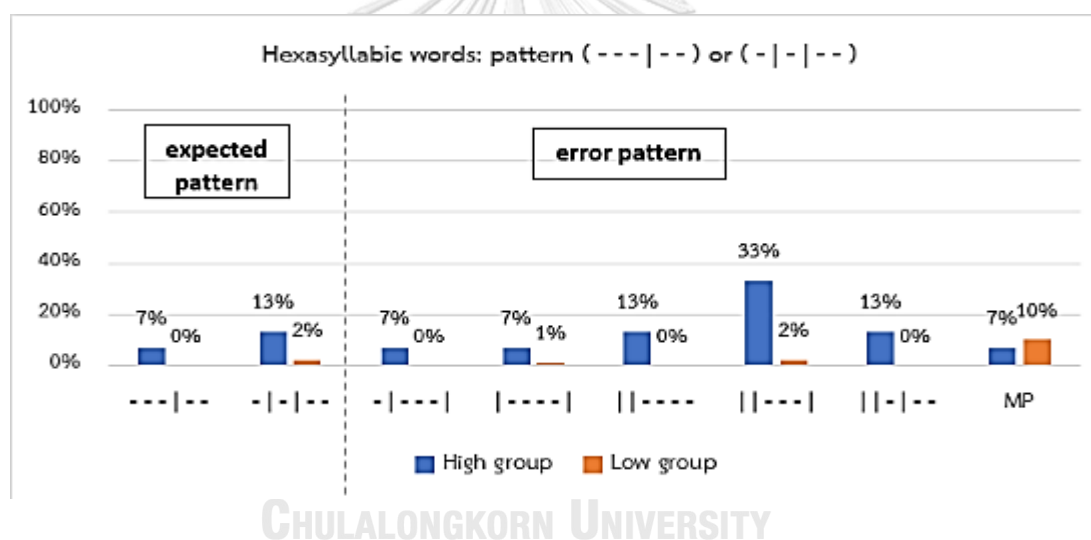


Figure 10: Histogram comparing the stress patterns of hexasyllabic words with the expected pattern (- - - | - -) and (- | - | - -) and the error patterns performed by the high and low proficiency groups

The main finding in the participants' performance of pentasyllabic words and hexasyllabic words was that the error patterns varied according to the higher number of syllables in words. The results were in accordance with the discussion in Watanapokakul (2009) that more syllables in an English word caused more difficulty for the learners to pronounce the words with accurate stress patterns. Considering

the error patterns, the patterns that were performed due to the realization of English stress pattern concerned the patterns which the final syllable was avoided such as (| - - - -), (- | - - -), (- - | - -), (| - | - -), and so on. However, the participants did not know the stress placement rules for each type of suffix, so the stressed positions did not conform to the accentual pattern of the English suffixed words. Some error patterns were transferred by the Thai language, i.e., the final syllable was always stressed, such as (- - - - |), (- - | - |) (| - | - |), (- | - - |), (| | - - |), (| | - - - |) and so on.

4.3 Pronunciation of suffixed words with error patterns

The finding on the stress patterns was elicited from the reading aloud tasks in the pre-test and post-test phases. The results were reported quantitatively and qualitatively to explore the stress patterns of English suffixed words performed by Thai learners and compare their performance before and after praxis intervention regarding the stress placement in suffixed words. The quantitative findings showed the number of stress patterns of suffixed words performed by the participants with high proficiency and low proficiency. The qualitative results showed both the expected stress patterns and the error patterns performed by Thai learners.

The symbols used in this chapter represent the following characteristics.

- (1) | represents a stressed syllable
- (2) – represents an unstressed syllable
- (3) Lexical tones in the Thai language (Gandour, 1979) are represented by the following symbols placed as raised characters after the syllables.
 - (^m) represents the mid-tone as in [ka^m] which means “to be stuck”.
 - (^l) represents the low tone as in [ka^l] which means “galangal”.
 - (^f) represents the falling tone as in [ka^f] which means “value”.
 - (^h) represents the high tone as in [ka^h] which means “commerce”.

(ˈ) represents the rising tone as in [kaˈ] which means “leg”.

The results were grouped and presented according to the words with different number of syllables ranging from two to four syllables, and the results were also grouped by the types of stress patterns in accordance with the accentual system of English suffixed words. Organization of the results in this chapter can be described as follows:

4.2.1 Disyllabic words

4.2.1.1 Pattern (| -)

4.2.1.2 Pattern (- |) or (| |)

4.2.2 Trisyllabic words

4.2.2.1 Pattern (| - -)

4.2.2.2 Pattern (- | -)

4.2.2.3 Pattern (- - |) or (| - |)

4.2.3 Tetrasyllabic words

4.2.3.1 Pattern (- | - -)

4.2.3.2 Pattern (- - | -) or (| - | -)

4.3.1 Disyllabic words

4.3.1.1 Pattern (| -)

The disyllabic words with pattern (| -) in this study are from these six words: endless, helpless, illness, careful, doubtless, and homeless. The results of disyllabic words with pattern (| -) are presented in the following tables and charts.

Pre-test

Participants & Words		Patterns	expected pattern	Error patterns		Mispronunciation (MP)
				-		
High group	endless		7	0	8	0
	helpless		5	0	6	4
	illness		8	0	6	1
Total	45 (100%)		20 (44%)	0 (0%)	20 (44%)	5 (11%)
Low group	endless		6	1	0	8
	helpless		7	0	4	4
	illness		5	0	2	8
Total	45 (100%)		18 (40%)	1 (2%)	6 (13%)	20 (44%)

Table 6: Stress patterns of disyllabic words with the expected pattern (| -) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Patterns	expected pattern	Error patterns		Mispronunciation (MP)
				-		
High group	careful		10	1	4	0
	doubtless		4	0	1	10
	homeless		8	3	3	1
Total	45 (100%)		22 (49%)	4 (9%)	8 (18%)	11 (24%)
Low group	careful		2	1	10	2
	doubtless		0	0	0	15
	homeless		8	1	4	2
Total	45 (100%)		10 (22%)	2 (4%)	14 (31%)	19 (42%)

Table 7: Stress patterns of disyllabic words with the expected pattern (| -) and error patterns performed by both proficiency groups in the post-test

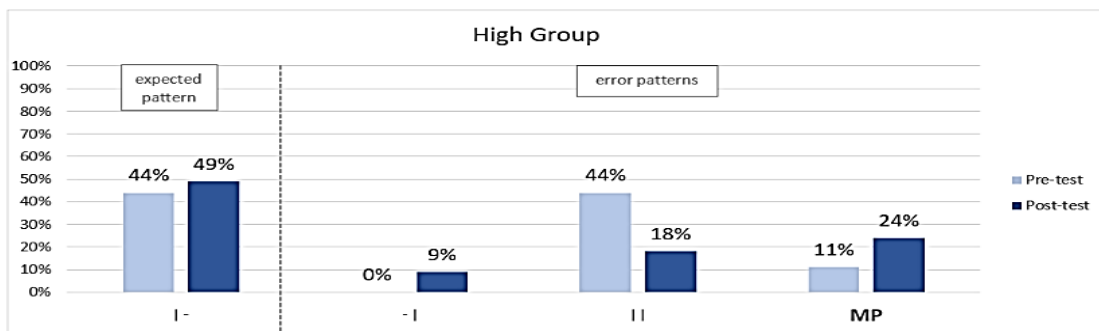


Figure 11: Histogram comparing the stress patterns of disyllabic words with the expected pattern (| -) and the error patterns performed by the high proficiency group in the pre-test and post-test

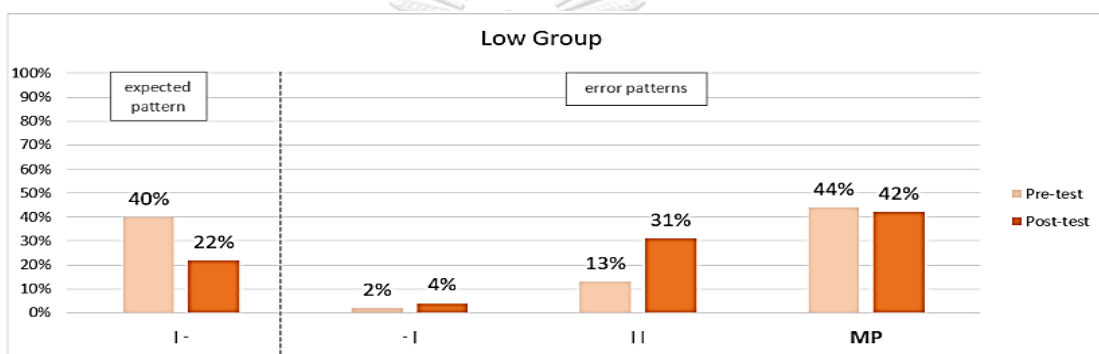


Figure 12: Histogram comparing the stress patterns of disyllabic words with the expected pattern (| -) and the error patterns performed by the low proficiency group in the pre-test and post-test

In this group of disyllabic words, the pattern (| -) was the expected pattern because the base words were attached with neutral stressed suffixes. In the pre-test, the expected pattern (| -) was produced by the high proficiency group at 44% and produced by the low proficiency group at 40%. However, the percentage of the expected pattern performed by the high and low proficiency groups went in the opposite direction for the post-test. The expected pattern was increasingly performed by the high proficiency group at 49% while the low proficiency group decreasingly performed the pattern at 22%.

The error patterns found in this word group were (- |) and (| |). According to the Thai accentual system, the primary stress always falls on the final syllable and is more potentially produced with a double stress pattern when the word does not contain a linker syllable (Luksaneeyanawin, 1983; Surinpiboon, 1985). As proposed by Bee (1975), a linker syllable refers to an open syllable consisting of a vowel phoneme /a/. It is usually realized as an unstressed syllable in casual speech. With the stress on the final syllables, the patterns (- |) and (| |) were both affected by Thai transfer, and the double stress pattern (| |) was produced more because not all the words contained linker syllables. The pattern (| |) was the most frequently produced pattern by both proficiency groups in the pre-test, but the pattern was produced less by the high proficiency group from 44% to 18% in the post-test. It could be suggested that the high proficiency group learned the stress placement rules of neutral stressed suffixes, or they may be more aware of English word stress than the low proficiency group. On the contrary, the low group increasingly produced the pattern (| |) in the post-test; this error pattern rose from 13% to 31%. The fact that the low proficiency group exhibited poorer performance in this word group can be explained with two reasons. The first reason was that they did not apply the English stress placement rules when pronouncing the words. Another reason suggested they were very careful of the pronunciation, so they decided to play it safe by putting the stress on both syllables, keeping the stress on the final syllable of the words as well as putting another stress on the first syllable (Luksaneeyanawin, 1983).

The pattern (- |) occurred marginally in this word group at less than 10% for both pre-test and post-test.

4.3.1.2 Pattern (- |) or (| |)

The disyllabic words with the pattern (- |) or (| |) in this study are from these three words: Chinese, trustee, and trainee. The result of disyllabic words with the pattern (| -) are presented in the following tables and charts.

Pre-test

Participants & Words		Patterns	expected pattern		Error patterns	Mispronunciation (MP)
			-		-	
High group	Chinese		4	6	5	0
	trustee		2	3	8	2
Total		30 (100%)	6 (20%)	9 (30%)	13 (43%)	2 (7%)
Low group	Chinese		5	3	2	5
	trustee		0	0	4	11
Total		30 (100%)	5 (17%)	3 (10%)	6 (20%)	16 (53%)

Table 8: Stress patterns of disyllabic words with the expected pattern (- |) and (| |) and error patterns performed by both proficiency levels in the pre-test

Post-test

Participants & Words		Patterns	expected pattern		Error patterns	Mispronunciation (MP)
			-		-	
High group	trainee		6	1	8	0
Total		15 (100%)	6 (40%)	1 (7%)	8 (53%)	0 (0%)
Low group	trainee		0	2	7	6
Total		15 (100%)	0 (0%)	2 (13%)	7 (47%)	6 (40%)

Table 9: Stress patterns of disyllabic words with the expected pattern (- |) and (| |) and error patterns performed by both proficiency levels in the post-test

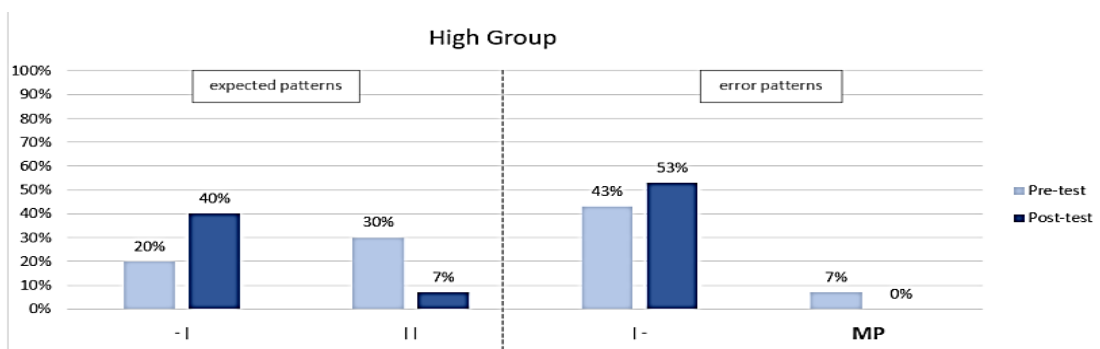


Figure 13: Histogram comparing the stress patterns of disyllabic words with the expected pattern (- |) and (| |) and the error patterns performed by the high proficiency group in the pre-test and post-test

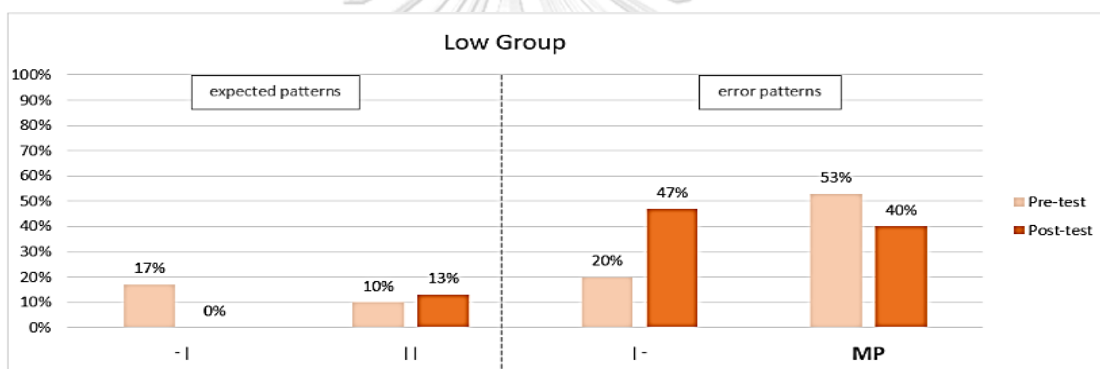


Figure 14: Histogram comparing the stress patterns of disyllabic words with the expected pattern (- |) and (| |) and the error patterns performed by the low proficiency group in the pre-test and post-test

The disyllabic words in this group were attached with the ultimate stressed suffixes which attracted the primary stress to fall on the last syllable. In addition to the stress shifting to the last syllable, the former position of the primary stress could be emphasized as secondary stress. Thus, two stress patterns possibly occurred in this word group: (- |) or (| |). In the pre-test, the high proficiency group performed the expected patterns at 50% in total (20% for - | and 30 % for | |). For the low proficiency group, they performed the expected patterns in the pre-test at 27% in total (17% for - | and 10% for | |). However, the performance of expected

patterns was produced less by both groups of proficiency in the post-test. The high proficiency group performed the expected patterns at 47% in total (40% for - | and 7% for | |). The percentage of the expected stress patterns in the post-test revealed that the high proficiency group produced the single stress pattern (- |) more than the double stress pattern (| |) after they learned the stress placement rules. It can be inferred that they became aware that the primary stressed syllable within English words must be more prominent than other syllables. The low proficiency group performed the expected pattern in the post-test at 13% with only the pattern (| |).

The error pattern found in this word group was (| -). The high proficiency performed this pattern in the pre-test at 43%, which increased in the post-test to 53%. The low group produced the error pattern at 20% in the pre-test, which increased significantly in the post-test to 47%. The increased number of (| -) patterns in the post-test was possibly due to the overgeneralization of the English accentual rule of disyllabic words. In English, the content words and most disyllabic words have a trochaic pattern which consists of a strong syllable followed by a weak syllable to form the pattern (| -) (Cutler and Carter, 1987; Thiessen and Saffran, 2007). The participants might have been aware that the test was in English, so they tried to anglicise or make English-like pronunciation regardless of the stress shifting rule for suffixes that they learned.

4.3.2 Trisyllabic words

4.3.2.1 Pattern (| - -)

The trisyllabic words with the pattern (| - -) in this study are from these seven words: actually, beautiful, powerful, usually, consciousness, happiness, and probably. The results of disyllabic words with the pattern (| - -) are presented in the following tables and charts.

Pre-test

Participants & Words		Patterns	Expected patterns	Error patterns					MP	
			--	--	- -	-	-	-		
High group	actually		8	0	0	4	1	1	0	1
	beautiful		7	0	0	7	0	0	1	0
	powerful		8	0	0	6	0	0	1	0
	usually		10	0	0	5	0	0	0	0
Total		60 (100%)	33 (55%)	0 (0%)	0 (0%)	22 (37%)	1 (2%)	1 (2%)	2 (3%)	1 (2%)
Low group	actually		3	0	2	1	0	0	0	9
	beautiful		7	0	0	4	0	2	1	1
	powerful		3	0	0	8	1	1	0	2
	usually		7	1	1	0	0	0	0	6
Total		60 (100%)	20 (33%)	1 (2%)	3 (5%)	13 (22%)	1 (2%)	3 (5%)	1 (2%)	18 (30%)

Table 10: Stress patterns of trisyllabic words with the expected pattern (|--) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Patterns	Expected patterns	Error patterns					MP	
			--	--	- -	-	-	-		
High group	consciousness		2	0	2	0	3	1	1	6
	happiness		11	0	0	3	1	0	0	0
	probably		4	1	2	3	0	1	0	4
Total		45 (100%)	17 (38%)	1 (2%)	4 (9%)	6 (13%)	4 (9%)	2 (4%)	1 (2%)	10 (22%)
Low group	consciousness		0	0	0	0	0	0	0	15
	happiness		8	0	0	2	2	0	0	3
	probably		1	0	3	2	3	0	0	6
Total		45 (100%)	9 (20%)	0 (0%)	3 (7%)	4 (9%)	5 (11%)	0 (0%)	0 (0%)	24 (53%)

Table 11: Stress patterns of trisyllabic words with the expected pattern (|--) and error patterns performed by both proficiency groups in the post-test

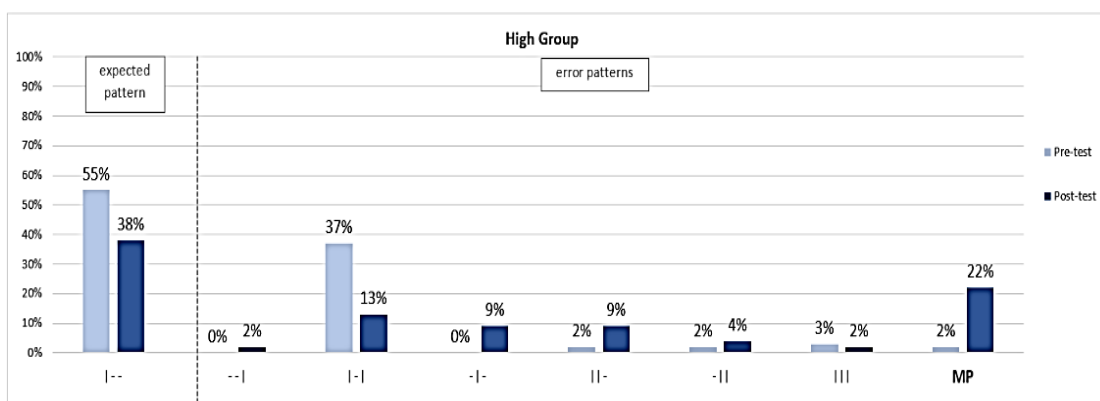


Figure 15: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (| - -) and the error patterns performed by the high proficiency group in the pre-test and post-test

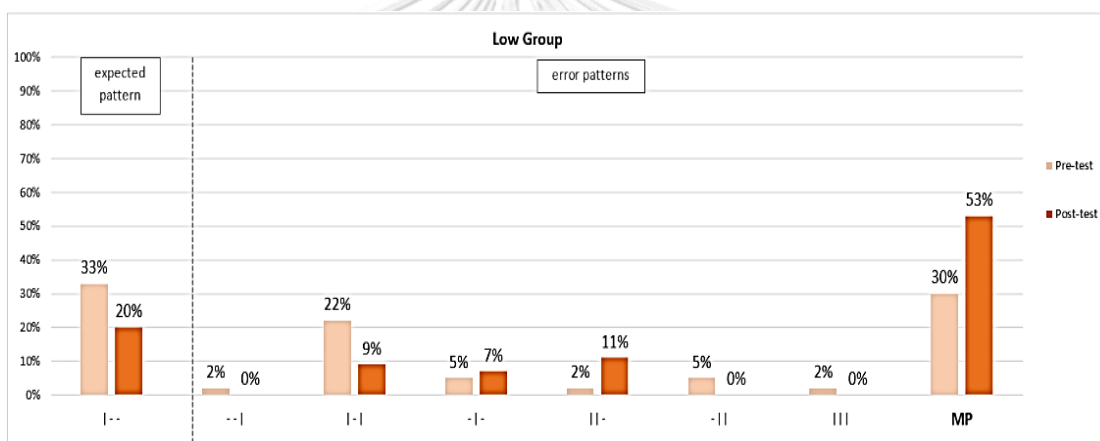


Figure 16: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (| - -) and the error patterns performed by the low proficiency group in the pre-test and post-test

The expected pattern of this group of trisyllabic words was (| - -) because they were trochaic and dactyl words attached with neutral stressed suffixes. Trochee refers to a metrical foot of a stressed syllable followed by an unstressed syllable (| -) such as 'actual', 'beauty' and 'happy'. Dactyl refers to a metrical foot of a first stressed syllable followed by two unstressed syllables (| - -), such as the word 'probable'. When they were attached with the neutral stressed suffixes, the stress stayed in the same position. Therefore, the pattern (| - -) was what we

expected in this group. The performance of the expected pattern from the high proficiency group was at 55% in the pre-test and fell to 38% in the post-test. The low proficiency group performed the expected pattern at 33% in the pre-test and the pattern was produced less in the post-test at 20%.

The error pattern which was most frequently found in the pre-test was the pattern (| - |) which the high group produced at 37% and the low group produced at 22%. The (| - |) pattern agreed with the accentual system of Thai trisyllabic words (Luksaneeyanawin, 1983; Naksakul, 2013); in words with more than two syllables, the final syllable must contain the primary stress and the secondary stress usually falls on the antepenultimate syllable. It can be suggested from the results that both groups of participants performed the error patterns with the Thai transfer pattern in the pre-test. However, the pattern (| - |) was decreased by both groups in the post-test; the high group performed this pattern at 13%, while the low group performed at 9%.

The pattern (- | -) and (| | -) were the error patterns that were increasingly produced by both groups of proficiency after they learned the stress placement rules. The high proficiency group performed the pattern (- | -) at 9% and the pattern (| | -) at 9%. The low group performed the pattern (- | -) at 7% and the pattern (| | -) at 11%. Considering the characteristics of these two patterns, the stress did not fall on the last syllable. This can imply that the participants who performed these patterns were trying to avoid putting stress on the last syllable. Vairojanavong (1984) discussed the underlying reason for these patterns in that it was due to the awareness among learners that the words they were pronouncing were not Thai, so they tried to put stress on the positions which made the words sound more like English. However, they did not know the location of the accented syllable, so they put stress on positions which did not conform to the English accentual system. After analysing the words that were pronounced with the pattern (| | -), it

was found that they were performed as if the words were compound words in Thai. This was probably caused by Thai transfer with the awareness of English word stress. To illustrate the point, the word “happiness” was given as an example. This word was pronounced as [ˈhæpʰ ˈpiːf nes]. According to the stress placement rules, no suffixes carry stress except the ultimate stressed type. So, after praxis intervention, the participants could learn that the neutral suffix {-nes} was not stressed, so they avoided putting the primary stress on the last syllable. However, the base word “happy” occurs a lot in Thai as a borrowed word, so it is frequently pronounced with a Thai stress pattern as [ˈhæpʰ ˈpiːf] and gets fossilized into their pronunciation. Therefore, it was pronounced as [[ˈhæpʰ ˈpiːf] + nes] and became the pattern (| | -)

The other error patterns that occurred in this word group were (- - |), (- | |) and (| | |). The Thai transfer pattern (- - |) which was marginally produced in the trisyllabic word group could confirm that the participants preferred producing a double stress pattern to a single stress pattern when they pronounced words with a Thai stress pattern. The pattern (- | |) was found to be produced by participants with the words: “actually”, “powerful”, “beautiful”, “consciousness” and “probably”. After considering the words pronounced with this pattern, it was found that the pattern was performed as if it was a compounding word in Thai; they pronounced the base words with Thai transfer patterns and kept the primary stress on the last syllable due to the influence of the Thai accentual system. The word “beautiful” can be used as an example. The base word “beauty” was pronounced with a double stress pattern (| |) similar to [ˈbjuːm ˈtiːf]. When the word was attached with a suffix, the primary stress on the last syllable remained, while the secondary stress was reduced, so the suffixed word “beautiful” was pronounced like [[bju ˈtiːf] + ˈfʊl] and formed the pattern (- | |). The primary stress remained on the last syllable of the base word and the last syllable of the suffixed word.

The pattern (| | |) was also found in this group, and was the pattern that occurred when the participants were too careful with their pronunciation, causing them to emphasize every syllable and make them all prominent.

4.3.2.2 Pattern (- | -)

The trisyllabic words with the pattern (- | -) in this study are from these 12 words: awareness, commercial, conceptual, habitual, industrial, outrageous, successful, contractual, courageous, financial, official, and production. The stress patterns performed by the high proficiency group and low proficiency group are shown in the following tables and charts.



Participants & Words		Patterns	Expected patterns	Error patterns					MP	
				- -	- -	- -	-	-		-
High group	awareness		12	1	0	0	0	2	0	0
	commercial		5	1	0	6	1	0	0	2
	conceptual		4	5	0	0	0	4	0	2
	habitual		0	4	4	3	0	0	0	4
	industrial		5	1	0	0	0	4	0	5
	outrageous		1	5	2	1	1	0	1	4
Total		90 (100%)	27 (30%)	17 (19%)	6 (7%)	10 (11%)	2 (2%)	10 (11%)	1 (1%)	17 (19%)
Low group	awareness		5	0	0	0	0	1	0	9
	commercial		5	1	1	2	0	0	0	6
	conceptual		0	0	1	1	0	0	1	12
	habitual		0	3	0	0	0	0	0	12
	industrial		2	0	0	0	0	2	0	11
	outrageous		1	1	0	1	0	0	0	12
Total		90 (100%)	13 (14%)	5 (6%)	2 (2%)	4 (4%)	0 (0%)	3 (3%)	1 (1%)	62 (69%)

Table 12: Stress patterns of trisyllabic words with the expected pattern (- | -) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Patterns	Expected patterns	Error patterns					MP	
				- -	- -	- -	-	-		-
High group	successful		11	0	0	0	1	2	1	0
	contractual		9	1	0	0	1	3	0	1
	courageous		9	0	2	0	0	0	0	4
	financial		7	2	2	2	0	1	0	1
	official		3	8	2	2	0	0	0	0
	production		11	1	0	0	1	2	0	0
Total		90 (100%)	50 (56%)	12 (13%)	6 (7%)	4 (4%)	3 (3%)	8 (9%)	1 (1%)	6 (7%)
Low group	successful		1	2	1	0	2	1	1	7
	contractual		7	1	0	0	1	2	0	4
	courageous		4	1	1	0	0	0	0	9
	financial		2	1	0	1	1	4	0	6
	official		2	4	0	1	2	0	0	6
	production		9	0	0	0	1	3	1	1
Total		90 (100%)	25 (28%)	9 (10%)	2 (2%)	2 (2%)	7 (7%)	10 (11%)	2 (2%)	33 (37%)

Table 13: Stress patterns of trisyllabic words with the expected pattern (- | -) and error patterns performed by both proficiency groups in the post-test

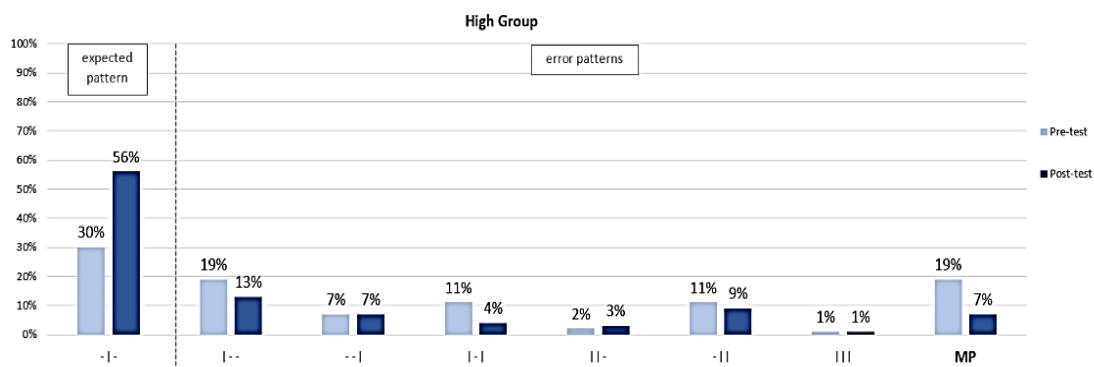


Figure 17: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (- | -) and the error patterns performed by the high proficiency group in the pre-test and post-test

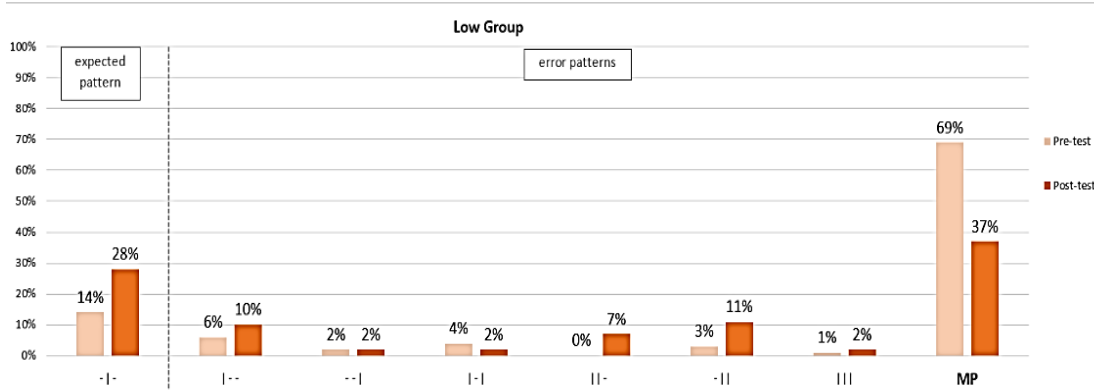


Figure 18: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (- | -) and the error patterns performed by the low proficiency group in the pre-test and post-test

The expected pattern of trisyllabic words in this group was (- | -) as most of them were attached with penultimate stressed suffixes. There were only two words that were formed by disyllabic words with the pattern (- |) attached with the neural stressed suffixes, i.e., “awareness” and “successful”.

The results showed signs of improvement for both proficiency groups. In the pre-test, the high proficiency group performed the expected pattern (- | -) at 30% and increasingly produced the pattern in the post-test at 56%. The low group performed the expected pattern in the pre-test at 14% and the pattern was

increasingly produced in the post-test at 28%. It can be concluded that the participants learned the rules for penultimate stressed suffixed words. Considering the penultimate stressed suffixed words which conformed to the expected pattern, two words were most frequently produced by the participants after they learned the rules, including “production” and “contractual”. According to Jarmulowicz (2002) and Suhandoko and Ningrum (2020), the suffixes {-tion} and {-ual} are frequently found in academic English. Therefore, the frequency of suffixes might play a role in participants’ learning. They can learn the stress placement rules of suffixes with high frequency better than the rules of low frequency suffixes.

For the error patterns, the pattern (| - -) was highly performed by the participants. The high group performed this pattern at 19% in the pre-test, which decreased in the post-test to 13%. The low group performed the pattern (| - -) at 6% in the pre-test, which increased in the post-test to 10%. It can be suggested that some participants became aware of the English left-handed stress pattern after praxis intervention, so they tried to anglicise their pronunciation with the left movement of the stress that they thought was more consistent with English. Without considering the stress placement rules of penultimate stressed suffixed words, the stress pattern did not conform to the expected pattern.

The Thai transfer pattern (- - |) and (| - |) were also frequently performed especially by the high proficiency group. The performance of the single stress pattern showed the same percentage in the pre-test and post-test (7% by the high group and 2% by the low group) while the double stress pattern was decreased in the post-test (the high group: from 11% to 9% and the low group: from 4% to 2%).

The compounding patterns (| | -) and (- | |) were also increasingly performed by the participants in the post-test. The increased pattern (| | -) in the post-test was performed by the high group at 3% and by the low group at 7%; it was

mostly found in the words “successful” and “official”. After analysing these two words, the researcher found that the participants tried to avoid putting the stress on the last syllable as they might learn that these suffixes did not contain the primary stress. Still, they kept the stress pattern on the base words such as [ˈsʌk^h ˈses^h] which were pronounced with Thai transfer pattern, so the pattern (| | -) was performed like [[ˈsʌk^h ˈses^h] + ful].

The pattern (- | |) was performed by the high group at 11% in the pre-test, which decreased slightly to 9% in the post-test. The low group performed this pattern in the pre-test at 3%, which increased to 11% in the post-test. The words that were found mostly produced with the pattern (- | |) in the post-test included “contractual”, “financial” and “production”. The participants pronounced the base words with a Thai transfer pattern such as [fai ˈnæn^h] and kept the primary stress on the last syllable due to the influence of the Thai accentual system. It formed the compounding pattern like [[fai ˈnæn^h] + ˈ[ɹɪɹ]ʌ]. The increasing performance of the patterns shows the transfer from Thai compounding process.

The least frequently occurred error pattern was (| | |) which was the pattern that was produced when you wanted to emphasize every syllable.

4.3.2.3 Pattern (- - |) or (| - |)

The trisyllabic words with the pattern (- - |) or (| - |) in this study are from these 13 words: billionaire, questionnaire, commandeer, mountaineer, refugee, Vietnamese, absentee, auctioneer, millionaire, doctrinaire, engineer, Japanese, and Portuguese. The stress patterns performed by the high proficiency group and low proficiency group are shown in the following tables.

Pre-test

Participants & Words		Expected patterns		Error patterns					MP
		--	-	--	- -	-	-		
High group	billionaire	1	6	0	0	0	7	0	1
	questionnaire	0	9	1	0	0	1	0	4
	commandeer	2	6	1	0	0	2	1	3
	mountaineer	0	8	1	0	0	1	2	3
	refugee	0	3	1	2	0	4	0	5
	Vietnamese	1	3	3	3	0	1	0	4
Total	90 (100%)	4 (4%)	35 (39%)	7 (8%)	5 (6%)	0 (0%)	16 (18%)	3 (3%)	20 (22%)
Low group	billionaire	0	2	1	0	0	0	0	12
	questionnaire	0	4	0	0	0	0	0	11
	commandeer	0	3	1	3	1	0	0	7
	mountaineer	0	3	5	0	0	0	0	7
	refugee	1	2	0	1	0	0	0	11
	Vietnamese	4	3	0	1	0	0	0	7
Total	90 (100%)	5 (6%)	17 (19%)	7 (8%)	5 (6%)	1 (1%)	0 (0%)	0 (0%)	55 (61%)

Table 14: Stress patterns of trisyllabic words with the expected pattern (- - |) and (| - |) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Expected patterns		Error patterns					MP
		--	-	--	- -	-	-		
High group	absentee	2	2	2	8	1	0	0	0
	auctioneer	3	2	1	1	0	0	0	8
	millionaire	8	3	0	2	0	2	0	0
	doctrinaire	3	7	2	0	0	1	0	2
	engineer	8	4	3	0	0	0	0	0
	Japanese	12	0	1	2	0	0	0	0
	Portuguese	3	6	1	1	0	0	0	4
Total	105 (100%)	39 (37%)	24 (23%)	10 (10%)	14 (13%)	1 (1%)	3 (3%)	0 (0%)	14 (13%)
Low group	absentee	2	3	0	2	2	0	2	4
	auctioneer	2	2	0	0	0	0	0	11
	millionaire	3	4	0	0	1	2	0	5
	doctrinaire	2	5	0	0	0	0	0	8
	engineer	4	7	3	0	0	0	0	1
	Japanese	9	2	0	4	0	0	0	0
	Portuguese	2	3	0	0	0	0	0	10
Total	105 (100%)	24 (23%)	26 (25%)	3 (3%)	6 (6%)	3 (3%)	2 (2%)	2 (2%)	39 (37%)

Table 15: Stress patterns of trisyllabic words with the expected pattern (- - |) and (| - |) and error patterns performed by both proficiency groups in the post-test

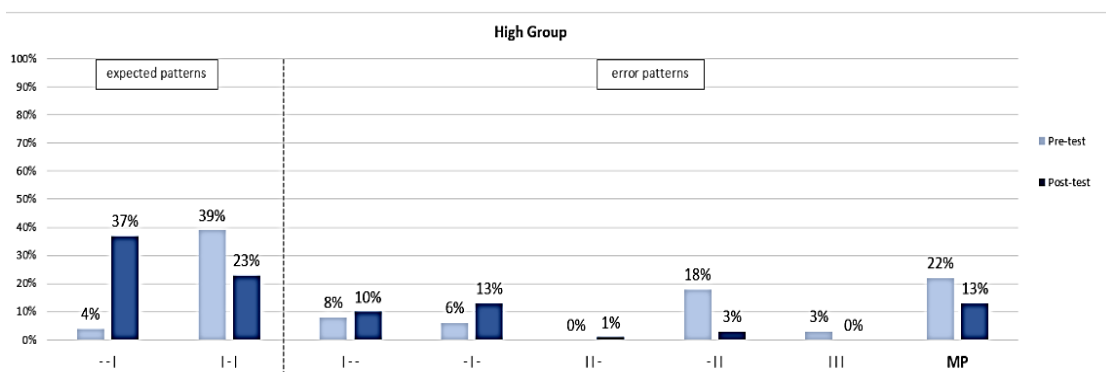


Figure 19: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (- - |) and (| - |) and the error patterns performed by the high proficiency group in the pre-test and post-test

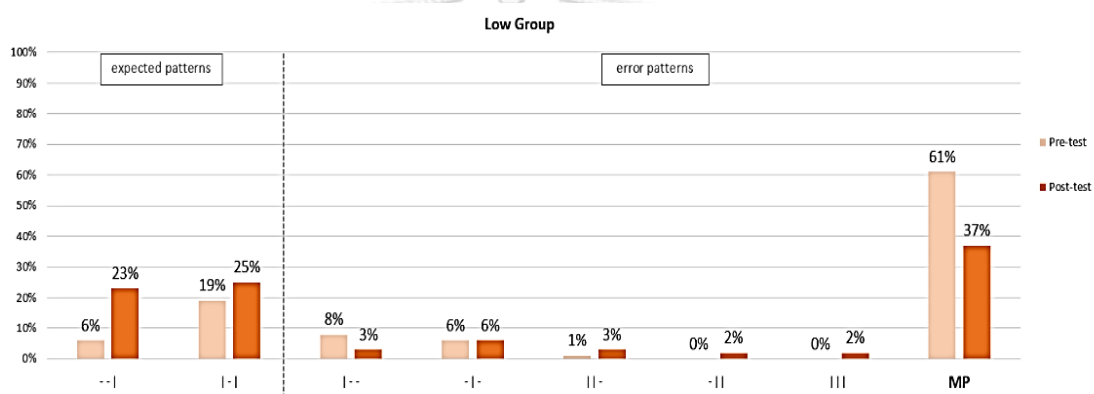


Figure 20: Histogram comparing the stress patterns of trisyllabic words with the expected pattern (- - |) and (| - |) and the error patterns performed by the low proficiency group in the pre-test and post-test

In this group of trisyllabic words, the patterns (- - |) and (| - |) possibly occurred as the words in this group were attached with the ultimate stressed suffixes which attracted the stress to the last syllable and the prior primary stressed position was less prominent and became the secondary stress. Thus, these two patterns were considered the expected patterns.

In the pre-test, the high proficiency group performed the expected patterns at 43% in total (4% for - - | and 39% for | - |). For the low proficiency group, they performed expected patterns in the pre-test at 25% in total (6% for - - | and

19% for | - |). The performance of expected patterns in the post-test was improved by both groups in terms of proficiency. The high proficiency group performed the expected patterns at 60% in total (37% for - | and 23% for | |). The low proficiency group performed the expected patterns in the post-test at 48% in total (23% for - | and 25% for | |). The result from the expected patterns showed that the participants performed better after they learned the rules of ultimate stressed suffixed words containing three syllables.

The errors that were found in this word group included the patterns (| - -), (- | -), (| | -), (- | |), and (| | |).

The patterns (- | -) and (| - -) were the patterns that occurred when the participants were aware of the English stress pattern, so they tried to anglicise the words by avoiding the stress on the last syllable. However, it might be because they did not know the rules for ultimate stressed suffixed words, so they put the stress on a different position that did not conform to the rules. The overgeneralization of English stress patterns can be supported by Limsangkass (2009) who found that the L2 learners created English stress patterns by avoiding the final stressed syllable to deal with the words they were not certain about pronouncing. The high group increased both pattern in the post-test (the pattern (| - -): from 8% to 10%, and the pattern (- | -): from 6% to 13%). On the contrary, the low group did not increase these patterns in the post-test (the pattern (| - -): from 8% to 3%, and the pattern (- | -) remained at the same percentage of 6%).

The compounding patterns (| | -) and (- | |) were marginally produced by both proficiency groups. Interestingly, the high group performed the pattern (- | |) at 18% in the pre-test and decreasingly performed the pattern in the post-test to 3%. This suggests that the participants had some knowledge regarding the morphological process of the suffixes before learning the stress placement rules. The participants pronounced the base words with Thai transfer pattern such as [bɪ 'ljənʔ] and they also put the stress on the last syllable of the suffixed words after they

formed a suffixed word by attaching the suffix {-aire} to the base. It formed a compounding pattern like [[bɪ 'ljən] + 'neə^m]. However, the patterns decreased after they learned the stress placement rules of ultimate stressed suffixed words.

The pattern (| | |) was the least frequently occurred. It was produced by both proficiency groups at less than 5% in both the pre-test and post-test.

4.3.3 Tetrasyllabic words

4.3.3.1 Pattern (- | - -)

The tetrasyllabic words with the pattern (- | - -) in this study are from these 13 words: abdominal, authority, detoxify, solidify, triangulate, activity, certificate, community, communicate, objectify, original, personify, political. The stress patterns performed by the high proficiency group and the low proficiency group are shown in the following tables.

Pre-test

Participants & Words		Patterns	Expected patterns	Error patterns							MP
				- - -	- - -	- - -	- -	- -	- -	- -	
High group	abdominal	4	1	2	0	0	3	5	0	0	0
	authority	3	6	2	0	0	0	4	0	0	0
	detoxify	4	0	0	0	5	0	2	0	0	4
	solidify	1	4	2	0	0	0	6	0	0	2
	triangulate	4	6	0	0	0	1	1	0	1	2
Total	75 (100%)	16 (21%)	17 (23%)	6 (8%)	0 (0%)	5 (7%)	4 (5%)	18 (24%)	0 (0%)	1 (1%)	8 (11%)
Low group	abdominal	4	0	0	1	0	1	4	0	1	4
	authority	3	0	0	2	0	0	1	1	0	8
	detoxify	2	0	0	0	3	0	0	0	0	10
	solidify	0	0	0	0	0	0	1	0	0	14
	triangulate	0	0	0	0	0	1	1	0	0	13
Total	75 (100%)	9 (12%)	0 (0%)	0 (0%)	3 (4%)	3 (4%)	2 (3%)	7 (9%)	1 (1%)	1 (1%)	49 (65%)

Table 16: Stress patterns of tetrasyllabic words with the expected pattern (- | - -) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Patterns	Expected patterns	Error patterns										MP
				- - -	- - -	- - -	- - -	- -	- -	- -	- -	- -	- -	
High group	activity	9	1	1	0	1	0	0	0	3	0	0	0	0
	certificate	6	4	0	1	0	1	0	0	2	1	0	0	0
	community	11	1	1	0	0	0	0	0	1	0	0	0	1
	communicate	11	1	0	1	0	0	0	0	2	0	0	0	0
	objectify	8	1	0	0	0	3	2	0	0	0	0	0	1
	original	11	0	0	1	0	3	0	0	0	0	0	0	0
	personify	7	0	0	4	0	2	0	0	2	0	0	0	0
	political	8	1	0	2	0	2	0	0	1	0	0	0	1
Total	120 (100%)	71 (59%)	9 (7%)	2 (2%)	9 (7%)	1 (1%)	11 (9%)	2 (2%)	0 (0%)	11 (9%)	1 (1%)	0 (0%)	0 (0%)	3 (3%)
Low group	activity	2	7	0	0	3	0	0	0	2	0	0	0	1
	certificate	1	0	2	0	1	0	1	0	4	0	0	0	6
	community	5	1	0	1	0	0	2	1	2	0	0	0	3
	communicate	4	1	0	0	0	0	1	0	4	0	0	0	5
	objectify	2	0	0	0	0	1	1	0	2	0	1	0	8
	original	5	3	0	2	0	1	0	0	1	0	0	0	3
	personify	3	0	0	0	0	0	0	0	3	0	0	0	9
political	6	0	0	1	0	1	0	0	1	0	1	1	4	
Total	120 (100%)	28 (23%)	12 (10%)	2 (2%)	4 (3%)	4 (3%)	2 (2%)	5 (4%)	1 (1%)	19 (16%)	0 (0%)	2 (2%)	1 (1%)	39 (33%)

Table 17: Stress patterns of tetrasyllabic words with the expected pattern (- | - -) and error patterns performed by both proficiency groups in the post-test

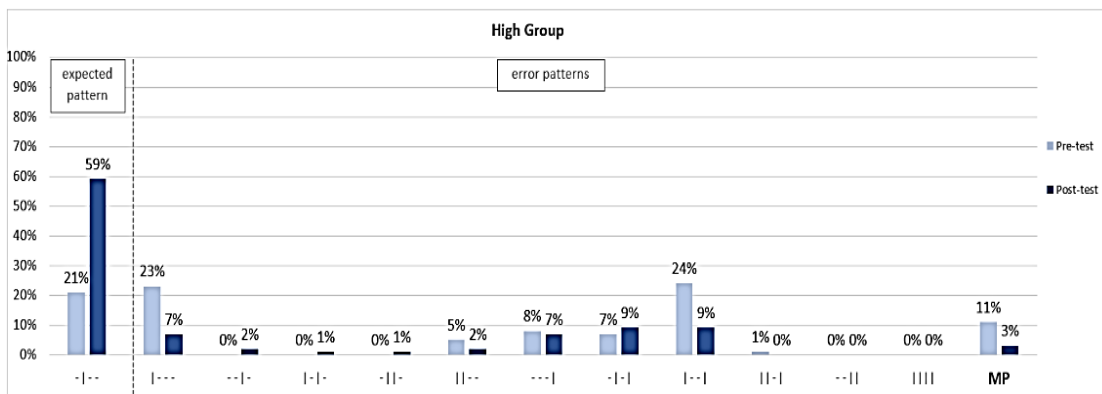


Figure 21: Histogram comparing the stress patterns of tetrasyllabic words with the expected pattern (- | - -) and the error patterns performed by the high proficiency group in the pre-test and post-test

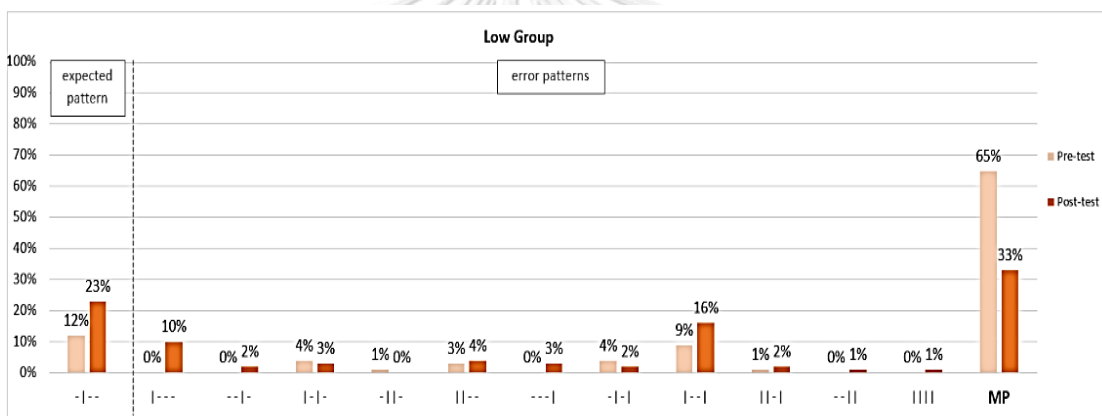


Figure 22: Histogram comparing the stress patterns of tetrasyllabic words with the expected pattern (- | - -) and the error patterns performed by the low proficiency group in the pre-test and post-test

The expected pattern in this tetrasyllabic word group was (- | - -) as the base words in this group were attached with the antepenultimate stressed suffixes, so the stress fell on the third syllable counting from the last. The performance of the expected pattern showed improvement in both proficiency groups as the expected pattern was increasingly produced in the post-test. The high group performed the pattern (- | - -) in the pre-test at 21% and the pattern increased to 59% in the post-test. The low group produced the pattern in the pre-

test at 12% and increasingly produced the pattern in the post-test at 23%. The suffixed words which were mostly produced with the expected pattern in the post-test included “community”, “communicate”, “original”, and “political”. After analysing the frequency of these suffixes according to Suhandoko and Ningrum (2020), it was found that {-ity}, and {-al} were the most frequent suffixes in academic English. Thus, the participants possibly picked up the stress pattern of the high frequency suffixes better than the low frequency suffixes. For the word “communicate”, the participants could place the stress accurately, even though the suffix {-ate} was used with low frequency. It might be because the base word was “commune” which was the same base word as “community”; the participants probably transferred the same stress pattern of “community” to the word “communicate”.

The results from the error patterns that were found in the group of tetrasyllabic words showed that the number of syllables might influence the production of error patterns. This means the more error patterns are produced when there are more syllables in the word. The most frequently found error pattern was the pattern (| - - |), which conformed to the Thai accentual pattern of tetrasyllabic words according to Luksaneeyanawin (1983) and Surinpiboon (1985). The high group performed the pattern (| - - |) at 24% in the pre-test and performed less in the post-test at 9%. The low group performed the pattern at 9% in the pre-test and increasingly produced the pattern in the post-test at 16%. There were some other patterns which were influenced by the Thai transfer including (- - - |), (- | - |), and (| - |), which were faintly produced by the participants.

The error pattern, which was the second most produced by the participants, was the anglicised pattern (| - - -). The high group performed this pattern at 23% in the pre-test and the pattern reduced to 7% in the post-test. The

low group did not perform this pattern in the pre-test, but the pattern was found to 10% in the post-test. Some other patterns were produced when the participants tried to anglicise the pattern by avoiding the final stressed syllable. However, their performance did not conform to the expected pattern. Those error patterns were (- - | -), (| - | -), and (- | | -). For the pattern (| | - -), the suffixed words that were pronounced with this pattern were analysed. It was found that this pattern was produced from the participants' realization of the stress pattern of the antepenultimate stressed suffixed words, but they also put the stress on the first syllable of the suffixed words. For example, the word "object" was pronounced like [ʔab dʒek]. When the suffix {-ify} was attached, the participant pronounced the suffixed word "objectify" as [ʔɒbʰ 'dʒekʰ tɪ faɪ]. The antepenult became prominent, but the first syllable was still stressed. It can be suggested that the participant learned the stress placement rules of antepenultimate stressed suffixes, but the first syllable kept the stress as it was stressed in the base word.

The other error pattern that was found in this tetrasyllabic group was (- - | |) which occurred only once in the word "community". As claimed by Vairojanavong (1984), This pattern occurred when the participant tried to seek for another stress syllable, so they exceeded the stressed syllable with double stress pattern. The participants put stress on the final syllable due to the influence of Thai accentual system. Then, they might learn that most English words were not stressed on the final position, so they tried to put stress on another position. Therefore, the pattern (- - | |) was produced. However, the stressed pattern did not conform to the stress placement rules. The pattern (| | | |) also occurred only once in the word "political" as the participant tried to emphasize every syllable.

4.3.3.2 Pattern (- - | -) or (| - | -)

The tetrasyllabic words with the pattern (- - | -) or (| - | -) in this study are from these six words: advantageous, education, situation, instantaneous, intellectual, and population. The stress patterns performed by the high proficiency group and the low proficiency group are shown in the following tables.

Pre-test

Participants & Words		Expected patterns		Error patterns								MP	
		-- -	- -	---	- --	---	--	--	- -	--	-		
High group	advantageous	1	3	1	4	0	1	0	0	4	0	1	
	education	8	2	0	0	0	0	4	0	0	1	0	
	situation	4	6	0	0	0	0	2	0	0	3	0	
Total		45 (100%)	13 (29%)	11 (24%)	1 (2%)	4 (9%)	0 (0%)	1 (2%)	6 (13%)	0 (0%)	4 (9%)	4 (9%)	1 (2%)
Low group	advantageous	0	0	0	0	0	1	0	1	0	0	13	
	education	6	2	0	0	1	0	1	0	1	0	4	
	situation	3	4	0	0	1	0	0	0	1	0	6	
Total		45 (100%)	9 (20%)	6 (13%)	0 (0%)	0 (0%)	2 (4%)	1 (2%)	1 (2%)	1 (2%)	2 (4%)	0 (0%)	23 (51%)

Table 18: Stress patterns of tetrasyllabic words with the expected pattern (- - | -) and (| - | -) and error patterns performed by both proficiency groups in the pre-test

Post-test

Participants & Words		Expected patterns		Error patterns								MP		
		-- -	- -	---	- --	---	- -	--	- -	--	-		-	
High group	instantaneous	0	2	0	3	1	1	0	4	1	0	0	3	
	intellectual	5	1	1	2	0	0	2	1	0	0	0	3	
	population	9	2	0	0	0	0	2	0	2	0	0	0	
Total		45 (100%)	14 (31%)	5 (11%)	1 (2%)	5 (11%)	1 (2%)	1 (2%)	4 (9%)	5 (11%)	3 (7%)	0 (0%)	0 (0%)	6 (13%)
Low group	instantaneous	0	1	0	0	0	1	0	1	0	1	0	11	
	intellectual	5	0	0	4	0	0	0	1	0	0	0	5	
	population	3	7	0	0	0	0	0	0	1	0	2	2	
Total		45 (100%)	8 (18%)	8 (18%)	0 (0%)	4 (9%)	0 (0%)	1 (2%)	0 (0%)	2 (4%)	1 (2%)	1 (2%)	2 (4%)	18 (40%)

Table 19: Stress patterns of tetrasyllabic words with the expected pattern (- - | -) and (| - | -) and error patterns performed by both proficiency groups in the post-test

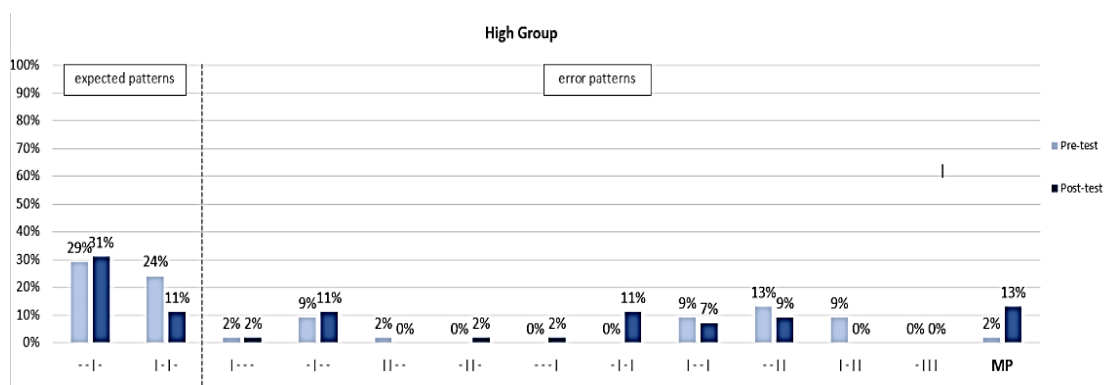


Figure 23: Histogram comparing the stress patterns of tetrasyllabic words with the expected pattern (- - | -) and (| - | -) and the error patterns performed by the high proficiency group in the pre-test and post-test

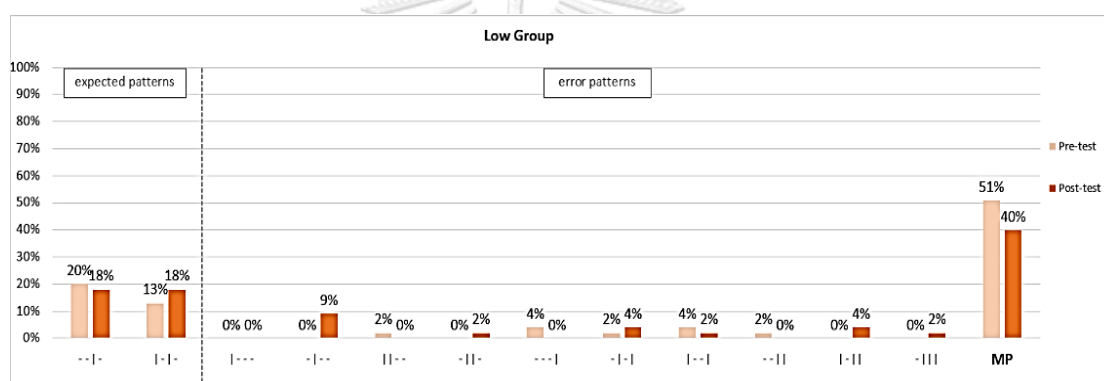


Figure 24: Histogram comparing the stress patterns of tetrasyllabic words with the expected pattern (- - | -) and (| - | -) and the error patterns performed by the low proficiency group in the pre-test and post-test

For the tetrasyllabic words in this group, the expected patterns were (- - | -) and (| - | -) as the words were attached with the penultimate stressed suffixes which caused the stress to be shifted to the position just before the suffix. The high proficiency group performed the expected patterns in the pre-test at 53% in total (29% for - - | - and 24% for | - | -). In the post-test, the expected patterns were produced by the high group at 42% in total (31% for - - | - and 11% for | - | -). For the low proficiency group, the expected patterns were produced in the pre-test at 33% in total (20% for - - | - and 13% for | - | -). In the post-test, the expected patterns were performed by the low group at 38% in total (18% for - - | - and 18%

for | - | -). The words that were found mostly produced with the expected patterns were the words ending with suffix {-tion} including “education”, “situation”, and “population”. As the suffix {-tion} is a frequently occurring suffix in academic English (Suhandoko and Ningrum, 2020), it was suggested that the participants learn the stress placement rules of the words with the high frequency suffixes better than the words with the low frequency suffixes.

The error patterns that were found in this word group varied based on the higher number of syllables in the words. The higher the number of syllables, the more the error patterns produced. The error patterns which were frequently pronounced by the participants were (- | - -), (- - | |), and (| - - |).

The pattern (- | - -) was produced by the high group at 9% in the pre-test and increased to 11% in the post-test. The low group did not produce this pattern at all in the pre-test, but increased to 9% in the post-test. It can be suggested that the participants who performed this pattern became aware of the English stress pattern, so they tried to anglicise the pattern to be English-like and avoided putting the stress on the last syllable. However, they could not put the stress on the position which conformed to the expected pattern as they did not know the stress placement rule for penultimate suffixed words. There were other patterns which were produced when the participants tried to anglicise English stress pattern including (| - - -), (| | - -), and (- | | -).

The pattern (- - | |) was performed by the high group at 13% in the pre-test and performed at 9% in the post-test. The low group performed this pattern at 2% in the pre-test and did not perform it in the post-test. According to Vairojanavong (1984), the pattern may occur when the participants were aware of English words but they still put stress on the last syllable according to the influence of Thai accentual system. After looking at the words pronounced with this pattern, it was found in the words “education”, “situation”, “intellectual”, and “population”. This error pattern could support the claim from Vairojanavong. The participants

realized that the stress pattern of the word ending with {-tion} and {-ual} were mostly stressed before the suffix. Therefore, the position before the suffix was stressed. However, participants still put stress on the last syllable of the suffixed words due to the influence of Thai accentual system, so the pattern (- - | |) was produced. The pattern (| - | |) was also the pattern that occurred with the same characteristics. They learned that the stress should be on the penultimate syllable but the L1 transfer still existed.

The pattern (| - - |) was produced according to Thai transfer; the high group performed this pattern at 9% in the pre-test and 7% in the post-test. The low group performed this pattern at 4% in the pre-test and 2% in the post-test. The other patterns which were influenced by Thai transfer pattern were (- - - |) and (- | - |).

The pattern (- | | |) was found produced by the participants at only 2% with the word “instantaneous”. It was the pattern for which the participants tried to emphasize every syllable.

4.4 Comparison of performance by the high proficiency and low proficiency students

This section presents the findings regarding the participants’ performance for pronunciation of suffixed words in the pre-test and post-test. The quantitative results compare the performance of the participants before and after praxis intervention. The qualitative results discuss the factors which influence participants’ performance in terms of their learning.

4.4.1 Students’ performance

The results of accurate stress patterns performed by the participants of both proficiency levels in the pre-test and post-test are presented in Table 20.

Group	Pre-test		Post-test	
	Mean (%)	S.D.	Mean (%)	S.D.
High proficiency (N=15)	40.73	15.723	52.53	20.553
Low proficiency (N=15)	22.93	14.926	29.13	18.083

Table 20: Comparison of mean score for accurate stress patterns performed by both proficiency groups in the pre-test and post-test.

According to Table 20, the mean score for the high proficiency group was 40.73 in the pre-test, which rose to 52.53 in the post-test. The mean score for the low proficiency group was 22.93 in the pre-test, which increased to 29.13 in the post-test. From an overall comparison of the performance, the result shows that the high proficiency group performed much better than the low proficiency group in both the pre-test and the post-test phases.

To see the difference in test performance for each group, the levels of significance for both groups were compared. Table 21 presents the statistical results from the pair-sample t-test showing the significant differences in the ability to perform accurate stress patterns within the proficiency group in the pre-test and the post-test.

Group	Pre-test		Post-test		t	P
	Mean (%)	S.D.	Mean (%)	S.D.		
High proficiency (N=15)	40.73	15.723	52.53	20.553	-3.597	.003*
Low proficiency (N=15)	22.93	14.926	29.13	18.083	-1.603	.131

* $p \leq 0.05$ level = significant

Table 21: Pair-sample t-test showing the significant differences within the proficiency group in the pre-test and the post-test

The tables illustrate that the high group's ability to perform accurate stress patterns showed a significant difference between the pre-test and post-test. The low group, on the contrary, was not significantly different in terms of performance in the

pre-test and post-test. The results of the significant differences between the pre-test and post-test in each group show that the high proficiency participants improved their competence in placing stress accurately more than the low group after they studied the stress placement rules explicitly and practised the pronunciation of English derivational suffixed words.

The standard deviations show high dispersion in the post-test scores of both proficiency groups. The high group's S.D. value was at 20.55 while the S.D. value of the low group was at 29.13. The results from the standard deviation show that the scores for each group spread out more after praxis intervention. This suggests that some participants improved significantly while other participants showed low rates of improvement or did not improve at all. With the high dispersion of post-test scores and the insignificant difference in the low group's performance, the researcher aimed to further investigate the individual performance of participants to identify the factors that influenced the participants' learning achievement of the pronunciation of English suffixed words.

Table 22 shows the scores for each participant from both proficiency groups in terms of percentage. The scores ranged from the highest achievement to the lowest achievement by considering the number of gained scores. The participants of each proficiency group were divided into two groups based on their achievement after looking at their gained scores. The first group was the achiever group which referred to those with higher scores in the post-test. Another group that was marked in grey was considered the non-achiever group referring to those with lower or equal post-test scores compared to the pre-test scores.

High Proficiency Group				Low Proficiency Group			
Participants	Pre-test	Post-test	gained score (%)	Participants	Pre-test	Post-test	gained score (%)
H12	47%	91%	+ 44	L14	44%	75%	+ 31
H09	44%	72%	+ 28	L06	9%	34%	+ 25
H14	28%	47%	+ 19	L15	19%	41%	+ 22
H02	38%	56%	+ 18	L01	13%	34%	+ 21
H15	41%	59%	+ 18	L10	16%	31%	+ 15
H11	25%	38%	+ 13	L12	9%	22%	+ 13
H13	69%	81%	+ 12	L09	38%	44%	+ 6
H06	56%	66%	+ 10	L07	3%	6%	+ 3
H03	25%	34%	+ 9	L11	31%	34%	+ 3
H01	16%	22%	+ 6	L05	38%	38%	0
H10	50%	56%	+ 6	L02	6%	3%	- 3
H04	56%	59%	+ 3	L03	9%	6%	- 3
H08	16%	16%	0	L13	34%	28%	- 6
H05	50%	47%	- 3	L04	28%	19%	- 9
H07	50%	44%	- 6	L08	47%	22%	- 25
Average	41%	53%	-----	Average	23%	29%	-----

Table 22: Scores for each participant from both proficiencies ranged by the number of gained scores.

According to Table 22, with the total number of 30 participants in this study, it is shown that the number of the achievers was more than the number of the non-achievers. Especially in the high proficiency group, 12 out of 15 students improved their performance after the praxis intervention. For the low proficiency group, there were 9 students who improved after they studied and practised the stress placement rules. Considering the gained scores, some students showed outstanding performance as their gained scores were very high. More surprisingly, they were those who started off with below average scores in the pre-test, such as H12, H09, L14, L06, L15, and L01. It showed that the praxis intervention which provided them the explicit lessons with engaging activities and exercises, could help enhance the participants' learning achievement in the stress placement of English derivational suffixed words. Some participants did not show much improvement, and some got poorer performance after the praxis intervention. To investigate how they learned and what factors that hindered their progress, the researcher asked the participants to join an interview session where they reflected on their performance during the praxis intervention and during the tests. They were also asked to provide their

metalinguistic knowledge regarding the stress placement rules of English suffixed words. The results from the interview were revealed and discussed in the following section.

4.4.2 Results from the interviews regarding students' achievement in learning and performing the stress patterns of English suffixed words

To investigate how the participant learned and performed the tasks, the data obtained from the interview were used to explain the reasons. The results from the interviews showed that the achievement of participants' performance was influenced by many factors. Only a few participants had outstanding performance after the three-week intervention phase. The possible reason was that the praxis intervention in this study served the treatment as an extra training course for participants without grades or scores. Therefore, it depended on the participants' motivation and effort in learning during the three weeks of praxis intervention.

4.4.2.1 Achievers with high gained scores

Among the group of achievers, there were only a few cases of participants who improved a lot and had outstanding performance in the post-test. The following participants are examples of those who gained high achievement with outstanding performance in the post-test.

H12 (47% -> 91% : gained score +44)

L14 (44% -> 75% : gained score +31)

H09 (44% -> 72% : gained score +28)

These participants from high and low proficiency groups gained scores in the pre-test of less than 50% (H12 got 47%, while L14 and H09 got 44%). Surprisingly, their scores in the post-test jumped in percentage. The high percentage of the gained scores shows that they improved a lot after they learned and practised the rules. After interviews with the participants, it was found that they spent the three weeks during praxis intervention very effectively. They paid attention and enjoyed the activities and lessons in the classroom. They mentioned that the lessons

were easy to follow because there were clear examples and the drills in the video lessons helped them to see the patterns clearly and practice along. They also practised outside the classroom by doing the homework assignments which were assigned to them after each session. Sufficient time of exposure to the rules and the flexible time for practice helped these participants to acquire the rules and reached high achievement in their performance.

L06 (9% -> 34% : gained score +25)

L01 (13% -> 34% : gained score +21)

The participants with low proficiency levels showed performance with high achievement as well, though it can be seen from the post-test that their scores did not reach 50%. This is because their scores in the pre-test were very low. During the interviews, they mentioned that the class and lessons were engaging, and they enjoyed the activities so much. They became aware of English word stress after praxis intervention, so they tried to produce the prominent syllable within the suffixed words. However, they could not remember all the stress placement rules as they spent insufficient time on practising and learning, which is why their scores in the post-test were still below the average. It is suggested that the participants need to spend more time learning the rules and practising the pronunciation of suffixed words.

4.4.2.2 Achievers with moderate and low gained scores

Most of the participants in the group of achievers showed a higher number of participants whose gained scores were not high, meaning they improved only slightly after praxis intervention. The factors that influenced their low achievement were varied as discussed in the following.

H02 (38% -> 56% : gained score +18)

H13 (69% -> 81% : gained score +12)

H01 (16% -> 22% : gained score +6)

L09 (38% -> 44% : gained score +6)

According to the interviews with this group of achievers, it was found that their achievement was not high due to insufficient time for practice. The H02 could spell out all the rules which conformed to the stress placement rules of suffixed words. However, the pronunciation did not conform to the rules that H02 explained. This suggests that the participants need to spend more time practising to apply the rules in pronunciation to improve performance when he/she pronounces the suffixed words. Apart from the factor regarding the insufficient time for practice, the concern for using rules was one factor that influenced the participants' achievement. According to the interviews, some participants did not consider the rules when they performed tasks, so their pronunciation was based on prior knowledge acquired through exposure to English language. If the participants had high exposure to English language, they could get good scores in the pre-test, like the performance of H13. According to the performance in the pre-test and post-test, H13 got high scores on both tests (69% in the pre-test and 81% in the post-test), but his gained score was only 12% which was not high. It was found that this participant did not pay much attention to the lesson and never did the assignments after class. Good performance came from high exposure to the English language, which the participant learned and imitated from native English movies and shows. However, there were some participants whose exposure to the English language was complicated by Thai contexts such as H01 and L09, because most suffixed words were pronounced with a Thai accentual pattern. That led their performance to improve at a very low rate. Even though exposure to English language can aid participants to improve their pronunciation, the quality of the input they are exposed to and the explicit rules regarding the pronunciation are essential for them to achieve English language competence.

4.4.2.3 Non-achievers

The following group of participants comprised the non-achievers whose scores in the post-test were equal to or lower than the pre-test scores. The factors which influence their performance are discussed.

H05 (50% -> 47% : gained score -3)

H07 (50% -> 44% : gained score -6)

L05 (38% -> 38% : gained score 0)

L13 (34% -> 28% : gained score -6)

According to the performance of this group of non-achievers, there was no improvement and some even got worse. They did not improve their performance after praxis intervention. Among these participants, some of their scores were even lower than the pre-test score. After the interviews, it was found that the participants in this group were not interested in the rules as they felt the rules were not important, and the rules made them confused and frustrated when they performed the tasks, so they gave up on learning and never thought about applying the rules in their pronunciation.

L02 (6% -> 3% : gained score -3)

L03 (9% -> 6% : gained score -3)

These participants were non-achievers who had serious problem with word pronunciation. Their performance reveals that they could not read the words even when the words were very simple. For example, they mispronounced the word “homeless” like ['həʊm mɪ 'lɑːs] or pronounced the word “careful” like ['kɑːrɪ 'fʊl]. According to the information they provided in the online survey regarding their experience with the English language, it was found that they had very low exposure to English language, especially reading. Such low exposure to English reading led the participants to very low vocabulary size in their mental lexicon and they lacked knowledge of phonemes and did not have any phonological awareness, which is essential for English reading and pronunciation. These learners need extra supports for practising reading skills and pronunciation skills from the beginning level to develop their ability to read and pronounce English words.

4.5 Metalinguistic knowledge study

This section presents the results regarding the metalinguistic knowledge of participants after praxis intervention. The quantitative results compare the metalinguistic knowledge of high and low proficiency groups. The qualitative results discuss the participants' knowledge regarding the stress placement rules after the morphophonological rules were explicitly taught and the students were trained in performance of the stress shift.

According to the theoretical framework regarding the learners' metalinguistic explanation, the learners' reasons were divided into two main kinds of reasons: Non-explicit and Explicit (Isarankura, 2008; Ngarmwirojkit, 2012; Worathumrong, 2015). The non-explicit reasons referred to the reasons which were not related to linguistic rules while the explicit reasons were related to the linguistic rules. The following table shows the categories of learners' metalinguistic explanation in two main kinds, non-explicit and explicit, as shown in Table 23.

Non-explicit reasons	Explicit reasons
<ul style="list-style-type: none"> ▪ <i>Impressionistic</i> ▪ <i>Guessing/ Requesting Clarification</i> ▪ <i>No response/ Irrelevant</i> 	<ul style="list-style-type: none"> ▪ <i>Phonology</i> ▪ <i>Morphology</i> ▪ <i>Lexicon</i> ▪ <i>Morpho-phonology</i> ▪ <i>Syntax</i> ▪ <i>Semantics</i> ▪ <i>Pragmatics</i>

(Isarankura, 2008; Ngarmwirojkit, 2012; Worathumrong, 2015)

Table 23: Two main types of learner's metalinguistic knowledge of morphophonological rules of stress placement

The non-explicit reasons consist of three categories: Impressionistic, Guessing or Requesting clarification, and No response or Irrelevant. Derived from Isarankura (2008), the characteristics of each non-explicit reason category are briefly explained as follows:

1) Impressionistic reasons are those that mention intuition, feelings, or beliefs in pronouncing certain English suffixed words.

2) Guessing or Requesting clarification refers to reasons that show how the participants make a guess or show strategies which can help them guess such as using an interrogative sentence to ask for clarification.

3) No response or Irrelevant reasons are shown when participants tell the researcher that they have no idea, or they remain silent without giving any reasons. It is also categorized as this type if the participants provide information that is off topic or irrelevant.

The explicit reasons in this study comprise four categories: phonologically based, morphologically based, lexically based, and morpho-phonologically based. The characteristics of each explicit reason category are briefly explained as follows:

1) Phonologically based reasons are those which refer to the awareness of sounds, phonemes, and phonological processes.

2) Morphologically based reasons are reasons which merely show awareness of morphemes and how words are formed by certain morphemes.

3) Lexically based reasons are shown when participants recognize the pronunciation of certain words as words in lexicon or vocabulary without providing any rules regarding the speech sounds or word formation.

4) Morpho-phonologically based reasons are those that show the relationship between the suffixes and their effect on the sound segments and stress patterns. The participants may recognize each type of suffix and provide the stress placement rules of English suffixed words.

4.5.1 Results of Thai learners' explicit reasons regarding the stress placement of English suffixed words

The overall results of metalinguistic knowledge from high and low proficiency groups are shown in Table 24.

Participants		High proficiency	%	Low Proficiency	%
Non-Explicit reasons	Impressionistic	16	13%	31	26%
	Guessing	7	6%	0	0%
	No response/Irrelevant	1	1%	15	13%
Explicit reasons	Phonologically based	4	3%	26	22%
	Morphologically based	16	13%	24	20%
	Lexically based	16	13%	6	5%
	Morpho-phonologically based	56	47%	9	7%
Blended reasons	Morpho-phonologically + Impressionistic	1	1%	0	0%
	Morpho-phonologically + Guessing	2	2%	0	0%
	Morpho-phonologically + Lexically	1	1%	0	0%
	Morphologically + Phonologically	0	0%	9	7%
Total		120	100%	120	100%

Table 24: Findings on the participants' metalinguistic explanations focusing on explicit reasons

According to Table 24, the metalinguistic explanations of the high proficiency group and the low proficiency group were based on different aspects of knowledge. Among the explicit reasons, the high proficiency group based their explanation on the pronunciation of suffixed words on the morpho-phonological rules at 47% whereas the low group based their explanation on the rules in phonology at 22% and in morphology at 20%. This could suggest that the high proficiency group learned the stress placement rules better than the low proficiency group and applied the rules in their pronunciation.

The following shows some examples of the explicit reasons provided by the participants on the pronunciation of suffixed words.

4.5.1.1 Phonologically based reasons

This kind of reason was mentioned when the participants relied on phonological rules such as how to separate syllables, how to combine consonant and vowel sounds, or mentioning the features of stress syllables. Examples of the phonologically based reasons are shown as follows.

- Conforming pronunciation to the English accentual system

L09: “political” [pə 'lɪ tɪ kəl]

“พยายามแบ่งพยางค์ แล้วออกเสียงไปเลย”

(I tried to separate the syllables and then read the word.)

L14: “financial” [faɪ 'næɪ nʃəl]

“อ่านทีละพยางค์”

(I pronounced the words by each syllable.)

- Non-conforming pronunciation to the English accentual system

H06: “instantaneous” [ɪn 'stæɪ nʃəl]

“สะกดออกมาแล้ว เน้นที่ tan”

(I spelled the word and put the stress on ‘tan’.)

L05: “probably” [prə 'be bli]

“ใช้การตัดแบ่งทีละพยางค์”

(I separated each syllable.)

L08: “consciousness” ['kɒn sɪ ə 'nes]

“แบ่งพยางค์ตามความเข้าใจ”

(I separated the syllables based on my understanding.)

L15: “probably” [ˈprə pə li]

“ดูจากสระว่ารวมกับพยัญชนะแล้วจะออกมาแบบไหน”

(I looked at the vowel and thought of how it would sound when it was combined with the consonant.)

4.5.1.2 Morphologically based reasons

The participants used the morphologically based reasons to explain the rules which only focused on the morphological aspect and did not include the phonological aspect of the pronunciation. For example, they might recognize certain suffixes, or they might explain how the word is formed, but they

did not give the explanation about how the word was pronounced. Examples of morphologically based reasons are shown as follows.

- Conforming pronunciation to the English accentual system

H03: “Japanese” [dʒə pæ 'nis]

“คำเดิมคือ Japan เติม ese เข้าไปเป็น Japanese”

(The original word is ‘Japan’. Then {-ese} is added, so it becomes ‘Japanese’.)

H06: “financial” [faɪ 'næn ʃəl]

“ออกเสียงคำว่า finance แล้วเติม ial”

(I pronounced ‘finance’ and then I added {-ial}.)

- Non-conforming pronunciation to the English accentual system

H08: “doctrinaire” [ˈdɒkᵻˈtriːnəɪ̯m]

“ดู suffix ตัวท้าย แต่ไม่รู้ว่าจะเน้นที่ไหน”

(I looked at the suffix at the end, but did not know where it should be stressed.)

L04: “political” [ˈpɒlɪ tɪ 'kɔːlɪm]

“แยก al ออกมาแล้วก็เชื่อมกับ politic”

(I separated {-al} and combined it with ‘politic’.)

L10: “objectify” [ɔb 'dʒekᵻ tɪ 'faɪm]

“อ่าน object ตามปกติ แล้วก็เติม ify ข้างหลัง”

(I read ‘object’ and I add {-ify} at the end.)

4.5.1.3 Lexically based reasons

The lexically based reasons were mostly given by the participants with high proficiency. It could be observed that they recognized the pronunciation of the words when exposed to them until they acquired the word and the pronunciation in their mental lexicon. The participants would mention that they recognized the words as they often saw or heard them in some contexts, or they

linked the pronunciation to a word which looked similar. Examples of lexically based reasons are shown as the following.

- Conforming pronunciation to the English accentual system

H02: “Japanese” [dʒə pæ 'nis]

“เคยได้ยินในคลิปที่เรียนในสาขา”

(I heard this word from a video clip that I learned in the faculty.)

H13: “instantaneous” [ɪnˈstænˈteɪniəs]

“เคยเห็นคำอื่นอย่าง simultaneous ก็เลยอ่านให้คล้ายกัน”

(I have seen other words like ‘simultaneous’, so I tried to pronounce the word to sound similar to ‘simultaneous’.)

L03: “Japanese” [ˈdʒe pæ 'nis]

“เห็นตามสถานที่ต่าง ๆ บ่อย ก็เลยออกเสียงตามนั้น”

(I have often seen the word from many places, so I pronounced it like that.)

- Non-conforming pronunciation to the English accentual system

H07: “political” [pə 'lɪt̚ t̚ 'kɔl̚]

“คำนี้คุ้น ๆ เพราะเคยเรียนแล้วเขาออกเสียงแบบนี้”

(This word looks familiar. I learned this word before and the lecturer pronounced it like this.)

H11: “financial” [faɪ 'næns̺ 'fɪəl̺]

“เห็นบ่อยตามโฆษณา”

(I have often seen this word in advertisements.)

L08: “probably” [prə 'be bli]

“คิดถึงคำที่คล้าย ๆ กัน เช่น project แล้วก็ปรับกับตัวที่เห็น”

(I thought of a similar word like ‘project’ and adapted the pronunciation to the word I saw.)

L15: “Japanese” [ˈdʒeɪ pæ nɪs]

“เคยเจอในหนังสือพิมพ์ หรือหนังสือเรียน เพราะล่าสุดเพิ่งเรียนเรื่องวัฒนธรรม เคยเห็นในแบบฝึกหัด”

(I have seen the word in newspaper or textbooks. Recently, I just learned about cultures. I have seen it in the exercise.)

According to the lexically based examples, it can be considered that exposure to the English language might help them to get accurate pronunciation. However, the quality of the input that they were exposed to should be accurate as well, because there were some participants whose pronunciation did not conform to the English accentual system. This was probably due to their exposure to the English language with Thai interference such as the teachers, Thai announcers or public figures who pronounce English words with a Thai accent. Without knowledge regarding the stress placement rules, the learners were not able to apply and perform the pronunciation which conformed to the stress placement rules of English suffixed words.

4.5.1.4 Morphophonologically based reasons

The morphophonologically based reasons were the expected metalinguistic knowledge in this study as the stress placement rules of English suffixed words were taught and trained in the praxis intervention. The researcher expected that the participants would acquire the rules and be able to apply the rules in their pronunciation. The reasons which were based on morphophonological rules showed the interaction between the suffixes and phonological effects regarding stress placement. Some examples of morphophonologically based reasons are shown as follows:

- Conforming pronunciation to the English accentual system

H04: “doctrinaire” [ˈdɒk trɪ ˈneɪ]

“เน้นตัวสุดท้ายเพราะ aire จะดึง stress มาที่ตัวเอง”

(This word is stressed on the last syllable because {-aire} will attract the stress to itself.)

H15: “objectify” [əb 'dʒek tɪ faɪ]

“ลงท้ายด้วย ify จำได้ว่าเน้นตัวที่สามจากท้าย”

(It ends with {-ify}. I remember it is stressed on the third syllable from the last.)

L11: “political” [pə 'lɪ tɪ kəl]

“suffix ตัวนี้เน้นตัวที่สามจากท้าย”

(With this suffix, the stress falls on the third syllable from the last.)

After analysing the data of the morpho-phonologically based reasons, the researcher found some performances which did not conform to the stress placement rules even though the participants were able to explain the rules regarding the stress placement rules of suffixed words. Some examples of morphophonologically oriented reasons that the participants learned but did not apply to their pronunciation are shown as follows:

- Non-conforming pronunciation of the rules

* *Only metalinguistic knowledge conforms to the rules.* *

H02: “doctrinaire” [ˈdɒk tɪ neə]

“suffix เป็นกลุ่มที่ต้องเน้นที่ suffix”

(The suffix is the type that puts the stress on the suffix.)

H05: “Japanese” [dʒə 'pæ nis]

“จำได้ว่า ese ต้องเน้นพยางค์สุดท้าย เลยพยายามออกเสียงข้างหน้าให้เบา ๆ”

(I remember that with {-ese}, the stress is on the last syllable, so I tried to pronounce the preceding syllables with a softer sound.)

* Only pronunciation conforms to the rules*

L12: “doctrinaire” [ˈdɔkʰ trə ˈneə̃m]

“aire จะเน้นที่ tri”

(With {-aire}, it is stressed on ‘tri’.)

* Both metalinguistic knowledge and pronunciation do not conform to the rules.*

H07: “objectify” [ɔb ˈdʒekʰ tɪ ˈfaɪ̃m]

“ify พยายามจะเน้นที่ ti”

(I saw {-ify}, so I tried to put the stress on ‘ti’.)

H06: “consciousness” [ˈkən̄ ˈtʃɔ̃s̄ nes]

“ออกเสียงตามที่เคยอ่านมาเลย ness จะต้อง stress ก่อนตัวมัน”

(I pronounced the word like I used to, and it must be stressed before the suffix {-ness}.)

To discuss more details about the morpho-phonologically based reasons, participants were divided into eight groups by their proficiency and their achievement. According to the participants’ gained scores in Table 22, the gained scores of the achievers in the high proficiency group were ranged from 44% to 3%. In the low proficiency group, the gained scores of the achievers were ranged from 31% to 3%. The researcher used the percentile ranks to clearly separate the high achievers from the low achievers in each proficiency group. Each group of participants consists of high achievers, moderate achievers, low achievers and the non-achievers in the high proficiency and the low proficiency groups as follows:

HH = High proficiency with high achievement

HM = High proficiency with moderate achievement

HL = High proficiency with low achievement

HN = High proficiency with no achievement

LH = Low proficiency with high achievement

LM = Low proficiency with moderate achievement

LL = Low proficiency with low achievement

LN = Low proficiency with no achievement

Table 25 shows the results of metalinguistic knowledge of the participants whose explanations were morpho-phonologically based. It also shows the percentage of the metalinguistic knowledge and the pronunciation that conformed to the stress placement rules comparing to those that did not conform.

Participants		HH N=24	HM N=32	HL N=40	HN N=24	LH N=24	LM N=24	LL N=24	LN N=48
Non-Explicit reasons	Impressionistic	4%	19%	20%	4%	21%	13%	13%	42%
	Guessing	8%	13%	-	4%	-	-	-	-
	No response/Irrelevant	-	3%	-	-	8%	8%	29%	8%
Explicit reasons	Phonologically based	-	6%	5%	-	25%	8%	42%	17%
	Morphologically based	-	6%	18%	29%	33%	17%	-	25%
	Lexically based	13%	25%	3%	17%	8%	-	-	8%
	Morpho-phonologically based	71%	25%	55%	38%	4%	17%	17%	-
	- MLK + Pronunciation conforms to the rules	67%	22%	25%	13%	4%	4%	17%	-
	- Only MLK conforms to the rules	4%	3%	20%	17%	-	8%	-	-
Blended reasons	Morpho-phonologically + Impressionistic	-	-	-	4%	-	-	-	-
	Morpho-phonologically + Guessing	4%	-	-	4%	-	-	-	-
	Morpho-phonologically + Lexically	-	3%	-	-	-	-	-	-
	Morphologically + Phonologically	-	-	-	-	-	38%	-	-

Table 25: The finding on the metalinguistic explanation showing the morpho-phonological knowledge of the participants

The results from Table 25 show that the participants in the high proficiency group, which were high achievers, had metalinguistic knowledge and pronunciation which conformed to the stress placement rules more than the other groups of participants. After interviews with the high achievers, it was revealed that they practised the rules until the rules were acquired and their pronunciation conformed to the rules. Therefore, it can be concluded the perception of the rules alone could not guarantee accurate pronunciation, which conforms to the rules. Even when the rules were acquired, the participants might not be able to perform if they did not practice applying the rules in the pronunciation. They would not be able to detect the stressed position in their own performance. Word pronunciation

tasks require knowledge about the rules and the production process at the same time. The perception of the rules could help the learners notice their own pronunciation and apply the rules when they saw new words. However, the production process required a lot of practice until the learners acquired the rules and performed accurately. To achieve competence regarding the English pronunciation of suffixed words, learners need to spend more time learning the rules as well as practising their pronunciation.

4.5.2 The results of Thai learners' explicit reasons regarding the stress placement of English suffixed words

The findings on metalinguistic knowledge regarding the non-explicit reasons are presented in Table 26.

Participants		High proficiency	%	Low Proficiency	%
Metalinguistic Knowledge					
Non-Explicit reasons	Impressionistic	16	13%	31	26%
	Guessing	7	6%	0	0%
	No response/Irrelevant	1	1%	15	13%
Explicit reasons	Phonologically based	4	3%	26	22%
	Morphologically based	16	13%	24	20%
	Lexically based	16	13%	6	5%
	Morpho-phonologically based	56	47%	9	7%
Blended reasons	Morpho-phonologically + Impressionistic	1	1%	0	0%
	Morpho-phonologically + Guessing	2	2%	0	0%
	Morpho-phonologically + Lexically	1	1%	0	0%
	Morphologically + Phonologically	0	0%	9	7%
Total		120	100%	120	100%

Table 26: The findings on participants' explanations focusing on non-explicit reasons

Table 26 focuses on the non-explicit reasons provided by participants. The results show that both the high and low proficiency groups provided impressionistic reasons more than other types of non-explicit reasons. This means the participants provided reasons for the pronunciation of suffixed words by using their feelings or the impression of the words that they saw on the screen in the performance task. The following reasons are shown as examples of impressionistic reasons.

4.5.2.1 Impressionistic reasons

H15: “political” [pə 'lɪ tɪ kəl]

“ไม่ได้คิดอะไร เจอก็อ่านไปเลย”

(I did not think of anything. I just looked at the words and pronounced them.)

L13: “Japanese” [dʒə pæ 'nɪsʰ]

“คิดว่าน่าจะออกแบบนี้”

(I think it should be pronounced like this.)

H01: “consciousness” [kən 'ʃɪənsʰ 'nesʰ]

“อ่านไปเลย พยายามจะนึกกฎแล้วแต่จำไม่ได้”

(I just pronounced it. I tried to think of the rules, but I could not remember them.)

L09: “objectify” [ɔb 'dʒekʰ tɪ 'faɪʰ]

“อ่านตามที่คิด เพราะไม่แน่ใจว่าออกเสียงยังไง”

(I pronounced it from what I thought it should be because I was not sure how to pronounce it.)

L09: “financial” [fɪ la 'sɪʰ]

“อ่านไปเลย”

(I just pronounced it.)

To examine the impressionistic reasons provided by the low proficiency group in greater detail, the participants were categorized into eight groups based on their proficiency levels and their levels of achievement as mentioned earlier. Table 27 highlights the percentage of Impressionistic reasons provided by the non-achievers in the low proficiency group.

Participants		HH N=24	HM N=32	HL N=40	HN N=24	LH N=24	LM N=24	LL N=24	LN N=48
Metalinguistic Knowledge									
Non-Explicit reasons	Impressionistic	4%	19%	20%	4%	21%	13%	13%	42%
	Guessing	8%	13%	-	4%	-	-	-	-
	No response/Irrelevant	-	3%	-	-	8%	8%	29%	8%
Explicit reasons	Phonologically based	-	6%	5%	-	25%	8%	42%	17%
	Morphologically based	-	6%	18%	29%	33%	17%	-	25%
	Lexically based	13%	25%	3%	17%	8%	-	-	8%
	Morpho-phonologically based	71%	25%	55%	38%	4%	17%	17%	-
	- MLK + Pronunciation conforms to the rules	67%	22%	25%	13%	4%	4%	17%	-
	- Only MLK conforms to the rules	4%	3%	20%	17%	-	8%	-	-
	- Only pronunciation conforms to the rules	-	-	-	-	-	4%	-	-
- None of them conforms to the rules	-	-	10%	8%	-	-	-	-	
Blended reasons	Morpho-phonologically + Impressionistic	-	-	-	4%	-	-	-	-
	Morpho-phonologically + Guessing	4%	-	-	4%	-	-	-	-
	Morpho-phonologically + Lexically	-	3%	-	-	-	-	-	-
	Morphologically + Phonologically	-	-	-	-	-	38%	-	-

Table 27: The findings on the metalinguistic explanation highlighting the percentage of Impressionistic reasons provided by the non-achievers in the low proficiency group

According to Table 27, the non-achievers of the low proficiency group were more impressionistic than the other groups. To find the factors which support the phenomenon of the non-achievers in the low proficiency group being so impressionistic about the pronunciation, the findings from the interview with the participants were discussed. It was found that the impressionistic reasons were mostly provided by the low proficiency group who were the non-achievers as shown in the table above. The results from the interview with the non-achievers showed two main factors which led them to be impressionistic in their pronunciation. The first factor was that they did not consider the rules and gave up on practising because of having a negative attitude towards learning the rules. Another factor was that they had insufficient vocabulary in their mental lexicon. Also, they lacked knowledge of phonemes and phonological awareness which led them to mispronounce words.

Apart from the impressionistic reasons, there were other kinds of non-explicit reasons provided by the participants, as shown in the following categories.

4.5.2.2 Guessing

H11: “doctrinaire” [ˈdɑkʰ trɪ ˈneə̃m]

“มั่ว”

(I just winged it.)

H07: “instantaneous” [ɪn ˈstæ̃nʰ te ˈnɪə̃sʰ]

“ไม่รู้ เตเอา”

(I did not know. I just guessed.)

H14: “consciousness” [ˈkɔ̃n ˈsɪ ʃɔ̃ ˈv nes]

“เตา”

(I just guessed.)

4.5.2.3 No response/ Irrelevant

L07: “objectify” [ˈɔ̃bʰ dʒek trɪ ˈfɑ̃r̃m]

“ob อ่านว่า อ็อบ ส่วนตัวนี้อ่านว่า อีฟาย”

(‘ob’ is pronounced [ˈɔ̃bʰ] and this one is pronounced [ɪ ˈfɑ̃r̃m].)

L05: “consciousness” [ˈkɔ̃ñm ˈsɔ̃ʰ nes]

“เพราะมี o มี sci”

(It is because there are ‘o’ and ‘sci’.)

L15: “doctrinaire” [ˈdɑk trə ˈneə̃r]

“เคยเรียนมาว่าคำพวกนี้คล้าย ๆ กริยาสามช่อง swim swam swum เลยเหมือน
near naire มันมีตัว r กำกับอยู่ว่าต้องออกเสียง”

(I learned this word before. It looks similar to the three forms of verbs like ‘swim – swam – swum’. It sounds like ‘near’ [ˈnɪə̃r] and ‘naire’ [neə̃r]]. There’s also an ‘r’, so I should pronounce [r] too.)

Also, some participants provided reasons which were a combination of reasons, such as the following.

Morpho-phonologically + Impressionistic

H05: “probably” [ˈprɑ bə bli]

“ไม่รู้จำคำนี้ พอเห็น ly ก็เลยพยายามนึก stress ตัวข้างหน้า (stress ของคำเดิม) แต่เพราะไม่เคยเห็นคำนี้ เลยไม่รู้ว่าจะ stress ตรงไหน ก็เลยใช้ sense”

(I did not know this word. I saw {-ly}, so I tried to think of the stressed position of the base, but I did not know this word. I did not know where to put the stress, so I just tried to make sense.)

Morpho-phonologically + Guessing

H05: “consciousness” [kən ˈʃɪs nes]

“ness จะใช้ stress ตัวเดิม ก็เลยคิดว่า cious คือ stress เดิม ก็เลยเน้น cious แต่ก็แอบไม่แน่ใจว่าจะเป็น con หรือเปล่าเพราะส่วนใหญ่ภาษาอังกฤษมักจะเน้นตัวหน้า แต่เลือก cious เพราะเน้นยากกว่า”

({-ness} keeps the stress in the same position. I think ‘cious’ is the prior stressed position, so I stressed ‘cious’. I am still not sure whether it is stressed on ‘con’ because most English words are stressed on the first syllable. By the way, I chose ‘cious’ because it is more difficult to put the stress there.)

H09: “consciousness” [kən ˈsɪəs ˈnes]

“เป็นกลุ่ม neutral ก็เลยเดาว่าเน้นที่ con”

(The suffix is neutral stressed, so I guessed it is stressed on ‘con’.)

Morpho-phonologically + Lexically based

H02: “probably” [ˈprɑ bə bli]

“เป็นกลุ่มที่ stress จะอยู่ที่เดิม แต่ไม่แน่ใจว่า stress เดิมอยู่ที่ไหน แต่คุ้น ๆ ว่าเคยได้ยินเขาออกเสียงแบบนี้”

(The suffix is in the group for which the stress stays in the same position, but I am not sure of the stressed position of the base word. I think I heard people pronounce it like this.)

Morphologically + Phonologically

L01: “probably” [ˈproʊ bə ˈbli]

“แยกพยางค์ก่อน ดูพยัญชนะแล้วก็สระ จากนั้นก็ดู suffix”

(I separated syllables, and looked at the consonants and vowels.
Then, I looked at the suffix.)

L10: “Japanese” [dʒə ˈpæ niːz]

“อ่านเว้นเป็นพยางค์ แล้วเติม ese ข้างหลัง”

(I separated syllables and added {-ese} at the end.)



CHAPTER 5

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter presents the conclusion of the study. It also discusses the implications and recommendations of the study. The main findings of the study are discussed with regard to the research questions and hypotheses. Then, the pedagogical implications are suggested. The last part of the chapter provides various recommendations for future research.

The present study aimed to explore the stress patterns of English suffixed words produced in the pre-test and post-test tasks by Thai learners having diverse proficiency levels. The learners' performance in the pronunciation of suffixed words was compared to see how they performed before and after praxis intervention. Praxis intervention was carried out to explicitly teach the morpho-phonological rules of suffixed words and provide exercises for students to practise in order to pronounce suffixed words systematically. The study also investigated the metalinguistic knowledge of Thai learners after they were explicitly and systematically taught and trained how to pronounce English derivational suffixed words.

The 3 research questions in this study are as follows:

1. What stress patterns of English derivational suffixed words are pronounced by Thai learners?
2. What metalinguistic knowledge governs Thai learners' pronunciation of English derivational suffixed words?
3. How do Thai learners of English perform before and after the praxis intervention where they are taught and trained in the pronunciation of English derivational suffixed words?

The hypotheses for the research questions are provided in the following statements.

1. The stress patterns of derivational suffixed words that Thai learners of English pronounce are varied. Learners with high proficiency show patterns that are more in agreement with the English accentual system.

2. Metalinguistic knowledge governing the pronunciation of English derivational suffixed words is different between learners with various proficiency levels.

3. After praxis intervention consisting of explicit teaching and training in the stress placement rules for English derivational suffixed words, Thai learners tend to become more accurate in their pronunciation of English derivational suffixed words compared to their pronunciation before praxis intervention.

5.1 The main findings of the study

5.1.1 Stress patterns performed by Thai learners

First, the researcher would like to discuss the results of accurate stress patterns performed by both proficiency levels in the post-test compared with the pre-test. Figures 25 and 26 show the percentage of accurate stress patterns performed in the pre-test and post-test by high and low proficiency groups.

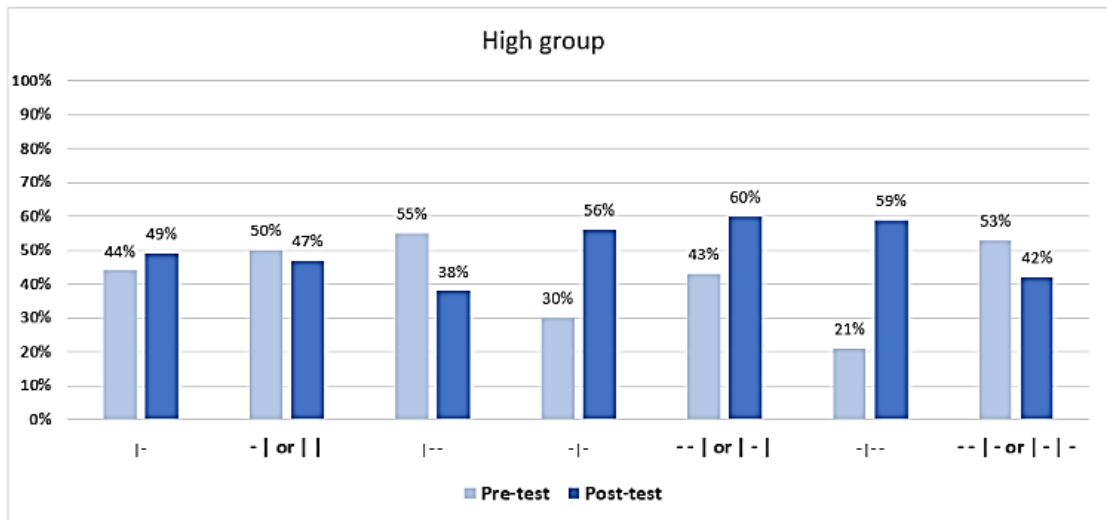


Figure 25: Percentage of accurate stress patterns performed by the high proficiency group in the pre-test and post-test

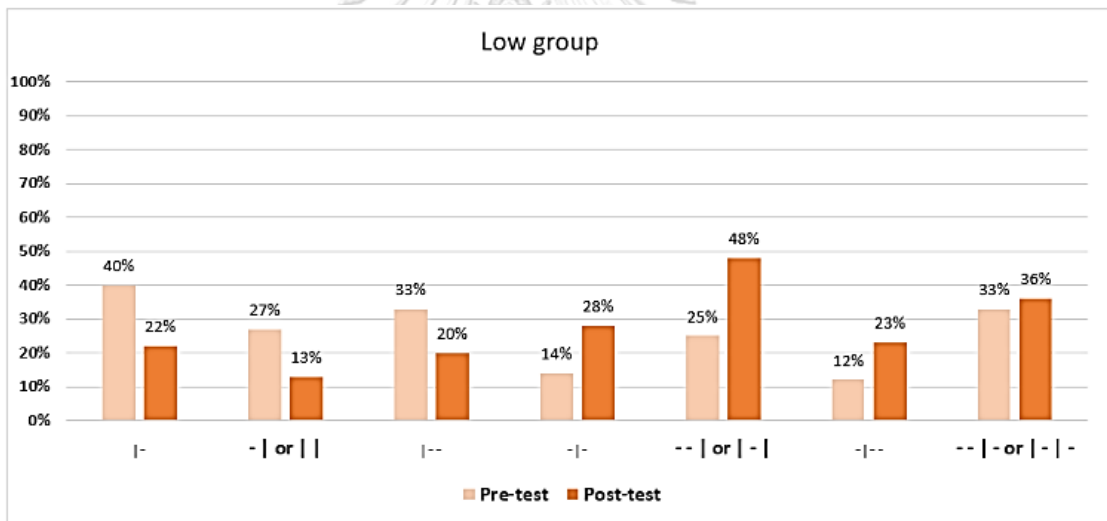


Figure 26: Percentage of accurate stress patterns performed by the low proficiency group in the pre-test and post-test

Overall, the high proficiency group performed the stress patterns in agreement with the English accentual system better than the low proficiency group. Comparing the participants' accurate stress patterns in the pre-test and post-test, the researcher found that both proficiency groups performed poorer in pattern (- |) or (| |) and pattern (| - -). Discussing the results from the words with expected pattern (-

|) or (| |), they were all attached with ultimate stressed suffixes. After the praxis intervention, the error pattern (| -) increased significantly, while the expected patterns decreased. It can be understood that the error pattern was affected by overgeneralization. The participants thought that all English disyllabic words were stressed on the first syllable, so they overgeneralized the (| -) pattern regardless of the stress placement rules for ultimate stressed suffixed words. For the lower rates of accurate stress patterns (| - -), the researcher found difficulty in performing the accurate stress patterns caused by the types of suffixes. The pattern (| - -) was attached by neutral stressed suffixes. It can be assumed that the neutral suffixed words are problematic because the patterns are fixed to the base words. This problem is due to the free accentual system in English. There are no rules governing the stress patterns of the words, meaning one has to learn and remember the locations by heart. Most Thai students are not exposed to the English language enough to learn all the word accents in English base words.

The error patterns found in Thai learners' stress placement are caused by many factors. The three major factors causing error patterns are briefly concluded as follows:

1) Thai Transfer

The error patterns caused by Thai transfer were mostly found in the findings. They were influenced by Thai accentual system. A characteristic of this pattern is that the final syllable is always stressed (Luksaneeyanawin, 1983; Naksakul, 2013; Surinpiboon, 1985).

2) Overgeneralization

As the result of overgeneralization, error patterns were also produced frequently by Thai learners. They were affected by the English accentual system, which was overly applied in the pronunciation of English suffixed words. The learners

put the stress on the first syllable of the suffixed words regardless of any stress placement rules. A possible reason is that the learners might have thought that most English words carry the stress on the first syllable, so they apply that rule to every English word without any knowledge in the stress placement rules of suffixed words. Error patterns were caused by the overgeneralization of the anglicized patterns. The learners might learn that most English words are not stressed on the last syllable. Regardless of the stress placement rules of suffixed words, they tried to anglicise the English stress patterns and avoid putting the stress on the last syllable.

3) Words pronounced as if they are compound words

The last stress error patterns found in Thai learners' performance are the stress patterns that are produced using the compounding patterns of Thai words. According to the word-formation rules, a suffix that is attached to a word involves the boundary which separates the morpheme from the base word (Chomsky and Halle, 1968; Katamba, 1993). Therefore, learners may keep the stress pattern of the base word and create the pattern again when attaching a suffix, such as in the word 'happiness' pronounced with the pattern (|| -), or the word 'beautiful' pronounced with the pattern (- ||).

Figure 27 summarizes the percentage of all error patterns on the stress placement of English suffixed words by Thai learners in both the pre-test and post-test. The patterns are categorized by the factors influencing the errors on stress patterns.

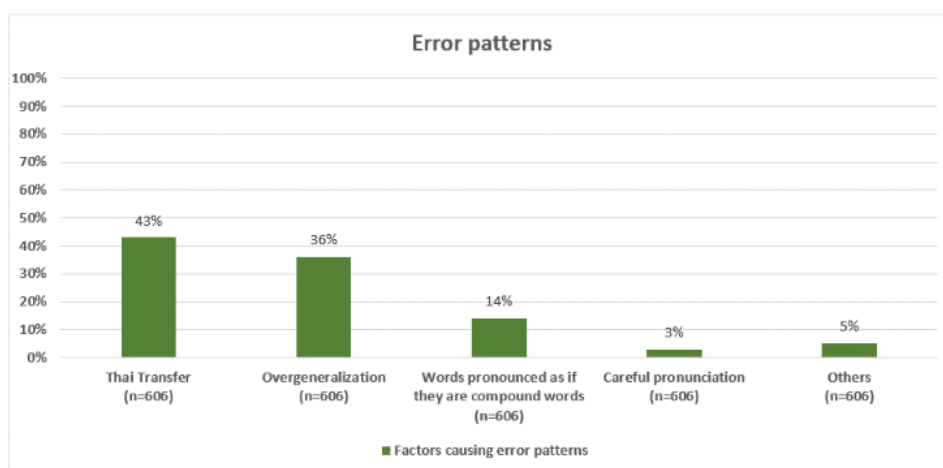


Figure 27: Percentage of all error patterns on the stress placement of English suffixed words categorized by factors causing the errors

Apart from the three major factors above, other factors may affect the errors in stress placement made by Thai learners. The first factor is the frequency of suffixes and suffixed words. According to the results, it was found that the learners could assign stress accurately when they pronounced high-frequency words or words attached by high-frequency suffixes. This supported the finding by Jarmulowicz (2002) who found that suffix frequency might have an impact on learners' knowledge about suffixes because learners are exposed more frequently to words attached with frequent suffixes. Jaiprasong and Pongpairoj (2020) also discussed the same findings in their study by stating that the unsatisfactory production of stress demanding suffixed words, or the ultimate stress suffixed words, might be due to infrequent exposure to derived words with suffixes of this type.

Another point that may cause errors in stress patterns is the number of syllables as well as awareness of stressed and unstressed syllable. As claimed by Watanapokakul (2009), the results in this study supported her findings that the number of syllables correlates with the variation of stress patterns. This means the more syllables the suffixed words contain, the greater number of various stress

patterns the learners will produce. In addition to the number of syllables, the lack of awareness of the features of unstressed syllables can cause errors in stress patterns as well. Even though the learners learn the rules and are able to apply them in their pronunciation, errors can still occur. They still put the stress on the first syllable because they might not be aware that when the stress is shifted, the strong syllable in the base word should be reduced to a weak syllable after the stress shift. Along with the stress placement rules of English suffixed words, therefore, learners need to learn the phonetic features of both strong and weak syllables as well as practice pronouncing stressed and unstressed syllables to develop greater awareness of stress patterns consisting of both stressed and unstressed syllables.

5.1.2 Thai learners' performance before and after the praxis intervention

The findings on Thai learners' performance before and after the praxis intervention are discussed and shown in Table 28 and 29. Table 28 shows the results of participants' performance and the significant differences within the proficiency group in the pre-test and the post-test.

Group	Pre-test		Post-test		t	P
	Mean (%)	S.D.	Mean (%)	S.D.		
High proficiency (N=15)	40.73	15.723	52.53	20.553	-3.597	.003*
Low proficiency (N=15)	22.93	14.926	29.13	18.083	-1.603	.131

* $p \leq 0.05$ level = significant

Table 28: Pair-sample t-test showing the significant differences within the proficiency group in the pre-test and the post-test

According to Table 28, the increasing mean scores in the post-test of the high and low proficiency groups show that both proficiency groups improved their performance after they explicitly learned and practised the stress placement rules of

English suffixes. The high proficiency group improved their performance at a very high significant rate while the low group's performance improved insignificantly. It can be concluded that the high proficient students could perform much better than the low proficient students. After they explicitly learned and practised the stress placement rules of English suffixes, the high proficient students could assign the stress more accurately than the low proficient students.

Table 29 shows the scores of each participant from both proficiencies ranged by the number of the gained scores.

High Proficiency Group				Low Proficiency Group			
Participants	Pre-test	Post-test	gained score (%)	Participants	Pre-test	Post-test	gained score (%)
H12	47%	91%	+ 44	L14	44%	75%	+ 31
H09	44%	72%	+ 28	L06	9%	34%	+ 25
H14	28%	47%	+ 19	L15	19%	41%	+ 22
H02	38%	56%	+ 18	L01	13%	34%	+ 21
H15	41%	59%	+ 18	L10	16%	31%	+ 15
H11	25%	38%	+ 13	L12	9%	22%	+ 13
H13	69%	81%	+ 12	L09	38%	44%	+ 6
H06	56%	66%	+ 10	L07	3%	6%	+ 3
H03	25%	34%	+ 9	L11	31%	34%	+ 3
H01	16%	22%	+ 6	L05	38%	38%	0
H10	50%	56%	+ 6	L02	6%	3%	- 3
H04	56%	59%	+ 3	L03	9%	6%	- 3
H08	16%	16%	0	L13	34%	28%	- 6
H05	50%	47%	- 3	L04	28%	19%	- 9
H07	50%	44%	- 6	L08	47%	22%	- 25
Average	41%	53%	-----	Average	23%	29%	-----

Table 29: Scores for each participant from both proficiencies ranged by the number of gained scores.

The results from Table 29 shows the effectiveness of praxis intervention as the number of achievers was more than the number of non-achievers. The lessons providing explicit rules, engaging activities and practices could help the students enhance their metalinguistic knowledge and their performance. More surprisingly, some of the students with high gained scores were those who got below average scores in the pre-test. Also, those students with high gained scores were

found in both high and low proficiency groups, and some students got scores in very high percentages in the post-test such as H12 and L14. The results from the interview revealed that these students were interested in the lessons, activities, and practicing the rules in their pronunciation. Therefore, it has been proven that once the students are engaged, they can achieve significantly as in the case of L06 whose score was 9% in the pre-test, and jumped up to 34% in the post-test. I was also found that some students improved very little or got poorer in their performances. Therefore, the factors that affect their learning achievement should be investigated and discussed.

As the praxis intervention in the study was executed in a very limited period, the participants may not have been sufficiently exposed to explicit teaching and practising in the classroom. Also, the praxis intervention only served as an extra training course for participants, without grades or scores for their performance. Materials and homework assignments were provided as extra voluntary practice outside the classroom. Therefore, learning achievement in the pronunciation of English suffixed words seemingly depended on the learners' individual differences. Khasinah (2014) discussed the factors which affect learners' achievement in language learning, offering that individual differences such as motivation, attitude, intelligence, and personality are crucial factors that may hinder or benefit learners' effort to achieve competence in the target language.

After interviewing the participants, the key factor found to play an important role in Thai learners' achievement in the pronunciation of English suffixed words was the interest in using the rules and practising pronunciation. High achievers who are more motivated and put forth effort into learning and practising, both inside and outside the classroom, tend to be more successful compared to the learners who were not interested in learning and practising the rules. When the rules are not interesting, learners tend to rely on their prior knowledge when performing read-

aloud tasks. Many research studies confirm the importance of exposure to the English language, which can aid English-language learners to achieve language competence (Al-Zoubi, 2018; Jarmulowicz et al., 2007; Thanavisuth, 2007). However, the quality of the input that the learners are exposed to, whether inside or outside the classroom, is also important in EFL teaching and learning settings, including those in Thailand. Chantapanyo (2016) suggested that extensive experience in studying the English language does not necessarily correlate to accurate pronunciation. One factor which might play a role is the transfer of training, which provides the input that learners are exposed to, such as teachers' pronunciation, textbooks, materials, and curriculum design.

According to the results from the present study, participants benefiting from high exposure to authentic English language from native speakers can get good scores on tests, while participants who are exposed to the English language in a Thai setting with interference have poor performance due to mostly pronouncing English suffixed words with Thai transfer patterns. However, Thai learners with high exposure to the English language do not show high achievement, i.e., high gained scores after praxis intervention, even though their pre-test scores are high. This is because they did not apply the cross placement rules in their pronunciation. When they depended on prior knowledge, the learners were not able to apply the rules when seeing new suffixed words that they had never seen before.

Another problem among Thai learners which hinders them to achieve more in the pronunciation of English suffixed words is limited vocabulary size as well as the lack of phonemic and phonological awareness. These factors are clearly demonstrated by learners who cannot read even basic words and produce many mispronunciation errors. These factors need to be fixed by encouraging the learners to read more extensively as a way to increase the size of their vocabulary. Also, they

should be exposed to English in both spoken and written forms for more improvement on the quality of lexical representation, which bridges the association of word meaning, phonological knowledge and morphological knowledge (Jarmulowicz et al., 2007).

5.1.3 The main findings on metalinguistic knowledge

This research aims to investigate the metalinguistic knowledge of Thai learners in the pronunciation of English suffixed words after praxis intervention. Explicit lessons are used in the praxis intervention phase to raise metalinguistic awareness among Thai learners regarding the stress placement rules for English suffixed words.

The results from the participants show that the learners from high and low proficiency groups based their pronunciation on different kinds of metalinguistic knowledge. The students with high proficiency relied heavily on morphophonological knowledge as they applied the stress placement rules of English suffixes in their pronunciation. The low-proficiency group based their knowledge either on phonological rules or morphological rules. From the results, it can be implied that Thai learners become more aware of the linguistic rules in pronunciation after receiving explicit instruction. Among the group of low proficiency participants, it was found that many of them, especially the non-achievers, were impressionistic when they performed the read-aloud tasks. From the interviews with the non-achievers in the low proficiency group, it can be concluded that they pronounced English suffixed words based on their feelings or impressions because they did not consider the rules and could not read certain words due to the limited size of their vocabulary as well as having a lack of phonemic and phonological awareness.

Even though high proficiency students show positive signs of using metalinguistic knowledge concerning the stress placement rules for English suffixed

words, some performances do not conform to the stress placement rules. The results show a correlation between learners' achievement and the awareness of stress placement rules. Higher achievers with high gained scores can spell out their metalinguistic knowledge and assign accurate stress in their pronunciation conforming to the stress placement rules of English suffixed words. The results from the interviews with high achievers show that they spend time practising until the rules are acquired.

The fact that some participants did not acquire the metalinguistic knowledge or could not perform the stress shift according to the morpho-phonological rules, it must have been from the lack of time to study the rules and sufficiently practice the pronunciation. Carlet and Souza (2018) revealed in their study that only the perception skills improved after explicit instruction, but did not carry out to production. This can be implied to the present study that the perception about the stress placement rules is different from the production of the suffixed words regarding the stress placement. To perceive or acquire the rules, the learners need to be instructed explicitly to understand how they work. To achieve performance in production, learners need a significant amount of practice using pronunciation (Eyovi, 2016). Metalinguistic knowledge has an important role in language learners' competence because it can assist learners who are in different stages of development to monitor, describe, explain, and correct their performance. If the learners and teachers can identify the developmental stage the learners are in, it will help them to know what should be developed and how to improve their performance in accordance with their individual differences in language learning (Luksaneeyanawin, 2007)

5.2 Pedagogical implications

The findings from the present study contribute to the implications for the English language teaching in the pronunciation of suffixed words. The implications are provided as follows.

First, the study of stress patterns shows various error patterns that are produced by Thai learners of English. Such error patterns can be used as examples to show the distinction between error stress patterns and accurate stress patterns. The findings of interlanguage study regarding the factors influencing each pattern can be implemented for explaining the characteristics of error stress patterns. The features of the stressed and unstressed syllables should be introduced and trained. Teachers could compare the features of stressed and unstressed syllables by playing recorded sounds of word pronunciation and showing the features of each syllable by using graphs or pictures. Then, the learners would try to listen and differentiate the stressed and unstressed syllables as well as try to pronounce the word using the practice of rhythm in nursery rhymes, or rhythm in dancing or exercising.

Second, the study discusses the factors that influence learners' achievement in the pronunciation of English suffixed words. It demonstrates that highly motivated learners tend to be more successful than less motivated learners. Accordingly, the researcher suggests that teachers use the materials or strategies that encourage learners' motivation and effort in learning. Engaging activities or games which allow learners to process the rules and practice pronunciation can create an enjoyable environment in the classroom. Learners will not get bored or lose the motivation to learn. The study also points out the limitations of praxis intervention, which does not give grades or scores for the learners' performance. Taking this limitation into account, grades, scores, and corrective feedback should be provided so that learners can track their own performance and be motivated to improve.

Apart from engaging and motivating activities, the factors regarding exposure to the English language and the quality of input should be taken into consideration

as well. Learners should be adequately exposed to English words along with the pronunciation in Educated English or Standard English. In Thailand's educational system, English is a compulsory subject, but a lot of Thai students cannot speak English well or pronounce the English words correctly. One reason is that English lessons are taught in Thai in some English classrooms. Moreover, English is taught as a foreign language, so students do not feel that it is necessary to use English outside the classroom. Therefore, Thai learners do not have enough exposure to English language and do not practise English pronunciation or English speaking enough. The quality of English language input is also important as it may affect learners' pronunciation. Even they spend time studying and practising English pronunciation outside the classroom, they might produce pronunciation errors if they are exposed to English words or conversation with Thai pronunciation produced by teachers, announcers, or influencers who speak English with Thai pronunciation. To solve this problem, teachers should apply and introduce Standard English pronunciation to their students and let them practise the pronunciation until they learn how to pronounce the words correctly. English pronunciation in different contexts can be presented to show the differences and variations in English pronunciation. Tasks and exercises that allow students to practise English pronunciation should be used. Teachers may let their students watch video clips of movie excerpts or news report, and let them practise by repeating the dialogues or doing some role plays.

Finally, this study proves that metalinguistic knowledge could facilitate learners' pronunciation of English suffixed words if given enough practice. This can be seen from the performance of high achievers who can spell out the metalinguistic explanations and the pronunciations which conform to all the stress placement rules. When they acquire the morphophonological rules of English suffixes, they can apply the rules to new suffixed words presented on the screen in the post-test. It led them to exhibit outstanding performance and high achievement. It was also found that some students can spell out all the stress placement rules of English suffixes, but their pronunciation did not conform to the rules. It is due to the lack of sufficient

practice of using the rules in their pronunciation. Once students learned the rules, they should apply the rules and keep on practising pronunciation until it becomes natural. When they practise a lot, they will be aware of their pronunciation and will be able to detect errors and correct their pronunciation. For the benefits of raising the morphophonological awareness and improve the learners' performance on the pronunciation of English suffixed words, the use of metalanguage or metalinguistic skills should be supported and encouraged in the classroom. Teachers should provide opportunities for learners to reflect on their own performance by using their metalinguistic knowledge. The teachers could also provide activities that allow learners to perform, observe, describe, and correct their pronunciation. Read-aloud tasks or the error detecting games could be used so that students can use their metalinguistic knowledge to find errors, explain the reasons, and correct those errors.

5.3 Limitations and recommendations for future research

The present study aims to explore the stress patterns of English suffixed words performed by Thai learners and compare the learners' performance regarding the pronunciation of English suffixed words before and after praxis intervention. Also, it investigates the metalinguistic knowledge of learners in the pronunciation of English suffixed words after they received explicit instruction concerning the stress placement rules of suffixes. The research questions and hypotheses were fulfilled by the findings of the study. However, there are some limitations that the researcher would take into account for the recommendation of future research.

This study implemented word pronunciation tasks which only included words in isolation. The results of learners' performance and stress patterns may show some distinctions if different kinds of tasks are used. Accordingly, future research should be extended to study the stress patterns and learners' performance by using different tasks, such as communicative conversational tasks or text readings.

Due to the limited period of the praxis intervention, the results showed only a few cases of participants who highly achieved their performance in the

pronunciation. The researcher hopes that longer period of praxis intervention with longer time of exposure to explicit lessons in the classroom could yield different results of learners' performance in the pre-test and post-test phases. Also, a delayed post-test should be conducted to investigate learners' retention in performance regarding the stress placement rules and the pronunciation of English suffixed words.

The results from metalinguistic knowledge show differences between the metalinguistic knowledge of participants with different proficiency levels. Highly proficient learners acquire the morphophonological rules better than low proficient learners who base their knowledge on phonological or morphological rules. As the results show varying levels of metalinguistic knowledge among learners with different proficiency levels, future research should be extended to the study of metalinguistic knowledge regarding the pronunciation of English suffixed words by learners with different L1 backgrounds.

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APPENDICES

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

APPENDIX A: A survey of the study of the
English language by Thai learners

The logo of Chulalongkorn University, featuring a central emblem with a sunburst and a tiered structure, set within a decorative oval frame.

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

APPENDIX A: A survey of the study of the English language by Thai learners

แบบสำรวจ เรื่อง การเรียนภาษาอังกฤษของนักเรียนชาวไทย**คำชี้แจงเกี่ยวกับแบบสำรวจ**

แบบสำรวจเรื่อง "การเรียนภาษาอังกฤษของนักเรียนชาวไทย "

ดัดแปลงและแปลจากแบบสำรวจเรื่อง "การเรียนภาษาอังกฤษในฟินแลนด์ ปี 2007 " ซึ่งจัดทำโดย University of Jyvaskyla

แบบสอบถามนี้จัดทำขึ้นเพื่อสำรวจข้อมูลของนิสิตชาวไทยเกี่ยวกับการเรียนรู้และประสบการณ์ในการใช้ภาษาอังกฤษ โดยข้อมูลที่ได้จะนำไปใช้ในการคัดเลือกผู้มีส่วนร่วมในงานวิจัยเกี่ยวกับการออกเสียงคำศัพท์และความรู้เกี่ยวกับกฎการออกเสียงคำที่เติม suffix ในภาษาอังกฤษ

โดยแบ่งออกเป็น 4 ตอน ดังนี้

1. ข้อมูลส่วนตัว มีทั้งหมด 13 ข้อ
2. ความคิดเห็นต่อภาษาอังกฤษ มีทั้งหมด 4 ข้อใหญ่ 24 ข้อย่อย
3. การเรียนและการรู้ภาษาอังกฤษ มีทั้งหมด 3 ข้อใหญ่ 3 ข้อย่อย
4. การใช้ภาษาอังกฤษ มีทั้งหมด 7 ข้อใหญ่ 39 ข้อย่อย

รวมทั้งสิ้น 27 ข้อใหญ่ 66 ข้อย่อย

จากผู้เข้าร่วมทำแบบสอบถามทั้งหมด ผู้ทำวิจัยจะติดต่อเลือกเพียง 30 คน เพื่อเข้าร่วมในการวิจัย โดยมีเกณฑ์การคัดเลือกดังนี้

1. นิสิตชั้นปีที่ 1 นอกสาขาวิชาภาษาอังกฤษ จำนวน 15 คนแรกที่มีคะแนนโอเน็ตอยู่ในช่วงต่ำ (0-30 คะแนน)

ไล่ นับจากคะแนนต่ำที่สุดไปสูงที่สุดในช่วง และเป็นนิสิตที่ตอบตกลงเข้าร่วมเป็นผู้มีส่วนร่วมในการวิจัยขั้นต่อไป

2. นิสิตชั้นปีที่ 1 นอกสาขาวิชาภาษาอังกฤษ จำนวน 15 คนแรกที่มีคะแนนโอเน็ตอยู่ในช่วงสูง (55-75 คะแนน)

ไล่ นับจากคะแนนสูงที่สุดไปถึงต่ำที่สุดของช่วง และเป็นนิสิตที่ตอบตกลงเข้าร่วมเป็นผู้มีส่วนร่วมในการวิจัยขั้นต่อไป

แบบสำรวจ เรื่อง การเรียนภาษาอังกฤษของนักเรียนชาวไทย

ตอนที่ 1 ข้อมูลส่วนตัว

* 1. ชื่อ-สกุล

* 2. ข้อมูลติดต่อ

กรุณาระบุช่องทางติดต่อที่สะดวกไว้อย่างน้อย 2 ช่องทาง

เบอร์โทรศัพท์

อีเมลล์

ไลน์

เฟสบุ๊ค

* 3. อายุ

* 4. เพศ

ชาย

หญิง

ไม่ระบุ

* 5. คุณศึกษาอยู่ชั้นปีใด

ปีหนึ่ง

ปีสี่

ปีสอง

สูงกว่าปีสี่

ปีสาม

* 6. คะแนน O-NET วิชาภาษาอังกฤษ (0.00-100.00 คะแนน)

* 7. ภาษาแม่ของคุณคือภาษาอะไร

* 8. ในครอบครัวของคุณ มีคนที่ใช้ภาษาแม่อื่น ๆ ที่ต่างจากคุณหรือไม่

ไม่มี

ถ้า มี (กรุณาระบุภาษาที่ใช้)

* 9. ในการเรียนระดับการศึกษาขั้นพื้นฐานของคุณ คุณครูใช้ภาษาอะไรในการสอนวิชาภาษาอังกฤษในห้องเรียนของคุณ

ภาษาไทยอย่างเดียว

ภาษาไทยเป็นส่วนใหญ่

ภาษาอังกฤษอย่างเดียว

ภาษาอังกฤษเป็นส่วนใหญ่

ภาษาไทยและภาษาอังกฤษเท่า ๆ กัน

* 10. คุณไปเที่ยวต่างประเทศบ่อยแค่ไหน

อย่างน้อยเดือนละครั้ง

น้อยกว่าสองสามครั้งในช่วง 5 ปี

ปีละสองสามครั้ง

ไม่เคยไปเลย

สองสามครั้งในช่วง 5 ปี

* 11. คุณเคยอยู่ในประเทศที่ใช้ภาษาอังกฤษ ต่อเนื่องเป็นระยะเวลาสามเดือนหรือมากกว่านั้นหรือไม่

ไม่

ถ้า เคย (โปรดระบุประเทศที่อยู่ และภาษาที่คุณใช้ในประเทศนั้น)

* 12. ทำเครื่องหมายเลือกข้อระดับการศึกษาและสถานที่ที่คุณเคยได้ศึกษาภาษาอังกฤษ

การศึกษาในที่นี้รวมถึงการได้เรียนรู้ภาษาอังกฤษเพียงเล็กน้อย หาก你不เคยศึกษาภาษาอังกฤษในระดับหรือสถานที่นั้น ๆ โปรดเว้นว่างข้อนั้นไว้

ก่อนเข้าโรงเรียน

หลักสูตรการศึกษาผู้ใหญ่

ในระดับการศึกษาภาคบังคับ (ชั้นอนุบาลถึงมัธยมปีที่สาม)

โรงเรียนส่งเสริมการเรียนรู้
(เมื่อจบแล้วไม่ได้รับประกาศนียบัตร)

ระดับสูงกว่ามัธยมต้น

หลักสูตรที่จัดโดยนายจ้าง

ระดับอาชีวศึกษา

หลักสูตรเรียนภาษาที่ต่างประเทศ

สถาบันโพลีเทคนิค

ศึกษาด้วยตนเอง

ระดับมหาวิทยาลัย

คอร์สพิเศษที่บุคคลทั่วไปสามารถเข้าร่วมได้ (เช่น การอบรมหรือ
การบรรยาย ที่จัดโดยมหาวิทยาลัยหรือองค์กรต่าง ๆ เป็นต้น)

* 16. โปรดอ่านข้อความแสดงความคิดเห็นเกี่ยวกับความสำคัญของภาษาอังกฤษในประเทศไทย

กรอกข้อมูลแต่ละข้อ จากความรู้สึกแรกที่คิดถึงข้อความนั้น ๆ

	เห็นด้วยอย่างมาก	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างมาก	ไม่รู้สึกระไร
1) เด็ก ๆ ควรจะต้องรู้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) คนวัยทำงานควรจะต้องรู้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) คนสูงอายุจะต้องรู้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) การแพร่หลายของภาษาอังกฤษในประเทศไทยถือว่าเป็นภัยต่อภาษาแม่ของคนไทย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) คนไทยที่ไปเที่ยวต่างประเทศควรต้องรู้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) คนไทยสามารถโกอินเตอร์ได้โดยไม่ต้องรู้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) การที่ทุกคนสามารถพูดภาษาอังกฤษได้ถือเป็นสิ่งสำคัญต่อการพัฒนาสังคมที่มีความหลากหลายทางวัฒนธรรม	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) สำหรับคนไทย ภาษาแม่มีประโยชน์มากกว่าภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) ภาษาอังกฤษมีประโยชน์กับคนไทยมากกว่าภาษาจีน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) ภาษาอังกฤษช่วยพัฒนาทักษะภาษาแม่ของคนไทยได้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) ทักษะภาษาอังกฤษถูกประเมินคุณค่าสูงเกินไป	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) การบริการต่างๆ ในสังคม (เช่น การรักษาพยาบาล) ควรมีการใช้ภาษาอังกฤษมากกว่ากับภาษาไทย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) บริษัทต่างๆ ในประเทศไทยควรมีการใช้ภาษาอังกฤษในการทำงานหรือให้บริการด้วย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 17. โปรดอ่านข้อความแสดงความคิดเห็นเกี่ยวกับภาษาอังกฤษในฐานะภาษาของโลก

กรอกข้อมูลแต่ละข้อ จากความรู้สึกแรกที่คิดถึงข้อความนั้น ๆ

	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง	ไม่รู้สึกละไร
1) ภาษาอังกฤษเข้ามาแทนที่ภาษาอื่น ๆ ในโลก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) ทักษะภาษาอังกฤษควรเป็นสิ่งที่ทุกคนในโลกควรมี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) ค่านิยมต่าง ๆ ที่มาพร้อมกับภาษาอังกฤษกำลังทำลายวัฒนธรรมอื่น ๆ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) ภาษาอังกฤษทำให้เกิดการแพร่กระจายของระบบเศรษฐกิจแบบตลาดและแนวคิดด้านวัตถุนิยม	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) ภาษาอังกฤษเป็นภาษาแห่งความก้าวหน้า	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) ทักษะภาษาอังกฤษช่วยให้เกิดความเข้าใจตรงกันทั่วโลก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) เพื่อให้ทั่วโลก คนต้องสามารถใช้ภาษาอังกฤษได้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) คนที่มีทักษะภาษาอังกฤษจะเป็นคนที่รู้จักฟังความคิดเห็นของผู้อื่นมากกว่าคนที่ไม่สามารถใช้ภาษาอังกฤษได้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

แบบสำรวจ เรื่อง การเรียนภาษาอังกฤษของนักเรียนชาวไทย

ตอนที่ 3 การศึกษาและการรู้ภาษาอังกฤษ

* 18. คุณเรียนภาษาอังกฤษมานานแค่ไหน

คำว่า "เรียน" ในที่นี้ รวมทั้งการเรียนในสถาบันและการศึกษาด้วยตนเอง

- | | |
|--|-------------------------------------|
| <input type="radio"/> ไม่เคยเรียนภาษาอังกฤษเลย | <input type="radio"/> 6-10 ปี |
| <input type="radio"/> น้อยกว่าหนึ่งปี | <input type="radio"/> 11-15 ปี |
| <input type="radio"/> 1-2 ปี | <input type="radio"/> มากกว่า 15 ปี |
| <input type="radio"/> 3-5 ปี | |

* 22. ในเวลาว่าง คุณฟังภาษาอังกฤษจากแหล่งต่าง ๆ เหล่านี้ บ่อยแค่ไหน

	แทบทุกวัน	ประมาณอาทิตย์ละครั้ง	ประมาณเดือนละครั้ง	น้อยกว่าเดือนละครั้ง	ไม่เคยฟังเลย
1) ฟังเพลงพร้อมเปิดเนื้อร้อง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) ฟังเพลงโดยไม่เปิดเนื้อร้อง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) ฟังบทพูดจากในหนัง รายการโทรทัศน์ หรือวิดีโอ ออนไลน์ พร้อมเปิดซับไตเติล	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) ฟังบทพูดจากในหนัง รายการโทรทัศน์ หรือวิดีโอ ออนไลน์ โดยไม่เปิดซับไตเติล	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) ฟังบทพูดจากรายการวิทยุ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

อื่น ๆ โปรดระบุ (ถ้ามี)

* 23. ในเวลาว่าง คุณอ่านภาษาอังกฤษจากแหล่งต่าง ๆ เหล่านี้ บ่อยแค่ไหน

	แทบทุกวัน	ประมาณอาทิตย์ละครั้ง	ประมาณเดือนละครั้ง	น้อยกว่าเดือนละครั้ง	ไม่เคยเลย
1) หนังสือพิมพ์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) นิตยสาร (ประเภทใดก็ได้)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) การ์ตูน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) วารสารกรรม นิตยสาร เรื่องแต่ง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) วารสารกรรมจากเรื่องจริง บทความด้านวิชาชีพหรือ วิชาการ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) คู่มือและคำอธิบายสินค้า	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) อีเมลล์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) เว็บไซต์ต่าง ๆ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

อื่น ๆ โปรดระบุ (ถ้ามี)

19. กรุณาประเมินทักษะภาษาอังกฤษของคุณเอง ดังต่อไปนี้

	คล่องแคล่วดี	คล่องแคล่วพอประมาณ	กลางๆ	ยากลำบาก	แต่เพียงไม่กี่คำ	ไม่ได้เลย
1) ฉันพูดภาษาอังกฤษได้...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) ฉันอ่านภาษาอังกฤษได้...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) เวลามีคนพูดภาษาอังกฤษ ฉันเข้าใจได้...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 20. ภาษาอังกฤษสามารถเรียนรู้ได้จากทั้งในบทเรียนและในชีวิตประจำวัน ตัวอย่างเช่น ในที่ทำงานหรือจากกิจกรรมยามว่าง แล้วคุณเรียนภาษาอังกฤษจากที่ใด

- แต่ในบทเรียนเท่านั้น
- ส่วนใหญ่ในบทเรียน
- ในบทเรียนวิชาภาษาอังกฤษและแหล่งอื่น เท่า ๆ กัน
- นอกห้องเรียนเป็นส่วนใหญ่
- จากนอกห้องเรียนเท่านั้น
- ไม่มีที่กล่าวมาข้างต้น

แบบสำรวจ เรื่อง การเรียนภาษาอังกฤษของนักเรียนชาวไทย

ตอนที่ 4 การใช้ภาษาอังกฤษ

* 21. คุณใช้ภาษาอังกฤษมากที่สุดที่ไหน

สามารถเลือกตอบได้มากกว่าหนึ่งข้อ

- ที่โรงเรียนหรือเวลาเรียน
- ในเวลาว่าง
- ในที่ทำงาน
- ไม่ได้ใช้ภาษาอังกฤษเลย
- อื่น ๆ (โปรดระบุ)

* 24. ในเวลาว่าง คุณพูดภาษาอังกฤษในสถานการณ์ต่าง ๆ เหล่านี้ บ่อยแค่ไหน

	แทบทุกวัน	ประมาณอาทิตย์ละครั้ง	ประมาณเดือนละครั้ง	น้อยกว่าเดือนละครั้ง	ไม่เคยเลย
1) พูดกับเพื่อนชาวไทย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) พูดกับเพื่อนชาวต่างชาติ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) พูดกับนักท่องเที่ยวที่มาประเทศไทย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) เมื่อแสดงความรู้สึกเชิงลบ (เช่น สบถ หรือ ต่ำ)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) เมื่อแสดงความรู้สึกเชิงบวก (เช่น แสดงความรัก ความพอใจ)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

อื่น ๆ โปรดระบุ (ถ้ามี)

* 25. ข้อความต่อไปนี้เกี่ยวข้องกับ การใช้อินเทอร์เน็ตและการเล่นเกมสื่อกึ่งการอนิเมชันในเวลาว่าง

กิจกรรมใดบ้างในรายการต่อไปนี้ที่คุณใช้ภาษาอังกฤษ

	แทบทุกวัน	ประมาณอาทิตย์ละครั้ง	ประมาณเดือนละครั้ง	น้อยกว่าเดือนละครั้ง	ไม่เคยเลย
1) สืบค้นข้อมูล (เช่น ใน Google)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) อ่านหนังสือพิมพ์หรือข่าวบนอินเทอร์เน็ต	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) สั่งสินค้าหรือรับบริการต่าง ๆ บนอินเทอร์เน็ต	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) สนทนาด้วยการพูดทางอินเทอร์เน็ต (เช่น Skype)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) สนทนาด้วยการพิมพ์ทางอินเทอร์เน็ต (เช่น ในข้อความ หรือ แชท)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) ติดตามการสนทนาในกระทู้หรือบล็อก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) เล่นเกมบนอินเทอร์เน็ต	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) เล่นเกมคอมพิวเตอร์หรือเกมส์บังคับที่ไม่ได้ใช้อินเทอร์เน็ต	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

อื่น ๆ โปรดระบุ (ถ้ามี)

* 26. คุณมีความคิดเห็นอย่างไรต่อข้อความเหล่านี้ ซึ่งเกี่ยวข้องกับการใช้ภาษาอังกฤษของคุณ

โปรดกรอกข้อมูลจากความรู้สึกแรกที่คิดต่อข้อความนั้น

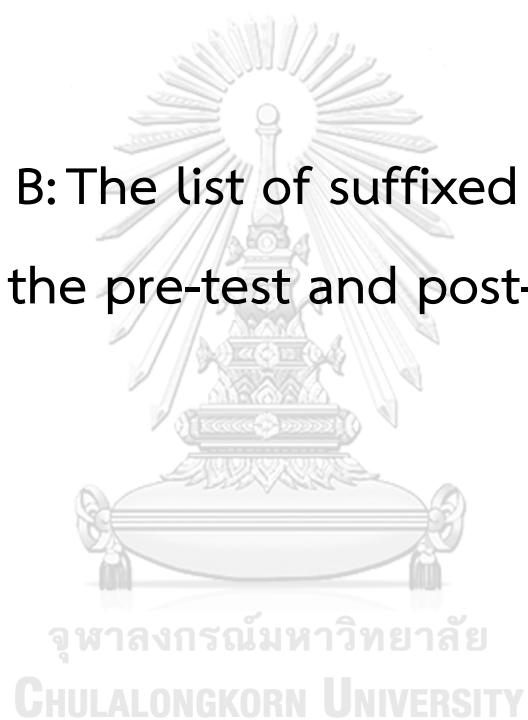
	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง	ไม่มีความเห็น
1) ฉันใช้ภาษาอังกฤษได้ คล่องแคล่วพอ ๆ กับภาษาแม่ ของฉัน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) ฉันใช้ภาษาอังกฤษเสมอ เมื่อมีโอกาส	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) ฉันใช้ภาษาอังกฤษเมื่อ จำเป็นเท่านั้น	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) การใช้ภาษาอังกฤษให้ดู คล่องแคล่วเป็นสิ่งที่ฉันคำนึง เสมอเวลาที่ใช้ภาษาอังกฤษ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) การใช้ภาษาอังกฤษเป็นเรื่อง ง่ายสำหรับเจ้าของภาษา มากกว่าคนที่ไม่ได้มี ภาษาอังกฤษเป็นภาษาแม่	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* 27. คุณใช้ภาษาอังกฤษบ่อยแค่ไหนด้วยเหตุผลต่าง ๆ ต่อไปนี้

พิจารณาจากโอกาสในการพูด อ่าน และ เขียน

	แทบทุกวัน	ประมาณอาทิตย์ละครั้ง	ประมาณเดือนละครั้ง	น้อยกว่าเดือนละครั้ง	ไม่เลย
1) เพื่อสื่อสารกับคนอื่น	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) เพื่อให้เรียนภาษาอังกฤษได้ดีขึ้น	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) เพื่อความบันเทิง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) เมื่อไม่มีทางเลือก	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) เพื่อสืบค้นข้อมูล	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) เพื่อใช้ในการทำงาน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) เพื่อใช้ในการศึกษา	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) เพื่อใช้ในกิจกรรมยาม ว่างหรือใช้ในหมู่เพื่อน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX B: The list of suffixed words used in
the pre-test and post-test



APPENDIX B: The list of suffixed words used in the pre-test and post-test

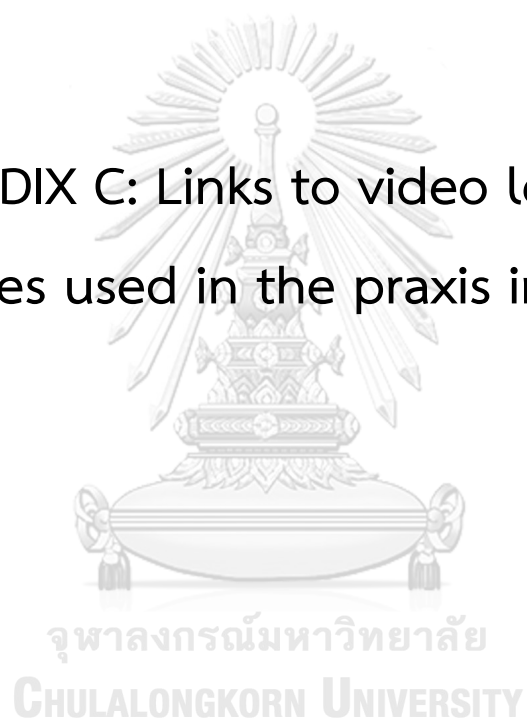
APPENDIX B1: The list of derivational suffixed words used as research items in the study presented with frequency from BNC (British National Corpus)

Types of suffixes	suffixes	words				
		successful (10564)	beautiful (8307)	careful (5013)	powerful (6962)	
Neutral	{-ful}					
	{-ness}	awareness (3517)	illness (3194)	consciousness (2529)	happiness (1603)	
	{-less}	endless (1512)	homeless (1043)	doubtless (835)	helpless (786)	
	{-ly}	usually (18711)	probably (26239)	actually (25221)	particularly (21509)	
Ultimate stressed	{-ee}	absentee (146)	trustee (880)	refugee (804)	trainee (607)	
	{-eer}	engineer (2199)	auctioneer (203)	mountaineer (75)	commandeer (23)	
	{-ese}	Japanese (5841)	Chinese (3969)	Portuguese (743)	Vietnamese (742)	
	{-aire}	questionnaire (1177)	millionaire (389)	doctrinaire (74)	billionaire (52)	
	{-tion}	education (25683)	situation (15573)	production (15313)	population (12859)	
Penultimate stressed	{-ial}	financial (16234)	industrial (11283)	official (9335)	commercial (7881)	
	{-eous}	outrageous (594)	advantageous (366)	courageous (358)	instantaneous (229)	
	{-ual}	intellectual (2946)	conceptual (1001)	contractual (875)	habitual (284)	
	{-al}	political (29541)	original (11065)	agricultural (3971)	abdominal (516)	
Antepenultimate stressed	{-ity}	community (22674)	authority (18091)	activity (11339)	responsibility (9023)	
	{-ate}	triangulate (3)	certificate (2842)	communicate (1497)	differentiate (501)	
	{-ify}	solidify (32)	personify (23)	detoxify (14)	objectify (14)	

APPENDIX B2: Two sets of suffixed word lists including base words and suffixed words. The words are ordered by the appearance of words on a computer screen.

Word list (Set1)		Word list (Set2)	
base words	suffixed words	base words	suffixed words
beauty	beautiful	success	successful
trust	trustee	absent	absentee
educate	education	product	production
agriculture	agricultural	politic	political
mountain	mountaineer	engine	engineer
industry	industrial	finance	financial
authorize	authority	commune	community
aware	awareness	conscious	consciousness
outrage	outrageous	courage	courageous
triangle	triangulate	certify	certificate
end	endless	home	homeless
China	Chinese	Japan	Japanese
solid	solidify	person	personify
usual	usually	probable	probably
question	questionnaire	million	millionaire
concept	conceptual	intellect	intellectual
power	powerful	care	careful
refuge	refugee	train	trainee
situate	situate	populate	population
abdomen	abdominal	origin	original
command	commandeer	auction	auctioneer
commerce	commercial	office	official
responsible	responsibility	active	activity
ill	illness	happy	happiness
advantage	advantageous	instant	instantaneous
different	differentiate	commune	communicate
help	helpless	doubt	doubtless
Vietnam	Vietnamese	Portugal	Portuguese
detox	detoxify	object	objectify
actual	actually	particular	particularly
billion	billionaire	doctrine	doctrinaire
habit	habitual	contract	contractual

APPENDIX C: Links to video lessons and
exercises used in the praxis intervention



APPENDIX C: Links to video lessons and exercises used in the praxis intervention

1) English After Class: The pronunciation of suffixed words (part1)

<https://drive.google.com/file/d/1p9YNIraJChcdHYqav9EiS09tdmq5iy1c/view?usp=sharing>

2) English After Class: The pronunciation of suffixed words (part2)

<https://drive.google.com/file/d/13-2UEWiOPdPr1MksUlt8EyWjMpfGyO50/view?usp=sharing>

3) English After Class: The pronunciation of suffixed words (part3)

<https://drive.google.com/file/d/1v9Cd581dwB5mpDhGYNvow4bacM--PcbS/view?usp=sharing>

4) Exercise for the intervention course (Part1) Ex. 1-1

<https://drive.google.com/file/d/1WDu1oHURaD5ZDfDJiZOCYT8fleKmC6tr/view?usp=sharing>

5) Exercise for the intervention course (Part1) Ex. 1-2

<https://drive.google.com/file/d/1F7DTKwDlw4jRxOf0UAddo30VE3twsXfp/view?usp=sharing>

6) Exercise for the intervention course (Part2) Ex. 2-1

<https://drive.google.com/file/d/17rZx2I5wXo4NEqkGRUcP9X6trmKoJVA7/view?usp=sharing>

7) Exercise for the intervention course (Part2) Ex. 2-2

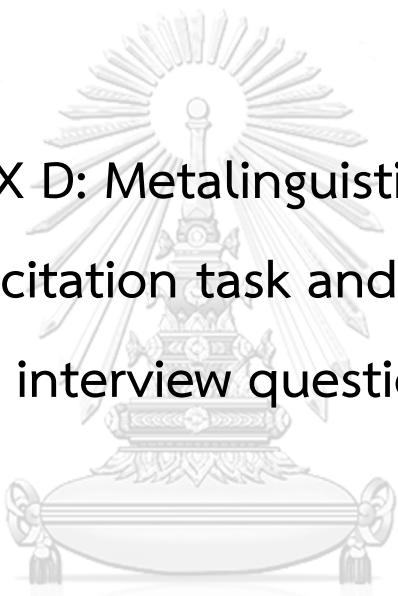
<https://drive.google.com/file/d/19sefablvb7F1EOrkjuD1Wx0BsUqllum/view?usp=sharing>

8) Exercise for the intervention course (Part3) Ex. 3-1

https://drive.google.com/file/d/1wYO_6rb9HoXOV3iDOLrp3XO-0iHGmA5g/view?usp=sharing

9) Exercise for the intervention course (Part3) Ex. 3-2

<https://drive.google.com/file/d/1CMu-7EsTTwXx36UzSMvBpvDeKMDULorj/view?usp=sharing>



APPENDIX D: Metalinguistic knowledge
elicitation task and list of
interview questions

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APPENDIX D: Metalinguistic knowledge elicitation task
and list of interview questions

คำชี้แจง

แบบสัมภาษณ์ฉบับนี้มีจุดมุ่งหมาย เพื่อศึกษาความรู้ทางภาษาศาสตร์เกี่ยวกับกฎการออกเสียงคำในภาษาอังกฤษ รวมถึงสอบถามความคิดเห็นเกี่ยวกับบทเรียนเรื่องการออกเสียงคำที่เติม suffix ในภาษาอังกฤษ เพื่อเป็นแนวทางในการปรับปรุงการเรียนการสอนการออกเสียงภาษาอังกฤษในอนาคต

ขอให้ยินดี ตอบคำถามตามความเป็นจริง เพราะคำตอบของนิตินิติมีประโยชน์และคุณค่าอย่างยิ่งต่อการพัฒนาการเรียนการสอนการออกเสียงในภาษาอังกฤษ และการตอบแบบสัมภาษณ์ครั้งนี้จะไม่มีผลเสียหรือผูกพันต่อตัวนิตินิติ ในทางใดทั้งสิ้น เพราะผู้วิจัยจะเสนอผลการศึกษาในภาพรวม

แบบสัมภาษณ์มีทั้งหมด 6 ข้อ ซึ่งจะถามเกี่ยวกับความรู้เรื่องการออกเสียงคำที่เติม suffix และให้นิตินิติประเมินการออกเสียงของตัวเองทั้งช่วงก่อนเรียนและหลังเรียนรู้กฎการออกเสียง รวมถึงสามารถแสดงความคิดเห็นต่อกิจกรรมการเรียนรู้เรื่องการออกเสียงคำที่เติม suffix ที่นิตินิติได้เข้าร่วมไป

เพื่อความสะดวกในการเก็บข้อมูล ผู้วิจัยขออนุญาตบันทึกเสียงของนิตินิติเอาไว้เพื่อนำไปวิเคราะห์ต่อ และจะทำลายทิ้งเมื่องานวิจัยนี้สิ้นสุด

ขอบพระคุณที่ให้ความร่วมมืออย่างดี

แบบทดสอบวัดความรู้ไวยากรณ์

อ่านคำเหล่านี้ แล้วอธิบายว่าตอนที่ออกเสียงคำต่อไปนี้ นิสิตคิดถึงอะไร มีวิธีการอย่างไร ถึงออกเสียงออกมาได้เป็นแบบนั้น

- 1) probably
- 2) objectify
- 3) doctrinaire
- 4) political
- 5) financial
- 6) consciousness
- 7) instantaneous
- 8) Japanese



คำถามสัมภาษณ์

- 1) ตอนที่ทำแบบทดสอบอ่านออกเสียง นิสิตนึกถึงอะไร ใช้วิธีการอย่างไรให้สามารถทำแบบทดสอบจนสำเร็จ
- 2) แบบทดสอบออกเสียงมีส่วนยากและส่วนง่ายตรงไหนบ้าง และเพราะเหตุใดจึงคิดเช่นนั้น
- 3) หากเปรียบเทียบการออกเสียงของตนตอนทำแบบทดสอบก่อนเรียนกับตอนทำแบบทดสอบหลังเรียน นิสิตคิดว่าการออกเสียงของตัวเองมีการเปลี่ยนแปลงหรือไม่
- 4) นิสิตคิดว่าสิ่งใดจะช่วยให้นิสิตสามารถทำแบบทดสอบอ่านออกเสียงได้ดีขึ้น
- 5) ขอให้นิสิตอธิบายความรู้ที่เกี่ยวกับเรื่อง affix เท่าที่สามารถอธิบายได้
- 6) ขอให้นิสิตยกตัวอย่างคำที่เติม suffix พร้อมอธิบายหลักการออกเสียงคำที่นิสิตยกตัวอย่างมา

APPENDIX E: Participants' pronunciation of
suffixed words



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APPENDIX D: Participants' pronunciation of suffixed words

endless ['end ləs] (| -)

Patterns	BW end [end]	SW	MP
participants		-	
H01	en ^m		'end ^m 'les ^h
H02	en ^h	'end ləs	
H03	en ^m		'end ^m 'les ^h
H04	end		'end ^h 'les ^l
H05	en ^m	'end ləs	
H06	end	'end ləs	
H07	en ^m	'end ləs	
H08	en ^m	'end ləs	'end ^m 'les ^l
H09	end		
H10	end		'end ^h 'les ^l
H11	end		'end ^m 'les ^l
H12	en	'end ləs	
H13	en		'end ^m 'les ^l
H14	en	'end ləs	
H15	end		'end ^m 'les ^l

Patterns	BW end [end]	SW	MP
participants		-	
L01	en		'end 'le ^h
L02	an		'æn ^m 'lɪf
L03	en		'ækt ^l 'les ^h
L04	en ^h	'end ^h ləs	
L05	end		'en ^h dəls
L06	erd ^l	en 'les ^h	
L07	ɪʃ ^h		'ɪʃ ^h 'le ^t
L08	end ^l	'end ləs	
L09	ɛɪn	'end ləs	'en ^m de 'le ^f
L10	en		'end ^m 'res ^h
L11	end	'end ləs	
L12	en ^m		
L13	en ^m	'end ləs	
L14	end	'end ləs	
L15	end		ən 'dɪs

“H” = “High proficiency group”; H01 means participant number 1 in the high proficiency group. “L” = “Low proficiency group”; L01 means participants 1 in the low proficiency group.
 “BW” = “Base words”; “SW” = “Suffixed words”; “MP” = “Mispronunciation”
 The column(s) with grey shading = the expected pattern(s) or pattern(s) expected to be in accordance with the English accentual system affected by suffixes.

helpless ['help ləs] (| -)

participants	Patterns	BW		SW		MP
		help [help]	help	-		
H01	help ^h		-			
H02	help ^h		'help ləs		'help ^m 'les'	
H03	help ^h					'help ^h 'hes'
H04	help				'help 'les'	
H05	help					'help nəs
H06	help ^h		'help ləs			'help læt
H07	help ^h				'help ^h 'les'	
H08	help ^h				'help ^h 'les'	
H09	help				'help ^h 'les'	
H10	help				'help ^h 'les'	
H11	help ^h					
H12	help		'help ləs			
H13	help		'help ləs			
H14	help ^h				'help ^h 'les'	
H15	help		'help ləs			

participants	Patterns	BW		SW		MP
		help [help]	help	-		
L01	help ^h		-			
L02	hæp ^h	MP			'help ^h 'ples ^h	
L03	help ^h		'help ^h ləs			'hæə pəl
L04	help ^h		'help ^h ləs			
L05	help		'help ləs			
L06	help ^h					'help ^h læt'
L07	help ^h				'help ^h 'les'	
L08	help ^h				'help ^h 'les'	
L09	help		'help ^h ləs			
L10	help ^h					help ^h pə 'li:j ^h
L11	help ^h		'help ləs			
L12	help ^h		'help ^h ləs			
L13	help ^h		'help ^h ləs			
L14	help				'help 'ples	
L15	help					'hel 'plis

“H” = “High proficiency group”; H01 means participant number 1 in the high proficiency group. “L” = “Low proficiency group”; L01 means participants 1 in the low proficiency group.
 “BW” = “Base words”; “SW” = “Suffixed words”; “MP” = “Mispronunciation”
 The column(s) with grey shading = the expected pattern(s) or pattern(s) expected to be in accordance with the English accentual system affected by suffixes.

illness [ˈɪl nes] (| -)

Patterns	BW		SW		MP
	ill [ɪl]	nes	ill [ɪl]	nes	
participants					
H01	ɪl ^m		-		
H02	ɪl				'ɪl ^m 'nes ^h
H03	ɪl ^m				
H04	ɪl				'ɪl ^m 'nes'
H05	ɪl				
H06	ɪl				
H07	ɪl ^m				
H08	ɪl ^m				'ɪl ^m 'nes'
H09	ɪl ^m				
H10	ɪl				
H11	ɪl ^m				
H12	ɪl				
H13	ɪl				'ɪl ^m 'nes'
H14	ɪl				'ɪl ^m 'nes'
H15	ɪl ^m				'ɪl ^m 'nes'

Patterns	BW		SW		MP
	ill [ɪl]	nes	ill [ɪl]	nes	
participants					
L01	ɪl ^m		-		
L02	ɪl ^h	MP			'ɪl ^h ne
L03	ɪl ^m	MP			'ɪl ^m 'nes'
L04	ɪl ^m				'ɪl ^h nes
L05	ɪl				
L06	ɪl ^m				
L07	ɪl ^m	MP			ɪl 'nɪʃ
L08	ɪl ^m	MP			'ɪl ^m 'nɪʃ
L09	ɪl	MP			
L10	ɪl ^m				'ɪl ^m lɪʃ
L11	ɪl				
L12	ɪl ^m				'ɪl 'nɪs
L13	ɪl ^m				
L14	ɪl				
L15	ɪl				'ɪl lə nes

“H” = “High proficiency group”; H01 means participant number 1 in the high proficiency group. “L” = “Low proficiency group”; L01 means participants 1 in the low proficiency group.
 “BW” = “Base words”; “SW” = “Suffixed words”; “MP” = “Mispronunciation”
 The column(s) with grey shading = the expected pattern(s) or pattern(s) expected to be in accordance with the English accentual system affected by suffixes.

careful ['keə feɪ] (| -)

Patterns	BW		SW		MP
	care [keə]		-		
participants			-		
H01	keə ^m				
H02	keər		'keə feɪ		
H03	keə ^m		'keə feɪ		
H04	keə		'keə feɪ		
H05	keər		'keə feɪ		
H06	keə		'keə feɪ		
H07	keər		'keər feɪ		
H08	keə ^m			'keə ^m 'fʊl ^m	
H09	keər			'keə 'fʊl	
H10	keə		'keə feɪ	'keə ^m 'fʊl ^m	
H11	keə ^m				
H12	keər		'keə feɪ		
H13	keər		'keə feɪ		
H14	keər			'keə 'fʊl	
H15	keər		'keə feɪ		

Patterns	BW		SW		MP
	care [keə]		-		
participants			-		
L01	keə ^m				
L02	keə ^h	MP		'keə ^m 'fʊl ^m	
L03	keə ^m	MP			'keə ^m 'fʊl ^m
L04	keə ^m			'keə ^m 'fʊl ^m	
L05	keə		keə feɪ		
L06	keə ^m			'keə ^m 'fʊl ^m	
L07	keə ^m			'keə ^m 'fʊl ^m	
L08	keə			'keə ^m 'fʊl ^m	
L09	keə			'keər 'fʊl	
L10	keə ^m			'keə ^m 'fʊl ^m	
L11	keər			'keər 'fʊl	
L12	keə			'keə 'fʊl	
L13	keə ^m			'keə ^m 'fʊl ^m	
L14	keər		'keə ^h feɪ		
L15	keər		'keə ^h feɪ		

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doubtless ['daʊt les] (| -)

participants	Patterns	BW		SW		MP
		doubt	[daʊt]	-	-	
H01	dʌb ^h	doubt	MP			'dɒp 'les ^h
H02	dəʊt			'daʊt les		
H03	dʌb		MP			'dɒp les
H04	dəʊt			'daʊt les		
H05	dɒb ^h		MP			'dɒp les
H06	dʌb		MP			'dʌp les
H07	dəʊt					'dʌb ^h 'les ^l
H08	dʌb ^h		MP			'dʌb les
H09	dəʊt ^h					
H10	dəʊt					
H11	dəʊt ^h			'daʊt les		
H12	dəʊt			'daʊt les		
H13	dəʊt					'dʌb 'les
H14	dʌb ^h		MP			'dʌb ^h 'les ^l
H15	dʌbt		MP			'dʌp les

participants	Patterns	BW		SW		MP
		doubt	[daʊt]	-	-	
L01	dʌb ^h	doubt	MP			'daʊt ^h let
L02	'dɒt ^h 'tʃf		MP			dɒ bə 'rɑf
L03	tʌt ^h		MP			'bɒt ^h let
L04	dʌb ^h		MP			'dʌp ^h les
L05	dʌb		MP			'dʌb let
L06	dʒæb ^h		MP			'dʒæm 'let
L07	'dɒm 'bɪf		MP			'dɒm 'bɪf let
L08	dʌbt ^h		MP			'dʌp let
L09	dʌp		MP			'dʌp les
L10	dəʊt					'dɒs tʒən
L11	dʌp		MP			'dʌp les
L12	dʌb ^h		MP			'dʌs ^h 'les ^l
L13	dʌn ^h		MP			'dʌn ^h lest
L14	dɒbt		MP			'dɒp les
L15	dʌbt		MP			'bʌp tes

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homeless ['həʊm ləs] (| -)

Patterns	BW		SW		MP
	home [həʊm]		-		
participants					
H01	həʊm		həʊm	'les ^h	
H02	həʊm		həʊm	'les	
H03	həʊm		həʊm	'les ^h	'həʊm 'les ^h
H04	həʊm		həʊm	'les	'həʊm 'les
H05	həʊm		həʊm	'les	
H06	həʊm		həʊm	'les	
H07	həʊm		həʊm	'les	'həʊm rəs
H08	həʊm		həʊm	'les	
H09	həʊm		həʊm	'les	
H10	həʊm		həʊm	'les	
H11	həʊm		həʊm	'les	
H12	həʊm		həʊm	'les	
H13	həʊm		həʊm	'les	'həʊm 'les ^h
H14	həʊm		həʊm	'les	
H15	həʊm		həʊm	'les	

Patterns	BW		SW		MP
	home [həʊm]		-		
participants					
L01	həʊm		həʊm	les	
L02	həʊm		həʊm	les	
L03	həʊm		həʊm	les ^h	'həʊm 'les ^h
L04	həʊm		həʊm	les	
L05	həʊm		həʊm	les	
L06	həʊm		həʊm	let	
L07	həʊm		həʊm	les	'həʊm 'les ^h
L08	həʊm		həʊm	les	
L09	həʊm		həʊm	les	
L10	həʊm		həʊm	les	'həʊm 'les
L11	həʊm		həʊm	les	
L12	həʊm		həʊm	les	
L13	həʊm		həʊm	les	
L14	həʊm		həʊm	les	
L15	həʊm		həʊm	les	'həʊm 'les ^h

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Chinese [tʃai 'ni:z] (- |) or (| |)

participants	Patterns	BW		SW		MP
		China [tʃai.ne]		-		
H01		tʃai ^m 'haf		tʃai ^m 'ni:sh		
H02		tʃai ^m 'haf		tʃai ^m 'ni:sh		
H03		tʃai ^m 'haf	-	tʃai ^m 'ni:sh		
H04		tʃai ^h na	-			tʃai nis
H05		tʃai na	-			tʃai nis
H06		tʃai na	-			tʃai nis
H07		tʃai na	-			tʃai nis
H08		tʃai ^m 'haf		tʃai ^m 'ni:sh		
H09		tʃai na	-	tʃai ^m 'ni:sh		tʃai nis
H10		tʃai ^h na	-	tʃai ^m 'ni:sh		
H11		tʃai 'haf	-	tʃai ^m 'ni:sh		
H12		tʃai na	-			tʃai nis
H13		tʃai na	-	tʃai ^m 'ni:sh		
H14		tʃai na	-			tʃai nis
H15		tʃai na	-			tʃai nis

participants	Patterns	BW		SW		MP
		China [tʃai.ne]		-		
L01		tʃai na	-			tʃai ^m 'ni:sh
L02		tʃai 'haf	-	tʃai 'nis		
L03		tʃai ^m 'haf				tʃai ^m 'haf 'ni:sh
L04		tʃai na	-			tʃai ^h nt
L05		tʃai na	-	tʃai 'nis		
L06		tʃai ^m 'haf		tʃai ^m 'ni:sh		
L07		tʃai ^h na	-			tʃai ^h 'ni
L08		tʃai na	-			tʃai ^m 'ni:sh
L09		tʃai na	-	tʃai ^f 'hi:z		
L10		tʃai na	-			tʃai ^m 'ni:sh
L11		tʃai na	-			
L12		tʃai na	-	tʃə 'nis		
L13		tʃai na	-	tʃai ^m 'ni:sh		tʃai nis
L14		tʃai na	-			
L15		tʃai na	-	tʃai ^m 'ni:sh		tʃai nis

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trustee [ˌtrʌs 'ti:] (- |) or (| |)

participants	Patterns	BW		SW		MP
		trust [trʌst]				
H01	trʌstʰ					
H02	trʌstʰ					'trʌsʰ 'ti:f
H03	trʌsʰ					
H04	trʌst					'trʌs ti
H05	trʌs					'trʌs ti
H06	trʌs					'trʌs ti
H07	trʌs					'trʌs ti
H08	trʌstʰ					'trʌsʰ ti
H09	trʌst					'trʌsʰ ti
H10	trʌs					'trʌsʰ ti
H11	trʌstʰ					
H12	trʌʃ	MP				'trʌs re
H13	trʌst					'trʌsʰ ti
H14	trʌs					'trʌs ti
H15	trʌst					'trʌs ti

participants	Patterns	BW		SW		MP
		trust [trʌst]				
L01	tʌt					'tʌtʰ 'ti
L02	tʌʃʰ	MP				'tʌtʰ 'tef
L03	trʌtʰ	MP				'tʌtʰ 'tʃ
L04	trʌt	MP				'trʌtʰ ti
L05	trʌs					'trʌtʰ 'tri
L06	trʌs					trʌtʰ
L07	trʌtʰ	MP				'tʌ ti
L08	tʌsʰ					'tʌs ti
L09	trʌsʰ					'trʌs ti
L10	tʌsʰ	MP				'trʌtʰ 'trʃ
L11	trʌsʰ					'trʌs ti
L12	tʌksʰ	MP				'tʌkʰ 'tiʃʰ
L13	trʌsʰ					'trʌs ti
L14	trʌsʰ					'trʌs ti
L15	trust	MP				'trʌd

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trainee [ˌtreɪni:] (- | -) or (| |)

Patterns	BW		SW		MP
	train [treɪn]				
participants					
H01	treɪn ^m				
H02	treɪn				
H03	treɪn ^m				
H04	treɪn				
H05	treɪn				
H06	treɪn				
H07	treɪn				
H08	treɪn ^m				
H09	treɪn				
H10	treɪn				
H11	treɪn ^m				
H12	treɪn				
H13	treɪn				
H14	treɪn				
H15	treɪn ^m				

Patterns	BW		SW		MP
	train [treɪn]				
participants					
L01	treɪn ^m				
L02	tə'dʒuːtʰ	MP			
L03	ten	MP			
L04	treɪn ^m				
L05	treɪn				
L06	treɪn ^m				
L07	treɪn ^m				
L08	treɪn				
L09	treɪn				
L10	treɪn ^m				
L11	teɪn				
L12	teɪn	MP			
L13	treɪn				
L14	treɪn				
L15	tæɪn	MP			

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actually [ˈæk tʃuə li] (| - -)

participants	Patterns	BW				SW				MP
		actual [ˈæk tʃuə li]								
H01	'ækʰ tʃuəl	- -	- -	- -	-	- -	- -	- -		
H02	'ækʰ tʃuəlʰ				'ækʰ tʃuəlʰ li'					
H03	'ækʰ tʃuəlʰ				'ækʰ tʃuəlʰ li'					
H04	'æk tʃuəl	'æk tʃuəl li								
H05	'æk tʃəl	'æk tʃuəl li								
H06	'æk tʃuəl	'æk tʃuəl li								
H07	'ækʰ tʃuəlʰ									
H08	'ækʰ tʃuəlʰ	MP						æk tʃuəlʰ li'		ækʰ tʃuəlʰ ri'
H09	'æk tʃuəl									
H10	'ækʰ tʃuəlʰ									
H11	'ækʰ tʃuəlʰ				'ækʰ tʃuəlʰ li'					
H12	'æk tʃəl									
H13	'ækʰ tʃuəl									
H14	'æk tʃuəl							'ækʰ tʃuəlʰ li		
H15	'æk tʃəl									

participants	Patterns	BW				SW				MP
		actual [ˈæk tʃuə li]								
L01	'ækʰ tuəm	- -	- -	- -	-	- -	- -	- -		'ækʰ tuəlʰ li'
L02	a 'kɒm 'teɪtʰ									Λ 'kɒm te 'li'
L03	'ækʰ tʃuəl	'æk tʃuəl li								
L04	'ækʰ tʃuəl									
L05	'ækʰ tʃuəl	'æk tʃuəl li								
L06	'ækʰ tʃuəl									
L07	'ækʰ tʃuəl	MP								
L08	'ækʰ tʃuəl	MP								'ækʰ tuəlʰ li'
L09	'ækʰ tʃuəl									æk tʃuəlʰ li'
L10	'ækʰ tʃuəl									'ækʰ tuəlʰ li'
L11	'ækʰ tuəm	MP								
L12	'ækʰ tuəlʰ	MP								
L13	'ækʰ tʃuəlʰ	MP								
L14	'æk tʃuəl							æk tʃuəl li		
L15	'ækʰ tʃuəl	MP						æk tʃuəl li		

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beautiful ['bju: t̩ fəl] (| - -)

Patterns	BW		SW					MP
	beauty ['bju: t̩]		-	- -	- -	-		
H01	bju: t̩f	-				'bju: t̩ f'ulm		
H02	'bju: t̩	-	'bju: t̩ fəl					
H03	'bju: t̩f		'bju: t̩ fəl					
H04	'bju: t̩ r̩	-	'bju: t̩ fəl					
H05	'bju: t̩	-	'bju: t̩ fəl					
H06	'bju: t̩	-				'bju: t̩ f'ul		
H07	'bju: r̩	-				'bju: t̩ f'ul		
H08	'bju: t̩f					'bju: t̩ f'ulm		
H09	'bju: t̩	-	'bju: t̩ fəl					
H10	'bju: t̩	-				'bju: t̩ f'ulm		
H11	'bju: t̩	-				'bju: t̩ f'ulm		
H12	'bju: r̩	-	'bju: t̩ fəl					
H13	'bju: t̩f					'bju: t̩ f'ulm		
H14	'bju: t̩	-				'bju: t̩ f'ul		'bju: t̩ f'ul
H15	'bju: r̩	-	'bju: t̩ fəl					

Patterns	BW		SW					MP
	beauty ['bju: t̩]		-	- -	- -	-		
L01	'bju: t̩f					'bju: t̩ f'ulm		
L02	'bju: t̩	-	'bju: t̩ fəl					
L03	'bju: t̩f							'bju: t̩ f'ulm
L04	'bju: t̩	-				'bju: t̩ f'ulm		
L05	'bju: t̩	-	'bju: t̩ fəl					
L06	bju: t̩f	-				'bju: t̩ f'ulm		
L07	'bju: t̩f							bju: t̩f f'ulm
L08	'bju: t̩	-	'bju: t̩ fəl					
L09	'bju: t̩	-	'bju: t̩ fəl					
L10	'bju: t̩	-				'bju: t̩ f'ul		
L11	'bju: t̩	-	'bju: t̩ fəl					
L12	bju: t̩f	-						bju: t̩f f'ulm
L13	'bju: t̩	-	'bju: t̩ fəl					
L14	'bju: t̩ r̩	-	'bju: t̩ fəl					
L15	'bju: t̩	-						'blæ: t̩ fəl

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powerful ['paʊ ə fəʊl] (| - -)

Patterns participants	BW		SW					MP
	power [paʊ ə]	power [paʊ ə]	- -	- -	- -	-	-	
H01	paʊ 'wɜːf	-				-		
H02	'paʊm 'wɜːf		'paʊ ə fəʊl			'paʊh ə 'fʊlm		
H03	'paʊm 'wɜːf					'paʊm ə 'fʊlm		
H04	'paʊh vɜː	MP	'paʊ ə fəʊl					
H05	'paʊ wə	-	'paʊ ə fəʊl					
H06	'paʊ wə	-	'paʊ ə fəʊl					
H07	'paʊ wɛr	-	'paʊ ə fəʊl					
H08	'paʊm 'wɜːf					'paʊh ə 'fʊlm		
H09	'paʊh wə	-	'paʊ ə fəʊl					
H10	'paʊ vɜː	MP				'paʊ ə 'fʊl		
H11	'paʊm 'wɜːf					'paʊm ə 'fʊlm		
H12	'paʊ wə	-	'paʊ ə fəʊl					
H13	'paʊ ɛr	-	'paʊ ə fəʊl					
H14	'paʊ wə	-						'paʊ 'wɜː 'fʊl
H15	'paʊ wɛr	-				'paʊh ə 'fʊlm		

Patterns participants	BW		SW					MP
	power [paʊ ə]	power [paʊ ə]	- -	- -	- -	-	-	
L01	'paʊm 'wɜːf					-		
L02	'pɔːm 'wɜːf	MP				'paʊh ə 'fʊlm		'pɔːm 'rɔːm 'fɪ
L03	paʊ 'wɜːf	-				'paʊm ə 'fʊlm		
L04	'paʊh wə					'paʊh ə 'fʊlf		
L05	'paʊ wɛr	-				'paʊh ə 'fʊlf		
L06	'paʊm 'wɜːf					'paʊh ə 'fʊlm		
L07	'paʊm 'wɜːf					'paʊh ə 'fʊlm		
L08	'paʊ wɛr	-	'paʊ ə fəʊl					
L09	'paʊ wɛr	-				'paʊh ə 'fʊlm		
L10	'paʊ wə	-				'paʊh ə 'fʊlm		
L11	'paʊ wɛr	-				'paʊm 'wɜːf fəʊl		
L12	'paʊm 'wɜːf							paʊ 'wɜːf 'fʊlm
L13	'paʊ wə	-	'paʊ ə fəʊl					
L14	'paʊ wɛr	-	'paʊ ə fəʊl					
L15	'plaʊ wɛr	MP						'plaʊ ə 'fʊl

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usually [ˈjuː ʒuə li] (| - -)

participants	Patterns	BW		SW						MP		
		usual [ˈjuː ʒuə li]		- -	- -	--	-	-	-			
H01	jə tʃuelf											
H02	jə tʃuelf											
H03	ˈjuː tʃuelf											
H04	ˈjuː tʃuelf											
H05	ˈjuː tʃal											
H06	ˈjuː tʃuelf											
H07	ˈjuː tʃuelf											
H08	ˈjuː tʃuelf											
H09	ˈjuː tʃuelf											
H10	ˈjuː ʒuə li											
H11	jə tʃuelf											
H12	ˈjuː tʃuelf											
H13	ˈjuː ʒuə li											
H14	ˈjuː tʃuelf											
H15	ˈjuː tʃuelf											

participants	Patterns	BW		SW						MP		
		usual [ˈjuː ʒuə li]		- -	- -	--	-	-	-			
L01	ˈlɪp tʃuə m											
L02	ˈjuː tʃuə m											
L03	ˈlɪp tʃuə m											
L04	ˈjuː tʃuə m											
L05	ˈjuː tʃuə m											
L06	ˈlɪp tʃuə m											
L07	ˈlɪp tʃuə m											
L08	ˈlɪp tʃuə m											
L09	ˈlɪp tʃuə m											
L10	ˈjuː tʃuə m											
L11	ˈjuː tʃuə m											
L12	ˈjuː tʃuə m											
L13	ˈjuː tʃuə m											
L14	ˈjuː tʃuə m											
L15	ˈlɪp tʃuə m											

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consciousness ['kɒn ʃəs nə:s] (| - -)

Patterns participants	BW conscious ['kɒn ʃəs]		SW					MP		
	conscious ['kɒn ʃəs]	conscious ['kɒn ʃəs]	- -	- -	- -	-	-		-	
H01	'kɒn ^m tʃɪəʃ ^h									
H02	kən 'sɪə nə:s	MP								kən 'sɪə nə:s
H03	'kɒn ^m tʃɪəʃ ^h									kən 'sɪəʃ nə:t
H04	kən 'ʃɪəs	-								kən 'ʃɪəʃ nə:t
H05	'kɒn ^m 'ʃɪəs ^f									
H06	'kɒn ʃəs	-	'kɒn ʃəs nə:s							
H07	kən 'sɪə ʃəs	MP								kən 'sɪ ʃəs nə:t
H08	'kɒn ^m tʃɪəʃ ^h									'kɒn ^m 'ʃɪəs ^h 'hesl
H09	'kɒn ^m 'sɪəs	MP								
H10	'kɒn ʃəs	-		kən 'sɪəs nə:s						
H11	'kɒn ^m tʃɪəʃ ^h									
H12	'kɒn ^h ʃəs	-	'kɒn ʃəs nə:s							
H13	'kɒn ^h ʃəs	-								
H14	kɒn 'saɪ ^h dʒə 'ɪrəs	MP								kən 'saɪ ^h dʒə 'ɪrəs ^h 'nesl
H15	kən 'ʃɪəs ^f	-								

Patterns participants	BW conscious ['kɒn ʃəs]		SW					MP		
	conscious ['kɒn ʃəs]	conscious ['kɒn ʃəs]	- -	- -	- -	-	-		-	
L01	'kɒn ^m tʃɪəʃ ^h									'kɒn ^m 'ʃɪəʃ nə:t
L02	'kɒʃ ^h 'neɪl ^m	MP								'kɒʃ ^h sɪ 'neɪl ^m ə 'lɪf
L03	'kɒn ^m 'sek ^h tʃɪəʃ ^f	MP								kɒn ^m 'sek ^h tʃɪəʃ ^f 'nɪf
L04	kəns 'ʃɪəs ^f	-								kən 'ʃɪəʃ ^h nə:s
L05	'kɒn ^m 'sɔɪl ^m	MP								kɒn 'sɔ ^h nə:s
L06	kən 'ʃɪəʃ ^w	MP								'kɒn ʃə nə:s
L07	'kɒn ^m sɪ 'u ^h	MP								'kɒn ^m sɪ 'u ^h 'hesl
L08	kɒn ^m sɪ 'ʒɪf	MP								'kɒn ^m sɪ 'ʒɪf 'hesl
L09	'kɒn ^m 'sɪəs ^h	MP								kən 'saɪ ^h ən 'hesl
L10	kən 'saɪ əs	MP								kən 'saɪ ^h ən 'neɪʃ
L11	'kɒns	MP								'kɒn ^m 'ʃɪəʃ nə:s
L12	kən 'sek ^h 'lɪʃ	MP								kən sɪ 'lɪʃ 'hesl
L13	kən 'sɪ ^h 'ʃæn	MP								kən 'sɪ ^h 'ʃæn nə:s
L14	'kɒn ^h sɪ əs	MP								kən 'saɪ ^h ən nə:s
L15	'kɒn ^h ses	MP								'kɒn sə nə:s

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happiness [ˈhæ pi nəs] (| - -)

participants	Patterns		BW					SW					MP
	happy [ˈhæ pi]		- -	- -	- -	-	-	-					
H01	'hæp' pi												
H02	'hæp pi		'hæp pi nəs				'hæp pi 'nes'						
H03	'hæp' pi		'hæp pi nəs										
H04	'hæp pi						'hæp pi 'nes						
H05	'hæp pi		'hæp pi nəs										
H06	'hæp pi		'hæp pi nəs										
H07	'hæp pi		'hæp pi nəs										
H08	'hæp' pi												
H09	'hæp pi		'hæp pi nəs								'hæp' pi nəs		
H10	'hæp pi		'hæp pi nəs										
H11	'hæp' pi		'hæp pi nəs										
H12	'hæp pi		'hæp pi nəs										
H13	'hæp pi		'hæp pi nəs										
H14	'hæp pi		'hæp pi nəs				'hæp pi 'nes						
H15	'hæp pi		'hæp pi nəs										

participants	Patterns		BW					SW					MP
	happy [ˈhæ pi]		- -	- -	- -	-	-	-					
L01	'hæp pi		'hæp pi nəs										
L02	'hæp pi												
L03	'hæp' pi												'hæp' pi 'nis'
L04	'hæp pi						'hæp pi 'nes'						
L05	'hæp pi		'hæp pi nəs										
L06	'hæp pi		'hæp pi nəs										
L07	'hæp' pi												
L08	'hæp pi		'hæp pi nəs								'hæp' pi nəs		
L09	'hæp pi		'hæp pi nəs										
L10	'hæp pi												'hæp pi neʃ
L11	'hæp pi		'hæp pi nəs										
L12	'hæp pi												
L13	'hæp pi		'hæp pi nəs										'hæp pi net
L14	'hæp pi		'hæp pi nəs										
L15	'hæp pi						'hæp pi 'nes'						

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probably ['prɒ bə bli] (| - -)

Participants	BW		SW					MP	
	probable	['prɒ bə bli]	- -	- -	- -	-	-		-
H01	'prɒb ə 'bɪf	-			prɒ bə 'bɪf	-	-	-	
H02	prə 'blɑː bəl	- -	'prɒb ə bli						
H03	'prɒm 'beɪm 'bɪf					'prɒm bə 'bɪf			
H04	prə 'bleɪ bə bəl	MP		prə 'be bli					
H05	'prɒ bəl	MP							'prɒb ʔə li
H06	prə 'bɑː bəl	- -		prɒ 'bɑ bli					
H07	'prɒb ə 'bɪf	-				'prɒb bə 'bɪf			
H08	prə bə 'bɪf	- -						prə 'blɑm 'bɪf	
H09	'prɒb ə bəl	- -							prə 'beɪ bə li
H10	prə 'bæː bəl	- -	'prɒb ə bli						
H11	'prɒb ə 'bɪf	-				'prɒb ə 'bɪf			
H12	'prɒb ə bəl	- -	'prɒb ə bli						
H13	prə 'be bəl	- -	'prɒb ə bli						'prɒp ə bli
H14	'prɒ pə bəl	MP							'prɒb ʔə li
H15	'prɒb ə bəl	- -							

Participants	BW		SW					MP	
	probable	['prɒ bə bli]	- -	- -	- -	-	-		-
L01	'prɒm bə 'bɪf	-				'prɒm bə 'bɪf			
L02	'pɒʃ sɪ 'bɪf	MP							'pɒʃ sɪ bə 'lɪf
L03	'prɒm də 'bɪf	MP							prɒ 'rɑː bɪ 'tɪf
L04	prɒ 'bɑː bəl	- -							
L05	prɒ 'eɪ bəl	- -							prɒb ʔə bli
L06	'prɒm 'beɪm 'bɪf	MP							
L07	prɒ 'bæːb 'bɪf	MP							'prɒm bə la 'lɪf
L08	'prɒb bəl	MP				'prɒb ə 'bɪf			
L09	'prɒ 'bɑː bəl								'prɒb ʔə 'blɑːm
L10	'prɒm 'bɑː bɪle	MP		prɒ 'be bli					
L11	'prɒ bə bəl	- -	'prɒb ə bli						
L12	'prɒm 'beɪm 'bɪf								
L13	prə 'bɑː bəl	- -		prə 'be li					
L14	prə bə 'eɪ bəl	MP							prə bə 'be li
L15	prə 'beɪ bəl	- -		prə 'be bli					

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awareness [ə 'weə nəʃ] (- | -)

Patterns participants	BW		SW					MP	
	aware [ə 'weə]		- -	- -	- -	-	- -		-
H01	ə 'weə	-	- -						
H02	ə 'weər	-	ə 'weə nəʃ					ə 'weəm 'nes ^h	
H03	ə 'weər	-							
H04	ə 'veər	MP						ə 'weəm 'nes ^h	
H05	ə 'weər	-							
H06	ə 'weər	-							
H07	ə 'weər ^m	-							
H08	ə 'weər ^m	-							
H09	ə 'weəm	-							
H10	ə 'veər	MP							
H11	ə 'væəm	MP							
H12	ə 'weər ^m	-							
H13	ə 'weər	-							
H14	ə 'weə	-							
H15	ə 'weər ^m	-							

Patterns participants	BW		SW					MP	
	aware [ə 'weə]		- -	- -	- -	-	- -		-
L01	ə 'weəm	-	- -						
L02	ə 'wɜ:ʃ	MP	ə 'weə nəʃ						ə wə 'nes ^l
L03	ə 'weəm	-							ə 'weəm 'neɪ ^l
L04	ə 'wɜ:m	MP							ər 'wɜ:h nəʃ
L05	ə 'weəm	-							ə 'weəm 'nes ^h
L06	ə 'vɑ: m	MP							ə wə 'nes ^h
L07	ə 'wep ^h	MP							ə 'weɪm 'reɪm 'nes ^l
L08	'a 'weɪ	MP							ə wə 're ^h nəʃ
L09	ə 'weər ^m	-							
L10	ə 'weəm	-							
L11	ə 'weəm	-							
L12	'ɔ weəm	MP							ə wə 'nɪʃ
L13	ə 'wɔɪ ^m	MP							ə 'wɔɪm 'res ^l 'nɪʃ
L14	'ɔ weɪ	MP							ə 'wɔ:h rɪ nəʃ
L15	'a 'veɪ	MP							

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commercial [kə 'mɜ: ʃəl] (- | -)

participants	BW		SW							MP	
	Patterns	commerce [kə mɜ: s]	- -	- -	- -	-	-	-			
H01		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H02		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
H03		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H04		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H05		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H06		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H07		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H08		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H09		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H10		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H11		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H12		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
H13		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				kɒm 'mɜ:ʃ
H14		kɒm 'mɜ:ʃ	MP				'kɒm 'mɜ:ʃ				
H15		kəm 'mɜ:ʃ					'kɒm 'mɜ:ʃ				

participants	BW		SW							MP	
	Patterns	commerce [kə mɜ: s]	- -	- -	- -	-	-	-			
L01		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				
L02		'kæm ^h mɜ: 'lɪf					'kɒm ^m mɜ: 'tʃəl				'kæm ^h mɜ: 'lɪf
L03		'kɒm ^m mɜ: 'dʒ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'dʒ
L04		'kɒm ^h mɜ: 'rɛd					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'rɛd
L05		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L06		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L07		'kɒm ^m mɜ: 'rɛɪs					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'rɛɪs
L08		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L09		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L10		'kɒm ^m mɜ: 'rɪʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'rɪʃ
L11		'kɒm ^m mɜ: 'rɛs					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'rɛs
L12		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L13		kəm mɜ: 'sɪf					'kɒm ^m mɜ: 'tʃəl				kəm mɜ: 'sɪf
L14		'kɒm ^m 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl
L15		kəm 'mɜ:ʃ					'kɒm ^m mɜ: 'tʃəl				'kɒm ^m mɜ: 'tʃəl

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conceptual [kəp 'sep tʃuəl] (- | -)

Patterns participants	BW		SW					MP		
	concept	[kən sept]	- -	- -	- -	-	-		-	
H01	'kɔŋ ^m 'sep'									'kɔŋ sep tʃuəl
H02	'kɔŋ sept	-								kən 'sep ^h tʃuəl ^h
H03	'kɔŋ ^m 'sep'									kən 'sep ^h tʃuəl ^h
H04	'kɔŋ sep	-	kən 'sep tʃuəl							
H05	'kɔŋ sep	-								
H06	'kɔŋ sep	-	'kɔŋ sep tʃuəl							kən 'sep ^h tʃuəl ^h
H07	'kɔŋ sep	-								
H08	'kɔŋ ^m 'sep'									kən 'sep ^h tʃuəl ^h
H09	'kɔŋ sept	-	'kɔŋ sep tʃuəl							
H10	'kɔŋ sep	-	kən 'sep tʃuəl							
H11	'kɔŋ sept	-								kən 'sep ^h tʃuəl ^h
H12	'kɔŋ sept	-	'kɔŋ sep tʃuəl							
H13	'kɔŋ sept	-	kən 'sep ^h tʃuəl							
H14	'kɔŋ ^m 'sep'		'kɔŋ sep tʃuəl							
H15	'kɔŋ sept	-	'kɔŋ sep tʃuəl							

Patterns participants	BW		SW					MP		
	concept	[kən sept]	- -	- -	- -	-	-		-	
L01	'kɔŋ ^m 'sep'									'kɔŋ ^m sep 'tuɑ ^m
L02	'kɔ ^h nɑ tɪ	MP								kɔ rɔ tʃɜf
L03	'kɔŋ ^m 'kep ^h	MP								'kɔŋ ^m 'kep ^h 'bɔw ^f
L04	'kɔŋ sept	-								'kɔŋ ^m sep tʃuəl
L05	'kɔŋ ^m 'sept ^h									'kɔŋ ^m 'sep ^h tʃuəl ^h
L06	'kɔŋ ^m 'sep'									'kɔŋ ^f sep 'tuɑ ^m
L07	'kɔŋ ^m 'kɔp ^h	MP								'kɔŋ ^m 'kɔ ^h 'tʃu: ^m
L08	'kɔŋ sep	-								'kɔŋ sep dʒə
L09	'kɔŋ ^m 'sep'									'kɔŋ ^m sep tʃuəl ^h
L10	'kɔŋ ^m 'sep'									'kɔŋ ^m sɪ 'pɪ ^h tʃuəl
L11	'kɔŋ sep	-								'kɔŋ ^m 'sep 'bɔw ^f
L12	'kɔŋ sep	-	kən sep 'tɔeɪf							
L13	'kɔŋ ^m 'sep'									'kɔŋ ^h sep 'tɔeɪf
L14	'kɔŋ sept	-								kən 'sep ^h tʃuəl
L15	'kɔŋ ^h 'kæpt'	MP								'kɔŋ keep tɛl

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habitual [hə 'bɪ tʃuəl] (- | -)

Patterns participants	BW habit ['hæ bɪt]		SW					MP
	- -	- -	- -	-	-	-		
H01	'hæ bɪt	-	hæ bɪ tʃuəl					
H02	'hæ bɪt	-	hæ bɪ tʃuəl ^h					
H03	'hæ bɪt	-	hæ bɪ tʃuəl					
H04	'hæ bɪt	-						'hæ bɪ tɛl
H05	'hæ bɪt	-	hæ bɪ tʃuəl					
H06	'hæ bɪt	-	hæ bɪ tʃuəl					
H07	'hæ bɪt	-	hæ bɪ tʃuəl					
H08	'hæ bɪt							'hæ bɪ tʃuəl
H09	'hæ bɪt	-						'hæ bɪ tʃuəl
H10	'hæ bɪt	-	hæ bɪ tʃuəl					
H11	'hæ bɪt	-	hæ bɪ tʃuəl					
H12	'hæ bɪt	-	hæ bɪ tʃuəl					
H13	'hæ bɪt	-	hæ bɪ tʃuəl					'hæ bɪ tʃuəl
H14	'hæ bɪt	-	hæ bɪ tʃuəl					
H15	'hæ bɪt	-	hæ bɪ tʃuəl					

Patterns participants	BW habit ['hæ bɪt]		SW					MP
	- -	- -	- -	-	-	-		
L01	'hæ bɪt							'hæ bɪ tʃuəl
L02	'hæ bɪt	MP						'hæ bɪ tʃuəl
L03	'hæ bɪt	-						'hæ bɪ tʃuəl
L04	'hæ bɪt	-						'hæ bɪ tʃuəl
L05	'hæ bɪt	-	hæ bɪ tʃuəl					
L06	'hæ bɪt	-						hæ bɪ tʃuəl
L07	'hæ bɪt	MP						hæ bɪ tʃuəl
L08	'hæ bɪt	-						'hæ bɪ tʃuəl
L09	'hæ bɪt							'hæ bɪ tʃuəl
L10	'hæ bɪt	MP	hæ bɪ tʃuəl					
L11	'hæ bɪt	-						'hæ bɪ tʃuəl
L12	'hæ bɪt	-						'hæ bɪ tʃuəl
L13	'hæ bɪt	-						hæ bɪ tʃuəl
L14	'hæ bɪt	-	hæ bɪ tʃuəl					
L15	'hæ bɪt	-						'hæ bɪ tʃuəl

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industrial [in 'das triəl] (- | -)

participants	BW		SW					MP		
	Patterns	industry [in dəs tri]	- -	- -	- -	-	-		-	
H01		in 'dʌʃ 'tri								
H02		in 'dʌʃ tri								in 'dʌʃ 'triəl
H03		in 'dʌʃ 'tri								in 'dʌʃ 'triəl
H04		in 'dʌʃ tri								
H05		in 'drʌs tri								in 'drʌs tel
H06		in 'drʌs tri								
H07		in 'drʌs tri								
H08		in 'dʌʃ 'tri								in 'dʌʃ 'triəl
H09		in 'dʌs tri								
H10		in 'dʌs tri								
H11		in 'dʌʃ 'tri								in 'drʌʃ 'triəl
H12		in 'dʌs tri								
H13		in 'dʌs tri								
H14		in 'dʌʃ tri								in 'dʌʃ tə 'ɔl
H15		in 'dʌs tri								in 'dʌʃ tri 'ɔl

participants	BW		SW					MP		
	Patterns	industry [in dəs tri]	- -	- -	- -	-	-		-	
L01		'in ^m 'dʌʃ tri								in 'dʌʃ 'triəm
L02		in 'dʌʃ tə 'li								in 'liʃ tə 'li
L03		in 'dʌʃ 'tri								in 'dʌʃ tə 'ɔl
L04		in 'drʌst tri								in 'drʌst ^h triəl
L05		in 'dʌs tri								in 'dʌt t'riəl
L06		in 'dʌʃ 'tri								in dʌs 'ɔw
L07		in 'dʌʃ 'tri								in 'dʌʃ 'tri nə
L08		in 'dʌʃ tri								
L09		in 'dʌʃ tri								in 'dʌʃ 'triəl
L10		in 'dʌʃ 'triəm								in 'dʌʃ stət 'ɔl
L11		in 'dʌʃ tri								
L12		in 'dʌʃ 'tri								in 'dʌʃ 'triəl
L13		in 'dʌʃ tri								in 'dʌʃ triən
L14		in 'dʌʃ tri								
L15		in 'du 'tri								in 'duʃ tri

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outrageous [aʊt 'reɪ dʒəs] (- | -)

Patterns participants	BW outrage [aʊt reɪdʒ]		SW					MP		
			- -	- -	- -	-	-			
H01	'aʊt 'reɪdʒ				aʊt re 'dʒəsʰ					
H02	'aʊtʰ 'tredʒ	-								'aʊt te grə 'dʒɪəsʰ
H03	'aʊtʰ 'tredʒ					'aʊtʰ tɪe 'dʒɪəsʰ				
H04	'aʊtʰ 'tredʒ	-								
H05	'aʊtʰ 'redʒ	-								
H06	'aʊtʰ 'rædʒ	MP		'aʊ re dʒəs						
H07	'aʊt 'redʒ	-		'aʊtʰ re dʒəs						
H08	'aʊtʰ 'rædʒ	MP			aʊ re 'dʒɪəsʰ				'aʊtʰ 'reɪm 'dʒɪəsʰ	
H09	'aʊtʰ 'tredʒ	-								'aʊ te dʒəs
H10	'aʊtʰ 'tredʒ		aʊ 'tɪeɪtʰ dʒɪəs							
H11	'aʊtʰ 'tredʒ									aʊ dʒə rəs
H12	aʊ rəs	MP		'aʊ re dʒəs						
H13	'aʊt 'redʒ	-		'aʊ re dʒɪəs						
H14	'aʊtʰ 'tredʒ	-								'aʊtʰ ræe 'dʒɪsʰ rəs
H15	'aʊtʰ 'redʒ			'aʊ re dʒəs						

Patterns participants	BW outrage [aʊt reɪdʒ]		SW					MP		
			- -	- -	- -	-	-			
L01	'aʊtʰ 'reɪnʰ	MP								'aʊtʰ re 'ʌʃʰ
L02	'ɔʊtʰ tə 'ræʰ	MP								'ɔʊtʰ tə 'gæ:tʰ
L03	'aʊtʰ 'geɪnʰ	MP								'aʊtʰ ge 'ʌtʰ
L04	'aʊtʰ 'redʒ	-	aʊ 're dʒɪəs							'aʊtʰ re 'tʃɪəsʰ
L05	'aʊtʰ 'redʒ	-								'aʊtʰ reɪtʰ 'ʌsʰ
L06	'aʊtʰ 'redʒ									'aʊtʰ 'ræɪm dʒɪ ɔn
L07	'aʊtʰ 'res	MP								'aʊtʰ redʒ 'ʌsʰ
L08	'aʊtʰ 'redʒ	-								'aʊtʰ re 'dʒɪ rʌs
L09	'aʊtʰ 'redʒ			'aʊtʰ re dʒɪəs						'aʊtʰ re grəs
L10	'aʊtʰ ræg	MP								'aʊtʰ re 'ʌʃʰ
L11	'aʊtʰ reɪt	MP								
L12	'aʊtʰ reɪt	MP								
L13	'aʊtʰ 'redʒ	-								
L14	'aʊtʰ 'redʒ	-					'aʊtʰ re 'dʒɪəs			aʊ 'reɪtʰ dʒɪ ɔs
L15	'aʊtʰ 'redʒ	MP								'aʊtʰ 'tredʒ

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successful [sək'ses.fəl] (- | -)

Patterns participants	BW		SW					MP
	success [sək'ses]		- -	- -	-	- -	-	
H01	sək 'ses ^h	-						
H02	'sək ses	-	sək 'ses ful				sək 'ses ^h 'ful ^m	
H03	'sək ^h 'ses ^h							
H04	sək 'sɪs	MP						
H05	'sək ses	-	sək 'ses ful					
H06	'sək ses	-	sək 'ses ful					
H07	sək 'ses	-	sək 'ses ful					
H08	'sək ^h 'ses ^h							'sək ^h 'ses ^h 'ful ^m
H09	'sək ses	-	sək 'ses ful					
H10	sək 'ses	-	sək 'ses ful					
H11	'sək ^h 'ses ^h							
H12	sək 'ses	-	sək 'ses ful					
H13	'sək ^h ses							
H14	sək 'ses	-	sək 'ses ful					
H15	sək 'ses	-	sək 'ses fəl					

Patterns participants	BW		SW					MP
	success [sək'ses]		- -	- -	-	- -	-	
L01	'sək ^h ses	-						'sək ^h 'sef ful
L02	sɪ 'kɪs ^h	MP						'su ^m 'kɪt ^h 'fɪf
L03	sɪ 'kɪs ^h	MP						sɪ 'kɪs ^h ful
L04	'sək ^h 'ses ^h							'sək [ɪs 'ful ^m
L05	'sək ses	-						
L06	'sək ^h 'ses ^h							
L07	'sək ^h 'kɪs ^h	MP						'sək ^h 'kɪs ^h 'ful ^m
L08	'sək ^h 'ses ^h							
L09	'sək ses	-						
L10	'sək ^h ket	MP						sək 'ket ^h 'ful ^m
L11	'sɪ kɪs	MP						'sɪ kɪs ful
L12	'sək ^h 'ses ^h							
L13	'sək ^h 'ses ^h							
L14	'sək ses	-						'sək ^h 'ses ^h 'ful ^m
L15	sək 'ses	-						

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contractual [kən 'træk tʃuəl] (- | -)

Patterns participants	BW contract [kən træk]		SW					MP	
			- -	- -	- -	-	-		-
H01	'kən 'træk'								
H02	'kən 'træk'	-	kən 'træk tʃuəl					kən 'trækʰ tʃuəl'	
H03	'kən 'træk'							kən 'trækʰ tʃuəl'	
H04	'kən 'træk'	-							
H05	'kən 'træk'	-		'kən træk ʃəl					
H06	'kən 'træk'	-	kən 'træk tʃuəl						
H07	'kən 'træk'	-	kən 'træk ʃə						
H08	'kən 'træk'								'kən 'trækʰ tʃuəl'
H09	'kən 'træk'		kən 'træk tʃuəl						
H10	kən 'træk'	-	kən 'træk tʃuəl					kən 'trækʰ tʃuəl'	
H11	'kən 'træk'								
H12	'kən 'træk'	-	kən 'træk ʃəl						
H13	'kən 'træk'		kən 'træk tʃuəl						
H14	'kən 'træk'	-					'kən 'trækʰ tʃuəl		
H15	kən 'træk'	-	kən 'træk ʃəl						

Patterns participants	BW contract [kən træk]		SW					MP	
			- -	- -	- -	-	-		-
L01	'kən 'trækʰ	MP							
L02	'kən 'trækʰ te 'lɪ'	MP							'kən 'trækʰ te 'lɪ'
L03	'kən 'trækʰ	MP							kən 'trækʰ tʃuəl'
L04	'kən 'træk'		kən 'træk tʃuəl						
L05	'kən 'træk'		kən 'træk tʃuəl						
L06	'kən 'træk'	MP							kən 'trækʰ tʃuəl'
L07	'kən 'trækʰ teɪ'	MP							'kən 'trækʰ teɪ' tɔ 'eɪ'
L08	'kən 'træk'	-							
L09	'kən 'trækʰ	MP	kən 'træk tʃuəl						
L10	'kən 'træk'	MP							kən 'trækʰ tʃuəl'
L11	'kən 'træk'	-		'kən træk ʃuəl					
L12	'kən 'trækʰ	MP	kən 'træk tʃuəl						
L13	'kən 'træk'	-	kən 'træk ʃən						
L14	'kən 'træk'	MP	kən 'træk ʃəl						
L15	'kən 'træk'	MP	kən 'træk təl						

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courageous [kə 'rei dʒəs] (- | -)

Patterns participants	BW courage ['kɔ: ɪdʒ]		SW					MP	
			- -	- -	- -	-	-		
H01	'kɜ:m 'redʒ								
H02	kə 'redʒ	-	kə 'rei dʒəs ^h						
H03	'kɜ redʒ	-							
H04	kə 'redʒ	-							kə 'ræ dʒəs
H05	'kɔ rɪdʒ	MP							
H06	'kɔ redʒ	MP							
H07	'kɜ redʒ	-							
H08	'kɔ:m 'redʒ	MP							'kɔ:m 'reɪm dʒəs ^h
H09	'kɜ redʒ	-							kə 'rei dʒə nəs
H10	'kɜ rɪdʒ	-							
H11	kə 'redʒ	-	kə 'rei dʒəs						
H12	'kɔ rɪdʒ	MP							
H13	'kɜ:m 'redʒ								
H14	'kɜ redʒ	-							
H15	kə 'redʒ	-	kə 'rei dʒəs						kə 'rei dʒə rəs

Patterns participants	BW courage ['kɔ: ɪdʒ]		SW					MP	
			- -	- -	- -	-	-		
L01	'kɜ redʒ	-							
L02	kə 'ræm	MP			kə re 'dʒəs ^h				'kɔ:m 'ræm 'lɪn ^m
L03	kɔə'm 'gɛn ^h	MP							'kɔ:m 'gɛk ^h 'lɛp ^m
L04	'kɔ res	MP							
L05	kə 'redʒ	-	kə 'rei dʒəs						
L06	'kɔ:m 'reɪt ^l	MP							kə 'reɪt ^l 'lɛs ^l
L07	'kɔ:m 'gɛrɪʃ	MP							'kɔ:m tə 'gɛrɪt ^l 'lɛs ^l
L08	'kæʊ redʒ	MP							'kɔ 'reɪt əs
L09	kə 'redʒ	-							kə 'reɪdʒ ʒʌt
L10	'kɔ redʒ	MP	kə 'rei dʒəs						
L11	'kɔ:m 'gɛs ^l	MP							kə 'gɛrɪ dʒəs
L12	'kɜ redʒ	MP							kə 'reɪt ^h 'lɛs ^h
L13	kə 'redʒ	-	kə 'rei dʒəs						
L14	'kɔ redʒ	MP							
L15	'kɜ redʒ	-	kə 'rei dʒəs						kɔn 'æŋ dʒəl

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financial [faɪ 'næɪn ʃəʊ] (- | -)

Patterns	BW		SW						MP	
	participants	finance ['faɪ næɪns]	- -	- -	- -	-	-	-		
H01	faɪ 'næɪns ^h	-			faɪ næɪn 'ʃəʊ					
H02	'faɪ næɪns	-								faɪ 'næɪn ʃəʊs
H03	faɪ 'næɪns ^h	-			faɪ næɪn 'ʃəʊ					
H04	faɪ 'næɪns	-								
H05	'faɪ næɪns	-	faɪ 'næɪn ʃəʊ							
H06	faɪ 'næɪns	-	faɪ 'næɪn ʃəʊ							
H07	faɪ 'næɪns ^h	-	faɪ 'næɪn ʃəʊ							
H08	'faɪ næɪns ^h					'faɪ næɪn 'ʃəʊ				
H09	faɪ næɪns	-	faɪ 'næɪn ʃəʊ							
H10	faɪ 'næɪns	-	faɪ 'næɪn ʃəʊ							
H11	'faɪ næɪns ^h						faɪ næɪn 'ʃəʊ			
H12	'faɪ næɪns	-	faɪ 'næɪn ʃəʊ							
H13	faɪ 'næɪns	-	faɪ 'næɪn ʃəʊ							
H14	'faɪ næɪns ^h								faɪ 'næɪn 'ʃəʊ	
H15	faɪ 'næɪns	-		faɪ næɪn ʃəʊ						

Patterns	BW		SW						MP	
	participants	finance ['faɪ næɪns]	- -	- -	- -	-	-	-		
L01	faɪ 'næɪns	-								
L02	fə nɪ 'lɪf	MP						faɪ 'næɪn 'ʃəʊ		faɪ 'næɪn lɪ 'tɪf
L03	'faɪ n 'lɪf	MP								fə 'næɪs ^h 'kɒlf
L04	fɪ 'næɪns	MP								
L05	'faɪ næɪns	-						'faɪ 'næɪn ʃəʊ		
L06	faɪ 'næɪn ^h	-							faɪ 'næɪn 'ʃəʊ	'fɪ ^h 'hɒs ^h sɪ 'kɒlf
L07	fɪ 'næɪ net	MP								
L08	'faɪ næɪns ^h									
L09	faɪ 'næɪns ^h	-					faɪ næɪn 'ʃəʊ			
L10	fɪ 'næɪn se	MP	faɪ 'næɪn ʃəʊ							
L11	faɪ 'næɪns ^h	-						faɪ 'næɪn 'ʃəʊ		faɪ næɪn sɪ kel
L12	'fɪ 'næɪs	MP								'fɪ ^h næɪt ^h 'sɒlf
L13	'faɪ næɪns ^h	MP								faɪ 'næɪn 'kɒlf
L14	faɪ 'næɪns	-	faɪ 'næɪn ʃəʊ							
L15	faɪ 'næɪns	-		faɪ næɪn ʃəʊ						

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official [ə 'fɪʃəl] (- | -)

Patterns	BW		SW					MP		
	participants	office [ɔrɪs]	- -	- -	- -	-	-		-	
H01	'ɑfʰ fɪʃʰ									
H02	'ɑf fɪʃ	-		'ɔf fɪ ʃəl						
H03	ɔf 'fɪʃʰ	-			ɔf fɪ ʃəlʰ					
H04	əf 'fɪʃ	-								
H05	'ɑf fɪʃ	-								
H06	'ɑf fɪʃ	-								
H07	'ɑfʰ fɪʃʰ									
H08	'ɑfʰ fɪʃʰ									
H09	'ɑf fɪʃ	-	ɔf 'fɪ ʃəl							
H10	ɔf 'fɪʃ	-	ɔf 'fɪ ʃəl							
H11	'ɑfʰ fɪʃʰ				ɔf fɪ ʃəlʰ					
H12	'ɑf fɪʃ	-	ɔf 'fɪ ʃəl							
H13	'ɑf 'fɪʃ									
H14	'ɑfʰ fɪʃʰ									
H15	ɔf 'fɪʃ	-								

Patterns	BW		SW					MP		
	participants	office [ɔrɪs]	- -	- -	- -	-	-		-	
L01	'ɑf fɪʃ	-								
L02	'ɑfʰ sɪf	MP								'ɔfʰ fɪ 'lɪʃ
L03	'ɑfʰ fɪʃ	MP								'ɔfʰ fɪ 'nɔlf
L04	'ɑfʰ fɪʃʰ									'ɔf fɪ kəl
L05	ɔf 'fɪʃ	-								
L06	'ɑfʰ fɪʃʰ									
L07	'ɑfʰ fɪʃʰ									'ɔfʰ fɪʰ sɪ 'kɔlf
L08	'ɑf fɪʃ	-								
L09	'ɑf 'fɪʃ		ɔf 'fɪ ʃəl							
L10	'ɑfʰ fɪʃʰ									
L11	'ɑf fɪʃ	-	ɔf 'fɪ ʃəl							
L12	'ɑf fɪʃ	-								
L13	'ɑfʰ fɪʃʰ									
L14	'ɑf fɪʃ	-								'ɔf fɪ kəl
L15	'ɑf fɪʃ	-								'ɔf fɪ səl

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production [prɛˈdʌkʰfən] (- | -)

participants	Patterns	BW		SW					MP		
		product	[prɛˈdʌkʰfən]	- -	- -	- -	-	-		-	
H01											
H02											
H03											
H04											
H05											
H06											
H07											
H08											
H09											
H10											
H11											
H12											
H13											
H14											
H15											

participants	Patterns	BW		SW					MP		
		product	[prɛˈdʌkʰfən]	- -	- -	- -	-	-		-	
L01											
L02											
L03											
L04											
L05											
L06											
L07											
L08											
L09											
L10											
L11											
L12											
L13											
L14											
L15											

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billionaire [ˌbɪl jə ˈneə] (- - |) or (| - -)

participants	Patterns		BW		billion [ˌbɪl jən]		SW				MP
H01	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H02	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H03	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H04	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H05	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H06	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H07	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H08	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H09	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H10	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H11	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H12	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H13	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H14	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
H15	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						

participants	Patterns		BW		billion [ˌbɪl jən]		SW				MP
L01	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L02	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L03	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L04	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L05	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L06	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L07	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L08	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L09	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L10	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L11	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L12	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L13	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L14	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						
L15	bɪ ˈlɪən		bɪ ˈlɪən		bɪ ˈlɪən						

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questionnaire [,kwes tʃə 'neə] (- - |) or (| - -)

Patterns participants	BW		SW					MP
	question [kwes tʃən]		--	-	- -	- -	- -	
H01	'kweʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				
H02	'kweʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				
H03	'kweʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ	'kwesʰ tʃə nə			
H04	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				
H05	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				
H06	'kwes tʃən	-		'kwes tʃə 'neə				
H07	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				
H08	'kweʰ tʃənʰ	-		'kwesʰ tʃə 'neə				
H09	'kwes tʃən	-		'kwesʰ tʃə 'neə				'kwes tʃə 'neə ɾɪ
H10	'kwes tʃən	-		'kwesʰ tʃə 'neə				'kwes tʃə nə ɾɪ
H11	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				'kwes tʃə nə
H12	'kweʰ tʃən	-		'kwes tʃə 'neə				'kwes tʃə 'neəʰ
H13	'kweʰ tʃən	-		'kwes tʃə 'neə				'kwes tʃə 'neəʰ
H14	'kweʰ tʃən	-		'kwes tʃə 'neə				'kwes tʃə 'neəʰ
H15	'kwes tʃən	-		'kwesʰ tʃə 'neəʰ				'kwes tʃən 'na ɾɪ

Patterns participants	BW		SW					MP
	question [kwes tʃən]		--	-	- -	- -	- -	
L01	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				
L02	'pjuʰ tʃɜʰ	MP		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə 'neəʰ
L03	'kwesʰ tʃənʰ	MP		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə 'neəʰ
L04	'kwesʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L05	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə nə ɾɪ
L06	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə 'neəʰ ɾɪ
L07	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə 'neəʰ ɾɪ
L08	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃə 'neəʰ ɾɪ
L09	'kwesʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L10	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L11	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L12	'kwesʰ tʃənʰ	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L13	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L14	'kwesʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ
L15	'kweʰ tʃən	-		'kwesʰ tʃə 'neəʰ				'kwesʰ tʃən 'neəʰ ɾɪ

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commandeer [ˌkɒm ən ˈdɪər] (- - |) or (| - |)

participants	Patterns	BW		SW					MP		
		command	[ke ˈmɑːnd]	- -	-	- -	- -	-			
H01		kom ˈman ^m	-								
H02		kom ˈmaen ^m	-		'kɒm ^h mən ˈdɪər ^m						
H03		'kɒm ^m ˈmaen ^m			'kɒm ^m mən ˈdɪər ^m						
H04		kom ˈmænd ^m	-	kom ən ˈdɪə							
H05		'kɒm ^m ˈmaen ^m			'kɒm mæn ˈdɪə						
H06		kom ˈmaen ^m	-		'kɒm mæn ˈdɪə						
H07		'kɒm ^m ˈman ^m			'kɒm ^m mən ˈdɪər ^m						
H08		'kɒm ^m ˈman ^m									
H09		'kɒm mæn	-								
H10		kom ˈman ^m	-								
H11		'kɒm ^m ˈmaend ^m									
H12		kom ˈmaen ^m	-				'kɒm æn dɪə				
H13		'kɒm ^m ˈman ^m			'kɒm mən ˈdɪər						
H14		kom ˈmaen ^m	-								
H15		'kɒm ^m ˈmaend ^m									

participants	Patterns	BW		SW					MP		
		command	[ke ˈmɑːnd]	- -	-	- -	- -	-			
L01		'kɒm ^m ˈman ^m									
L02		'kæm mə	MP		'kɒm ^m mæn ˈdɪər						
L03		'kɒm ^m ˈmaen ^h									
L04		kom ˈman ^m	-								
L05		kom ˈman	-								
L06		'kɒm ^m ˈmaen ^h									
L07		'kɒm ^m ˈman ^m									
L08		'kɒm mæn	-								
L09		'kɒm ^m ˈmænd ^m									
L10		kom ˈmann	-								
L11		'kɒm ˈmaen									
L12		'kɒm ^m ˈmen ^h	MP								
L13		'kɒm mænd	MP								
L14		'kɒm ^m ˈman ^m									
L15		kə ˈmænd	-								

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refugee [ˌref ju ˈdʒi:] (- - |) or (| - -)

Patterns participants	BW refugee [ˌref ju ˈdʒi:]			SW			MP
	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	
H01	'reʰ fʃɔ ˈdʒiːm	'reʰ ju ˈdʒiːm	'reʰ ju ˈdʒiːm	'reʰ ju ˈdʒiːm	'reʰ ju ˈdʒiːm	'reʰ ju ˈdʒiːm	'riːm ˈfʌkʰ ɡi
H02	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	
H03	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	
H04	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	
H05	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri fa ˈɡi:
H06	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	'riːm ˈfʃuʰ dʒiː	
H07	ri ˈfʃu	ri ˈfʃu	ri ˈfʃu	ri ˈfʃu	ri ˈfʃu	ri ˈfʃu	
H08	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	
H09	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	
H10	'riʰ ˈfʃuʰ dʒiː	'riʰ ˈfʃuʰ dʒiː	'riʰ ˈfʃuʰ dʒiː	'riʰ ˈfʃuʰ dʒiː	'riʰ ˈfʃuʰ dʒiː	'riʰ ˈfʃuʰ dʒiː	
H11	'ri ˈfʌs	'ri ˈfʌs	'ri ˈfʌs	'ri ˈfʌs	'ri ˈfʌs	'ri ˈfʌs	
H12	'ri ˈfʃuʰ dʒiː	'ri ˈfʃuʰ dʒiː	'ri ˈfʃuʰ dʒiː	'ri ˈfʃuʰ dʒiː	'ri ˈfʃuʰ dʒiː	'ri ˈfʃuʰ dʒiː	
H13	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	
H14	'ri ˈfʃuʰ ɡi	'ri ˈfʃuʰ ɡi	'ri ˈfʃuʰ ɡi	'ri ˈfʃuʰ ɡi	'ri ˈfʃuʰ ɡi	'ri ˈfʃuʰ ɡi	
H15	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	

Patterns participants	BW refugee [ˌref ju ˈdʒi:]			SW			MP
	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	refugee [ˌref ju ˈdʒi:]	
L01	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	
L02	ri ˈfʌsʰ	ri ˈfʌsʰ	ri ˈfʌsʰ	ri ˈfʌsʰ	ri ˈfʌsʰ	ri ˈfʌsʰ	kə ˈfʃuʰ
L03	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	
L04	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	'ri ˈfʌk	ri ˈfʌkʰ ɡi
L05	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ ʃhɪ
L06	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ
L07	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	'riːm ˈfʃuʰ	
L08	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ	'riːm ˈfʌkʰ dʒə
L09	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʃuʰ	ri ˈfʌkʰ ˈɡiːm
L10	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌuʰ	ri ˈfʌkʰ dʒi
L11	'ri fu	'ri fu	'ri fu	'ri fu	'ri fu	'ri fu	'riːm ˈfʃuʰ ˈɡi
L12	'ri ˈfʌkʰ	'ri ˈfʌkʰ	'ri ˈfʌkʰ	'ri ˈfʌkʰ	'ri ˈfʌkʰ	'ri ˈfʌkʰ	ri ˈfʌkʰ ˈɡiʃ
L13	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	ri ˈfʃuʰ dʒiː	
L14	ri ˈfʌdʒd	ri ˈfʌdʒd	ri ˈfʌdʒd	ri ˈfʌdʒd	ri ˈfʌdʒd	ri ˈfʌdʒd	ri ˈfʌh dʒi
L15	'ri tʃænt	'ri tʃænt	'ri tʃænt	'ri tʃænt	'ri tʃænt	'ri tʃænt	ri ˈfʃuʰ dʒi

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Vietnamese [,vjɛt nə 'mi:z] (- - |) or (| - -)

Participants	Patterns		BW					SW					MP
	Vietnam [,vjɛt nəəm]		Vietnam [,vjɛt nəəm]					Vietnam [,vjɛt nəəm]					
H01	'wɾəɫ' 'nəm'	-	-	- -	- -	-							
H02	'wɾəɫ' 'nəm'		'wʲɛt' nə 'mi:s'										
H03	'wɾəɫ' 'nəm'		wʲɛt nə 'mi:s'										'wʲɛt' 'nəm' 'mi:tʰ
H04	wʲɛt 'nəm'	-										wʲɛt 'nə' 'mi:s'	'wʲɛt' 'nəm' 'hes'
H05	'wɾəɫ' 'nəm'												
H06	'wɾəɫ' 'nəm'												
H07	'wɾəɫ' 'nəm'	-											
H08	'wɾəɫ' 'nəm'		'wʲɛt' nə 'mi:s'										
H09	'wɾəɫ' 'nəm'	-											
H10	'wɾəɫ' 'nəm'												
H11	wʲəs 'nəm'	MP											'vʲes' 'nəms
H12	'wɾəɫ' 'nəm'												
H13	'wɾəɫ' 'nəm'	-											
H14	'wɾəɫ' 'nəm'		'wʲɛt' nə 'mi:s'										
H15	'wɾəɫ' 'nəm'												'wʲɛt' 'nəm' 'ni:s'

Participants	Patterns		BW					SW					MP
	Vietnam [,vjɛt nəəm]		Vietnam [,vjɛt nəəm]					Vietnam [,vjɛt nəəm]					
L01	'wɾəɫ' 'nəm'		-	- -	- -	-							
L02	'wɾəɫ' 'nəm'	MP	'wʲɛt' nə 'mi:s'										'wɾəɫ' nə 'li:f
L03	'wi:tʰ' 'təɲ'	MP											wʲɛt tə 'mi:s'
L04	'wɾəɫ' 'nəm'												wʲɛt 'ni:s'
L05	'wɾəɫ' 'nəm'												
L06	'wɾəɫ' 'nəm'		wʲɛt' nə 'mi:s'										
L07	'wiʰ' 'təɲ'	MP											
L08	wʲɛt 'nəm'	-											
L09	wʲɛt 'nəm'	-	wʲɛt nə 'mi:s'										
L10	wʲɛt 'nəm'	-	wʲɛt nə 'mi:s'										
L11	'wʲɛt' 'nəm'												
L12	'wɾəɫ' 'nəm'	-											
L13	wʲɛt 'nəm'	-	wʲɛt nə 'mi:s'										wʲɛt nə 'mi:f'
L14	'wʲɛt' 'nəm'	-	wʲɛt nə 'mi:s'										wʲɛt 'nəm' 'mi:s'
L15	wi 'tə məɲ	MP											wi 'tɾəɲs

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absentee [ˌæb sən 'ti:] (- - |) Or (| - |)

Participants	Patterns		BW					SW					MP
	absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		
H01													
H02													
H03													
H04													
H05													
H06													
H07													
H08													
H09													
H10													
H11													
H12													
H13													
H14													
H15													

Participants	Patterns		BW					SW					MP
	absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		absent [ˌæb sən'ti:]		
L01													
L02													
L03													
L04													
L05													
L06													
L07													
L08													
L09													
L10													
L11													
L12													
L13													
L14													
L15													

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auctioneer [ˌɔ:k fə 'nɪər] (- - |) or (| - |)

participants	Patterns		BW		SW		MP
		auction [ˌɔ:k fən]					
H01		æk 'fʌnʃ	MP				'æk fə 'nɪə
H02		'æək fən	MP				'ʌk fə 'nɪə
H03		'ɔ:kʰiː 'fʌnʃ ()					
H04		'æək fən	MP				
H05		'ɔ:k fən ()	-		'ɔ fən		
H06		'ak fən	MP				'ak fə 'nɪə
H07		'ɔ:k fən ()	-				'ɔ:kʰiː fə 'nɪərʰ
H08		'akʰiː 'fʌnʃ	MP				'ɔ:k fən
H09		'ɔ:k fən ()	-			ɔk 'fʌn nɪə	æk 'fʌnʃ 'nɪərʰ
H10		'ak fən	MP				'ækʰiː 'fʌnʃ 'nɪərʰ
H11		æk 'fʌnʃ	MP				
H12		'ɔ:k fən ()	-				
H13		'ɔ:k fən ()	-				
H14		æk 'fʌnʃ	MP				'æk fə 'nɪə
H15		'ak fən	MP				

participants	Patterns		BW		SW		MP
		auction [ˌɔ:k fən]					
L01		'ɔ:k fən	MP				
L02		'ɔ:h gi 'lɑ:f	MP				a 'juːtə 'nɪsʃ
L03		'ækʰiː 'fʌnʃ	MP				'ækʰiː 'fʌnʃ 'nɪərʰ
L04		'ak fən	MP				'ækʰiː 'fʌnʃ 'nɪərʰ
L05		'ak fən	MP				'æk fə 'nɪə
L06		'ɪʊm 'fʌnʃ	MP				'ækʰiː 'fʌnʃ 'nɪm
L07		'ækʰiː 'fʌnʃ	MP				æk fə 'nɪərʃ
L08		'ak fən	MP				'ak fə 'nɪə
L09		'ɔ:k fən ()	-				æk 'kɑ fə 'nɪə
L10		'æh 'fʌnʃ	MP				æk fə nɪə
L11		æk 'kɑh fən	MP				'æk fə nɪə
L12		'ak fən	MP				
L13		'ækʰiː fən	MP				
L14		'ak fən	MP				
L15		'æk fən	MP				æk fə 'nɪə

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millionaire [ˌmɪljəˈneər] (- - |) or (- | -)

Patterns participants	BW million [ˈmɪljən]		SW					MP	
H01	mt 'lɪən'	-	- -	-	- -	- -	-	-	
H02	'mɪljən		mɪljəˈneə	'mɪljəˈneə ^m					
H03	mt 'lɪən'	-		'mɪljəˈneə ^m					
H04	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
H05	'mɪljən	-		'mɪljəˈneə					
H06	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
H07	'mɪljən	-		'mɪljəˈneə		mɪljəˈneə			
H08	mt 'lɪən'	-		'mɪljəˈneər					mɪˈlɪrəˈneə ^m
H09	'mɪljən	-	mɪljəˈneər	'mɪljəˈneər					
H10	'mɪljən	-		'mɪljəˈneə					
H11	mt 'lɪən'	-		'mɪljəˈneə					mɪljəˈneə ^m
H12	'mɪljən	-	mɪljəˈneər	'mɪljəˈneər					
H13	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
H14	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
H15	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					

Patterns participants	BW million [ˈmɪljən]		SW					MP	
L01	'mɪljən 'lɪən'		mɪljəˈneə ^m	'mɪljəˈneə ^m					
L02	'mɪljən 'lɪf	MP		'mɪljəˈneə ^m					'mɪljən 'lɪf 'ɔːn 'tʰæɪt'
L03	'mɪljən 'lɪən'	MP		'mɪljəˈneə ^m					'mɪljən 'lɪən 'tʰæɪt'
L04	'mɪljən	-		'mɪljəˈneə					
L05	'mɪljən	-		'mɪljəˈneə					
L06	'mɪljən	-		'mɪljəˈneə					
L07	'mɪljən 'lɪən'			'mɪljəˈneə					
L08	'mɪljən	-		'mɪljəˈneə					
L09	'mɪljən	-		'mɪljəˈneə					
L10	'mɪljən	-		'mɪljəˈneə					
L11	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
L12	'mɪljən 'lɪən'	MP		'mɪljəˈneə					
L13	'mɪljən	-		'mɪljəˈneə					
L14	'mɪljən	-	mɪljəˈneə	'mɪljəˈneə					
L15	'mɪljən	-		'mɪljəˈneər					

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doctrinaire [ˌdɒk tri 'neə] (- - |) or (| - -)

participants	Patterns		BW		SW		MP
	doctrinaire	doctrin	doctrinaire	doctrin	doctrinaire	doctrin	
H01			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H02			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H03			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H04			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H05			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H06			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H07			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H08			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H09			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H10			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H11			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H12			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H13			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H14			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
H15			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	

participants	Patterns		BW		SW		MP
	doctrinaire	doctrin	doctrinaire	doctrin	doctrinaire	doctrin	
L01			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L02			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L03			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L04			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L05			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L06			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L07			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L08			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L09			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L10			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L11			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L12			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L13			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L14			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	
L15			'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	'dɒk tri 'neə	

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engineer [en dʒɪ 'niə] (- - |) or (| - -)

Patterns	BW		SW					MP
	participants	engine [en dʒɪn]						
H01	en dʒɪn	MP						
H02	'en dʒɪn	-						
H03	'en dʒɪn	-						
H04	'en dʒɪn	-						
H05	'en dʒɪn	-						
H06	'en dʒɪn	-						
H07	en dʒɪn	-						
H08	'en dʒɪn	-						
H09	'en dʒɪn	-						
H10	'en dʒɪn	-						
H11	'en dʒɪn	-						
H12	'en dʒɪn	-						
H13	'en dʒɪn	-						
H14	'en dʒɪn	-						
H15	'en dʒɪn	-						

Patterns	BW		SW					MP
	participants	engine [en dʒɪn]						
L01	'en dʒɪn	-						
L02	'en dʒɪn	MP						
L03	'en dʒɪn	MP						
L04	'en dʒɪn	-						
L05	'en dʒɪn	-						
L06	'en dʒɪn	MP						
L07	'en dʒɪn	MP						
L08	'en dʒɪn	MP						
L09	'en dʒɪn	-						
L10	'en dʒɪn	MP						
L11	'en dʒɪn	-						
L12	'en dʒɪn	-						
L13	'en dʒɪn	MP						
L14	'en dʒɪn	MP						
L15	'en dʒɪn	-						

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Japanese [ɰdʒæ pæ 'ni:z] (- - |) or (| - |)

participants	Patterns		BW		SW		MP
			Japan [ɰdʒæ 'pæɪn]				
H01		-	dʒæ 'pæɪn ^h		- -		
H02		-	dʒæ pæɪn ^h				
H03		-	dʒæ pæɪn ^h				
H04		-	dʒæ pæɪn ^h				
H05		-	dʒæ pæɪn ^h				
H06		-	dʒæ pæɪn ^h				
H07		-	dʒæ pæɪn ^h				
H08		-	dʒæ pæɪn ^h				
H09		-	dʒæ pæɪn ^h				
H10		-	dʒæ pæɪn ^h				
H11		-	dʒæ pæɪn ^h				
H12		-	dʒæ pæɪn ^h				
H13		-	dʒæ pæɪn ^h				
H14		-	dʒæ pæɪn ^h				
H15		-	dʒæ pæɪn ^h				

participants	Patterns		BW		SW		MP
			Japan [ɰdʒæ 'pæɪn]				
L01		-	dʒæ pæɪn ^h		- -		
L02		-	dʒæ pæɪn ^h				
L03		-	dʒæ pæɪn ^h				
L04		-	dʒæ pæɪn ^h				
L05		-	dʒæ pæɪn ^h				
L06		-	dʒæ pæɪn ^h				
L07		-	dʒæ pæɪn ^h				
L08		-	dʒæ pæɪn ^h				
L09		-	dʒæ pæɪn ^h				
L10		-	dʒæ pæɪn ^h				
L11		-	dʒæ pæɪn ^h				
L12		-	dʒæ pæɪn ^h				
L13		-	dʒæ pæɪn ^h				
L14		-	dʒæ pæɪn ^h				
L15		-	dʒæ pæɪn ^h				

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Portuguese [ˌpɔː tʃə ˈɡiːz] (- - |) or (| - |)

Patterns participants	BW		SW					MP		
	Portugal [ˌpɔː tʃə ɡɐl]		--	-	- -	- -	-		-	
H01	'pɔm tɔ 'ɡɔlf	-		'pɔm tɔ 'ɡɔlf ^h						
H02	'pɔ tɔ ɡɐl	- -								'pɔ tɔ 'ɡeɪs
H03	'pɔm tɔ 'ɡɔlf	-								
H04	'pɔ tɔ ɡɐl	MP			'pɔ tʃə ɡɪs					'pɔ tʃə 'ɡeɪs
H05	'pɔ tɔ ɡɐl	- -		'pɔ tɔ 'ɡɪs						
H06	'pɔ tɔ ɡɐl	- -		'pɔ tɔ 'ɡɪs						
H07	'pɔm tɔ 'ɡɔlf	MP								
H08	'pɔm tɔ 'ɡɛɫ'	-		'pɔm tɔ 'ɡɪs ^h						
H09	'pɔ tɔ ɡɔl	- -								
H10	'pɔ tʃə ɡɛɫ	- -								
H11	'pɔm tɔ 'ɡɔlf ^h	-		'pɔm tɔ 'ɡɪs ^h						
H12	'pɔ tʃə ɡɛɫ	- -								'pɔ tʃɪf ɡeɪs
H13	'pɔ tɔ ɡɛɫ	- -		'pɔ tɔ 'ɡɪs						
H14	'pɔm tɔ 'ɡeɪt'	MP								
H15	'pɔm tɔ 'ɡɔlf	-								'pɔ tɔ 'ɡeɪt sɛs

Patterns participants	BW		SW					MP		
	Portugal [ˌpɔː tʃə ɡɐl]		--	-	- -	- -	-		-	
L01	'pɔm tɔ 'ɡɔlf ^m	-								'pɔm tɔ 'dʒɛs ^h
L02	'pɔm tɔ 'ɔɫ'	MP								'pɔɫ tɔ 'ɾɐ'
L03	'pɔm tʃɔ 'ɡɔlf	-								'pɔm tʃɔ ^h 'nɔʃ
L04	'pɔ tɔ ɡɔl	- -								'pɔ tɔ 'ɡeɪs
L05	'pɔ tɔ ɡɔl	- -		'pɔ tɔ 'ɡɪs						
L06	'pɔm tɔ 'ɡeɪt'	MP								'pɔ tɔ 'kɛʃ
L07	'pɔm tɔ 'ɡeɪt'	MP								'pu tɔ 'ɡɛʃ ^h
L08	'pɔ tɔ ɡɪ	MP								'pɔm tɔ 'kɛʃ
L09	'pɔm tɔ 'ɡɔlf ^m	-								
L10	'pɔ tɔ ɡɛɫ	- -								
L11	'pɔ tɔ ɡɛɫ	- -								
L12	'pɔm tɔ 'ɡɔlf	-								'pɔm tɔ 'ɡʊʃ
L13	'pɔm tɔ 'ɡeɪt'	MP								'pɔ tɔ 'ɡeɪs
L14	'pɔ tɔ ɡɛɫ	- -		'pɔm tɔ 'ɡɪs ^h						'pɔm tɔ 'ɡʊʃ
L15	'pɔ tɔ 'ɡeɪt'	MP		'pɔ tɔ 'ɡɪs						

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abdominal [æb 'dɒ mɪ nəl] (- | - -)

Patterns participants	BW		SW							MP	
	abdomen [æb dɒ meɪn]		- - -	- - -	- - - -	- - -	- - -	- - -	- - -		
H01	'æbʰ dɒ 'mɛɪn ^m	-							'æbʰ dɒ mɪ 'nɔɪf		
H02	'æbʰ dɒ mɛn	- -							'æb dɒ mɪ 'nɔɪf		
H03	'æbʰ dɒ 'mɛɪn ^m	- -							'æbʰ dɒ mɪ 'nɔɪf		
H04	'æb dɒ 'mɛn	- -									
H05	'æbʰ 'dɒm 'mɛɪn ^m	- -							'æb 'dɒʰ mɪ nəl		
H06	æb 'dɒ mɛn	- -							'æbʰ 'dɒm mɪ nəl		
H07	'æb 'dɒ mɛn										
H08	'æbʰ 'dɒm 'mɛɪn ^m										
H09	'æb dɒ mɛn	- -							'æbʰ dɒ mɪ 'nɔɪf		
H10	æb 'dɒ mɛn	- -							'æbʰ dɒ mɪ 'nɔɪf		
H11	æb 'dɒ mɛnd	MP									
H12	æb 'dɒ mɛn	- -									
H13	'æbʰ dɒ mɛn	- -									
H14	'æb 'dɒ mɛn	-							'æbʰ 'dɒm mɪ nɔɪ		
H15	'æbʰ dɒ mɛn	- -									

Patterns participants	BW		SW							MP	
	abdomen [æb dɒ meɪn]		- - -	- - -	- - - -	- - -	- - -	- - -	- - -		
L01	'æbʰ dɒ 'mɛɪn ^h	- -									
L02	a 'dʌsʰ nɪs	MP									
L03	a 'hæpʰ dɒ 'mɛɪn ^m	MP									a 'dʌʰ mə 'li:sʰ mæpʰ dɒ 'mɛɪn ^m 'nɔɪf
L04	'æbʰ dɒ 'mɛn ^h	- -									
L05	æb 'dɒ mɛn	- -									
L06	'æbʰ 'dɒm 'mɛɪn ^h	- -									
L07	a 'dɒm 'mɛɪn ^m	MP									'æbʰ 'dɒm mɪ 'neɪn ^m 'æf 'dɒm mɪ 'neɪn ^m
L08	æb 'dɒ mɛn	- -									
L09	'æbʰ dɒ 'mɛɪn ^m	- -									
L10	æb 'dɒ mɛn	- -									
L11	'æb 'dɒ mɛn	-									
L12	'æb dɒ mɛn	- -									
L13	'æbʰ dɒ 'mɛɪn ^h	- -									
L14	æb 'dɒ mɛn	- -									
L15	'æb dɒ mɛn	- -									

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authority [ɔ: 'θɒ rə ti] (- | - -)

Patterns participants	BW		SW					MP
	authorize [ɔ: θɔ: rə iz]		- - -	- - -	- - -	- - -	- - -	
H01	ɔ to 'raɪtʰ	--						
H02	ə to 'raɪʃ	--						
H03	ɔ to 'raɪʃ	MP						
H04	ɔ to 'raɪs	- - -						
H05	ə to 'raɪʃ	- - -						
H06	ɔ to 'raɪʃ	- -						
H07	ɔ to 'raɪs	- - -						
H08	ə to 'raɪʃ	- - -						
H09	ɔ to 'raɪʃ	- -						
H10	ɔ to 'raɪʃ	- -						
H11	ɔ to 'raɪʃ	- - -						
H12	ɔ to 'raɪs	- - -						
H13	ɔ to 'raɪʃ	- -						
H14	ɔ to 'raɪʃ	- -						
H15	ɔ to 'raɪʃ	- -						

Patterns participants	BW		SW					MP
	authorize [ɔ: θɔ: rə iz]		- - -	- - -	- - -	- - -	- - -	
L01	ɔ to 'raɪtʰ	MP						
L02	ə 'hɒpʰ lɪ tɪ	MP						
L03	o to 'saɪtʰ	MP						
L04	ɔ to 'raɪʃ	- -						
L05	ɔ to 'raɪʃ	MP						
L06	ju to 'ɪf	MP						
L07	ə to 'raɪtʰ	MP						
L08	ɔ to 'raɪʃ	MP						
L09	ə to 'raɪʃ	- - -						
L10	ən to 'rɪs	MP						
L11	'æd to 'rɪs	MP						
L12	ʊ to 'raɪtʰ	MP						
L13	ɔ to 'saɪtʰ	MP						
L14	ɔ to 'raɪs	- - -						
L15	ɔ to 'saɪs	MP						

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detoxify [di: 'tɒk sɪ faɪ] (- | - -)

Patterns participants	BW detox[di: tɒks]		SW						MP	
			- - -	- - -	- -	- -	- -	- -		- -
H01	'dɪm 'tɒk	MP								
H02	'dɪ tɒks	-								
H03	'dɪm 'tɒks'									'deɪm 'tɒk sɪ faɪ
H04	dɪ 'tɒks	-								
H05	'dɪ tɒk	MP	dɪ 'tɒk sɪ faɪ							
H06	'dɪm 'tɒks'									
H07	'dɪm 'tɒk'	MP								
H08	'dɪm 'tɒks'									
H09	'dɪ tɒks	-								
H10	'dɪt 'tɒk	MP								
H11	'dɪ tɒks	-								
H12	dɪ 'tɒks	-								
H13	'dɪm 'tɒks'									
H14	'deɪks' 'tɒks'	MP								
H15	'dɪt 'tɒk	MP								

Patterns participants	BW detox[di: tɒks]		SW						MP	
			- - -	- - -	- -	- -	- -	- -		- -
L01	'dɪm 'tɒk	MP								
L02	dɪt 'tɒk	MP								
L03	'dɪm 'tɒk'	MP								
L04	'dɪ tɒk	MP								
L05	'dɪ tɒk	MP								
L06	'dɪm 'tɒk'	MP								
L07	'dɪm 'tɒk'	MP								
L08	'dɪ tɒk	MP								
L09	dɪ 'tɒk	MP								
L10	'de tɒk	MP								
L11	'dɪ tɒk	MP								
L12	dɪ 'tɒk'	MP								
L13	'dɪ tɒk	MP								
L14	'dɪ tɒk	MP								
L15	dɪ 'tɒks	-								

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solidify [sə 'li dɪ fəɪ] (- - | - -)

Patterns participants	BW solid [sɒ lɪ d]		SW					MP
	- - -	- - -	- - - -	- - -	- - -	- -	- - -	
H01	'sɒ lɪ d	-						
H02	'sɒ lɪ d	-	'sɒ lɪ dɪ fəɪ					
H03	'sɒ lɪ d	-	'sɒ lɪ dɪ fəɪ					
H04	'sɒ lɪ d	-		sɒ lɪ dɪ fəɪ				'sɒ lɪ fəɪ
H05	'sɒ lɪ d	-						
H06	'sɒ lɪ d	-		sɒ lɪ dɪ fəɪ				
H07	'sɒ lɪ d	-						
H08	'sɒ lɪ d	-						
H09	'sɒ lɪ d	-						
H10	'sɒ lɪ d	-						
H11	'sɒ lɪ d	-						
H12	'sɒ lɪ d	-	'sɒ lɪ dɪ fəɪ					
H13	'sɒ lɪ d	-						
H14	'sɒ lɪ d	-	'sɒ lɪ dɪ fəɪ					
H15	'sɒ lɪ d	-						

Patterns participants	BW solid [sɒ lɪ d]		SW					MP
	- - -	- - -	- - - -	- - -	- - -	- -	- - -	
L01	'sɒ lɪ d	-						
L02	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L03	'sɒ lɪ d	-						sɒ lɪ fəɪ
L04	'sɒ lɪ d	-						sɒ lɪ dɪ
L05	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L06	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L07	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L08	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L09	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L10	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L11	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L12	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L13	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L14	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ
L15	'sɒ lɪ d	-						'sɒ lɪ dɪ fəɪ

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triangulate [traɪˈæŋgʌlət] (- | - -)

Patterns participants	BW triangle [ˈtraɪ.æŋ.gəl]		SW					MP	
	- - -	- - -	- - - -	- -	- -	- -	- -		-
H01	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H02	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
H03	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H04	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
H05	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H06	traɪˈæŋgʌlət	traɪˈæŋgʌlət							'traɪ.æŋ.gəl
H07	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H08	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
H09	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H10	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
H11	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H12	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
H13	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
H14	traɪˈæŋgʌlət	traɪˈæŋgʌlət							'traɪ.æŋ.gəl
H15	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							

Patterns participants	BW triangle [ˈtraɪ.æŋ.gəl]		SW					MP	
	- - -	- - -	- - - -	- -	- -	- -	- -		-
L01	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L02	traɪˈæŋgʌlət	traɪˈæŋgʌlət							'traɪ.æŋ.gəl
L03	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L04	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L05	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L06	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L07	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L08	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L09	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L10	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L11	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L12	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L13	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							
L14	traɪˈæŋgʌlət	traɪˈæŋgʌlət							
L15	'traɪ.æŋ.gəl	'traɪ.æŋ.gəl							

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certificate [sə 'tɪ frɪ kət] (- | - -)

participants	Patterns	BW		SW										MP						
		certify [sɜː tɪ faɪ]		- - -	- - -	- - -	- - - -	- -	- -	- - -	--	- -	- -							
H01	'sɜː tɪ faɪ ^m	-	- - -																	
H02	'sɜː tɪ faɪ	- -	- - -																	
H03	'sɜː tɪ faɪ	- -	- - -																	
H04	'sɜː tɪ faɪ	- -	- - -																	
H05	'sɜː tɪ faɪ	- -	- - -																	
H06	'sɜː tɪ faɪ	-	- - -																	
H07	'sɜː tɪ faɪ	- -	- - -																	
H08	'sɜː tɪ faɪ ^m	-	- - -																	
H09	'sɜː tɪ faɪ	- -	- - -																	
H10	'sɜː tɪ faɪ	- -	- - -																	
H11	'sɜː tɪ faɪ ^m	-	- - -																	
H12	'sɜː tɪ faɪ	- -	- - -																	
H13	'sɜː tɪ faɪ	-	- - -																	
H14	'sɜː tɪ faɪ ^m	-	- - -																	
H15	'sɜː tɪ faɪ	- -	- - -																	

participants	Patterns	BW		SW										MP						
		certify [sɜː tɪ faɪ]		- - -	- - -	- - -	- - - -	- -	- -	- - -	--	- -	- -							
L01	'sɜː tɪ faɪ ^m	-	- - -																	
L02	'kɪt ^h tɪ 'fɪ	MP	- - -																	
L03	'kɜː tɪ 'fɪ	-	- - -																	
L04	'kɜː tɪ 'fɪ	MP	- - -																	
L05	'sɜː tɪ faɪ	-	- - -																	
L06	'sɜː tɪ 'fɪ	MP	- - -																	
L07	'sɜː tɪ faɪ ^m	-	- - -																	
L08	'sɜː tɪ 'fɪ	MP	- - -																	
L09	'sɜː tɪ faɪ	-	- - -																	
L10	'sɜː tɪ faɪ	-	- - -																	
L11	'kɜː tɪ faɪ	MP	- - -																	
L12	'sɜː tɪ faɪ	-	- - -																	
L13	'sɜː tɪ 'fɪ	MP	- - -																	
L14	'sɜː tɪ faɪ	- -	- - -																	
L15	'kɜː tɪ fi	MP	- - -																	

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community [kə 'mju: nə ti] (- | - -)

Patterns participants	BW		SW										MP		
	communes[kəm ju:n]		- - -	- - -	- - -	- - -	- -	- -	- - -	- - -	- - -	- -		- -	- -
H01	'kəm' 'nju:n'														
H02	kəm 'nju:n	-													
H03	'kəm 'nju:n	-													
H04	kəm 'nju:n	-													
H05	'kəm' 'nju:n'														
H06	kəm 'nju:n	MP													
H07	kəm 'nju:n	-													
H08	'kəm' 'nju:n'														
H09	kəm 'nju:n	-													
H10	'kəm' 'nju:n'														
H11	'kəm' 'nju:n'														
H12	kəm 'nju:n	-													
H13	kəm 'nju:n	-													
H14	kəm 'nju:n	-													
H15	kəm 'nju:n	-													

Patterns participants	BW		SW										MP		
	communes[kəm ju:n]		- - -	- - -	- - -	- - -	- -	- -	- - -	- - -	- - -	- -		- -	- -
L01	'kəm' 'nju:n'	MP													
L02	'kəm' 'nju:n'	MP													
L03	'kəm' 'nju:n'	MP													
L04	'kəm' 'nju:n'														
L05	'kəm' 'nju:n'	-													
L06	'kəm' 'nju:n'	MP													
L07	'kəm' 'nju:n'	MP													
L08	'kəm' 'nju:n'	-													
L09	'kəm' 'nju:n'														
L10	'kəm' 'nju:n'														
L11	'kəm' 'nju:n'	-													
L12	'kəm' 'nju:n'	MP													
L13	'kəm' 'nju:n'														
L14	'kəm' 'nju:n'	-													
L15	'kəm' 'nju:n'	-													

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communicate [kə 'mju: ni kert] (- - | - - -)

Patterns participants	BW		SW										MP			
	communie [kə mju:n]		- - - -	- - - -	- - - -	- - - -	- - -	- - -	- - -	- - -	- - -	- - -		- - -	- -	- -
H01	communie [kə mju:n]															
H02	'kəm' 'nju:n'															
H03	kəm 'nju:n															
H04	'kəm' 'nju:n'															
H05	kəm 'nju:n															
H06	'kəm' 'nju:n'															
H07	kəm 'nju:n															
H08	'kəm' 'nju:n'															
H09	kəm 'nju:n															
H10	'kəm' 'nju:n'															
H11	kəm 'nju:n															
H12	'kəm' 'nju:n'															
H13	kəm 'nju:n															
H14	'kəm' 'nju:n'															
H15	kəm 'nju:n															

Patterns participants	BW		SW										MP			
	communie [kə mju:n]		- - - -	- - - -	- - - -	- - - -	- - -	- - -	- - -	- - -	- - -	- - -		- - -	- -	- -
L01	communie [kə mju:n]	MP														
L02	'kəm' 'nju:n'	MP														'kə' 'nju:n
L03	kəm 'nju:n	MP														'kəm' 'nju:n
L04	'kəm' 'nju:n'															'kəm' 'nju:n
L05	kəm 'nju:n															'kəm' 'nju:n
L06	'kəm' 'nju:n'															'kəm' 'nju:n
L07	kəm 'nju:n															'kəm' 'nju:n
L08	'kəm' 'nju:n'															'kəm' 'nju:n
L09	kəm 'nju:n															'kəm' 'nju:n
L10	'kəm' 'nju:n'															'kəm' 'nju:n
L11	kəm 'nju:n															'kəm' 'nju:n
L12	'kəm' 'nju:n'															'kəm' 'nju:n
L13	kəm 'nju:n															'kəm' 'nju:n
L14	'kəm' 'nju:n'															'kəm' 'nju:n
L15	kəm 'nju:n															'kəm' 'nju:n

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objectify [əb 'dʒek tɪ fɑɪ] (- | - -)

Patterns participants	BW		SW										MP						
	object [əb dʒɪk]		- - -	- - -	- - -	- - - -	- -	- -	- -	- - -	- -	- - -		- - -	- -	- -	- -	- -	- -
H01	'əb 'dʒek'																		
H02	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H03	'əb 'dʒekt'		əb 'dʒek tɪ fɑɪ																
H04	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H05	'əb dʒekt	-	'əb dʒek tɪ fɑɪ																
H06	'əb dʒekt	-																	
H07	'əb 'dʒek																		
H08	'əb 'dʒek'																		
H09	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H10	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H11	'əb 'dʒek'																		
H12	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H13	'əb dʒekt	-	əb 'dʒek tɪ fɑɪ																
H14	'əb dʒekt	-																	
H15	əb 'dʒekt	-	əb 'dʒek tɪ fɑɪ																

Patterns participants	BW		SW										MP						
	object [əb dʒɪk]		- - -	- - -	- - -	- - - -	- -	- -	- -	- - -	- -	- - -		- - -	- -	- -	- -	- -	- -
L01	'əb dʒek	-																	
L02	'əb 'dʒek'	MP																	
L03	'əb 'dʒek'																		
L04	'əb 'dʒek'																		
L05	'əb dʒek	-																	
L06	'əb 'dʒek'																		
L07	'əb 'dʒek'																		
L08	'əb dʒek	-																	
L09	'əb dʒek	-																	
L10	'əb 'dʒek'																		
L11	'əb dʒek	-																	
L12	'əb 'dʒek'		əb 'dʒek tɪ fɑɪ																
L13	'əb dʒek	-																	
L14	'əb dʒek	-	əb 'dʒek tɪ fɑɪ																
L15	'əb dʒekt	-																	

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original [ə 'rɪ dʒə nəl] (- | - -)

Patterns participants	BW		SW										MP	
	origin [ə rɪ dʒən]		- - -	- - -	- - -	- - -	- -	- -	- - -	--	- -	- -		-
H01	בָּרֵךְ	הַרְדֵּךְ	- - -											
H02	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H03	בָּרֵךְ	הַרְדֵּךְ נֶל	- - -											
H04	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H05	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H06	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H07	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H08	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H09	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H10	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H11	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H12	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H13	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H14	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
H15	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											

Patterns participants	BW		SW										MP	
	origin [ə rɪ dʒən]		- - -	- - -	- - -	- - -	- -	- -	- - -	--	- -	- -		-
L01	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L02	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L03	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L04	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L05	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L06	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L07	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L08	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L09	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L10	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L11	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L12	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L13	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L14	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											
L15	הַרְדֵּךְ	הַרְדֵּךְ נֶל	- - -											

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advantageous [ˌæd væn 'teɪ dʒəs] (- - | -) or (| - | -)

Participants	Patterns		SW										MP	
	advantage [əd'veɪn.tɪdʒ]		- - - -	- - -	- - - -	- - - -	- - - - -	- - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
H01	advantage	MP												
H02	'æd' væn 'teɪ'	MP												
H03	'æd' væn 'teɪ dʒəs'	MP												
H04	'æd' væn 'teɪ dʒəs'	MP												
H05	'æd' væn 'teɪ dʒəs'	MP												
H06	'æd' væn 'teɪ dʒəs'	MP												
H07	'æd' væn 'teɪ dʒəs'	MP												
H08	'æd' væn 'teɪ dʒəs'	MP												
H09	'æd' væn 'teɪ dʒəs'	MP												
H10	'æd' væn 'teɪ dʒəs'	MP												
H11	'æd' væn 'teɪ dʒəs'	MP												
H12	'æd' væn 'teɪ dʒəs'	MP												
H13	'æd' væn 'teɪ dʒəs'	MP												
H14	'æd' væn 'teɪ dʒəs'	MP												
H15	'æd' væn 'teɪ dʒəs'	MP												

Participants	Patterns		SW										MP	
	advantage [əd'veɪn.tɪdʒ]		- - - -	- - -	- - - -	- - - -	- - - - -	- - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
L01	advantage	MP												
L02	'æd' væn 'teɪ'	MP												
L03	'æd' væn 'teɪ dʒəs'	MP												
L04	'æd' væn 'teɪ dʒəs'	MP												
L05	'æd' væn 'teɪ dʒəs'	MP												
L06	'æd' væn 'teɪ dʒəs'	MP												
L07	'æd' væn 'teɪ dʒəs'	MP												
L08	'æd' væn 'teɪ dʒəs'	MP												
L09	'æd' væn 'teɪ dʒəs'	MP												
L10	'æd' væn 'teɪ dʒəs'	MP												
L11	'æd' væn 'teɪ dʒəs'	MP												
L12	'æd' væn 'teɪ dʒəs'	MP												
L13	'æd' væn 'teɪ dʒəs'	MP												
L14	'æd' væn 'teɪ dʒəs'	MP												
L15	'æd' væn 'teɪ dʒəs'	MP												

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education [e dʒu 'keɪʃən] (-- | - | -) or (| - | -)

participants	Patterns		SW											MP	
	BW	educate [e dʒu keɪʃ]	-- --	- -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -		- - - -
H01	educate [e dʒu keɪʃ]	educate [e dʒu keɪʃ]	-- --	- -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
H02	i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	--	i dɔ 'keɪʃ tʃən											
H03	'eɪ dɔ keɪʃ		--												'eɪ dɔ 'keɪʃ tʃən
H04	'eɪ dɔ 'keɪʃ	e dɔ 'keɪʃ tʃən	-	e dɔ 'keɪʃ tʃən											
H05	eɪ dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											
H06	'i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	-	i dɔ 'keɪʃ tʃən											
H07	'eɪ dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											
H08	'i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	-	i dɔ 'keɪʃ tʃən											
H09	i dɔ 'keɪʃ	e dɔ 'keɪʃ tʃən	--	e dɔ 'keɪʃ tʃən											
H10	'eɪ dɔ 'keɪʃ	'eɪ dɔ 'keɪʃ tʃən	-	'eɪ dɔ 'keɪʃ tʃən											
H11	'e dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											
H12	'e dɔ 'keɪʃ	e dɔ 'keɪʃ tʃən	--	e dɔ 'keɪʃ tʃən											
H13	'e dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											
H14	'eɪ dɔ 'keɪʃ	'eɪ dɔ 'keɪʃ tʃən	-	'eɪ dɔ 'keɪʃ tʃən											
H15	'e dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											

participants	Patterns		SW											MP	
	BW	educate [e dʒu keɪʃ]	-- --	- -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -		- - - -
L01	educate [e dʒu keɪʃ]	educate [e dʒu keɪʃ]	-- --	- -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -
L02	i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	--	i dɔ 'keɪʃ tʃən											
L03	dt 'keɪʃ		MP												dt 'keɪʃ tʃən
L04	ɪn 'ɡreɪʃ		MP												ɪn 'keɪʃ tʃən
L05	'i dɔ keɪʃ	i dɔ 'keɪʃ tʃən	MP	i dɔ 'keɪʃ tʃən											
L06	'i dɔ 'keɪʃ	'eɪ dɔ 'keɪʃ tʃən	- -	'eɪ dɔ 'keɪʃ tʃən											
L07	i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	-	i dɔ 'keɪʃ tʃən											
L08	'i dɔ keɪʃ	i dɔ 'keɪʃ tʃən	--	i dɔ 'keɪʃ tʃən											
L09	'i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	--	i dɔ 'keɪʃ tʃən											
L10	'i dɔ 'keɪʃ	i dɔ 'keɪʃ tʃən	--	i dɔ 'keɪʃ tʃən											
L11	ɪn dɔ keɪʃ	ɪn dɔ keɪʃ tʃən	MP	ɪn dɔ keɪʃ tʃən											ɪn dɔ 'keɪʃ tʃən
L12	'i dɔ keɪʃ	'i dɔ keɪʃ tʃən	- -	'i dɔ keɪʃ tʃən											
L13	'e dɔ keɪʃ	'e dɔ keɪʃ tʃən	- -	'e dɔ keɪʃ tʃən											
L14	'i dɔ keɪʃ	i dɔ 'keɪʃ tʃən	- -	i dɔ 'keɪʃ tʃən											
L15	'e dɔ keɪʃ	e dɔ 'keɪʃ tʃən	- -	e dɔ 'keɪʃ tʃən											

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situation [sɪ tʃu 'erʃən] (-- | -) or (| - | -)

participants	Patterns		SW										MP		
	BW situate [sɪ tʃu eɪt]		-- -	- -	- - -	- - -	- - -	- -	- -	- -	- -	- -			
H01	'sɪ to eɪt	- -												'sɪ tu 'erʃ tʃən	
H02	'sɪ to eɪt	- -													
H03	'sɪ to 'eɪt	-													
H04	'sɪs to eɪt	MP													
H05	'sɪ to 'eɪt	-													
H06	'sɪ to 'eɪt	-													
H07	'sɪ to eɪt	- -													
H08	'sɪ tu 'eɪt	-													
H09	'sɪ to eɪt	- -													
H10	'sɪ to eɪt	- -													
H11	'sɪ to 'eɪt	-													
H12	'sɪ to eɪt	- -													
H13	'sɪ to eɪt	- -													
H14	'sɪ to 'eɪt	-													
H15	'sɪ to eɪt	- -													

participants	Patterns		SW										MP		
	BW situate [sɪ tʃu eɪt]		-- -	- -	- - -	- - -	- - -	- -	- -	- -	- -	- -			
L01	'sɪ to 'eɪt	-													
L02	'sɪs to rə tɪ	MP													
L03	'sɪt tɪ	MP													
L04	'sɪ to 'eɪt	- -													
L05	'sɪ to eɪt	- -													
L06	'sɪ tu 'eɪt	MP													
L07	'sɪ to 'eɪt	MP													
L08	'sɪ to eɪt	- -													
L09	'sɪ to 'eɪt	-													
L10	'sɪ to eɪt	MP													
L11	'sɪs əl	MP													
L12	'sɪ tu 'res	MP													
L13	'sɪ to 'eɪt	-													
L14	'sɪ to 'eɪt	-													
L15	'sɪ tu l	MP													

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instantaneous [ˌɪn stən ˈteɪ niəs] (- - - | -) or (| - | -)

participants	Patterns		SW										MP	
	BW		instant [ɪn stɛnt]	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -		- -
H01	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H02	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H03	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H04	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H05	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H06	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H07	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H08	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H09	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H10	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H11	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H12	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H13	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H14	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
H15	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -

participants	Patterns		SW										MP	
	BW		instant [ɪn stɛnt]	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -		- -
L01	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L02	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L03	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L04	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L05	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L06	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L07	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L08	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L09	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L10	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L11	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L12	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L13	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L14	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -
L15	instant	in stɛnt ^h	-	- - -	- -	- - -	- - - -	- - - -	- -	- - -	- -	- - -	- -	- -

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intellectual [ˌɪn tə 'leɪk tʃuəl] (- - | - -) or (| - | - -)

participants	Patterns		SW															MP
	BW intellect [ˌɪnləlekt]		- - - -	- -	- - - -	- - - -	- - - -	- -	- - -	- -	- -	- - -	- - -	- -	- -	- -		
H01	'ɪnˈtelˈleɪk	-																
H02	'ɪnˈtəlˈleɪk	- -																
H03	'ɪnˈtelˈleɪkʰ	-																
H04	'ɪnˈtəlˈleɪk	-																
H05	'ɪnˈtəlˈleɪk	- -																
H06	'ɪnˈtelˈleɪk	MP																
H07	'ɪnˈtelˈleɪkʰ	MP																
H08	'ɪnˈtəlˈleɪkʰ	-																
H09	'ɪnˈtəlˈleɪk	- -																
H10	'ɪnˈtəlˈleɪk	-																
H11	'ɪnˈtelˈleɪkʰ	-																
H12	'ɪnˈtəlˈleɪk	- -																
H13	'ɪnˈtəlˈleɪk	- -																
H14	'ɪnˈtəlˈleɪk	-																
H15	'ɪnˈtelˈleɪk	- -																

participants	Patterns		SW															MP
	BW intellect [ˌɪnləlekt]		- - - -	- -	- - - -	- - - -	- - - -	- - - -	- -	- - -	- -	- -	- - -	- - -	- -	- -	- -	
L01	'ɪnˈtelˈleɪkʰ	-																
L02	'ɪnˈtelˈleɪkʰ	MP																
L03	'ɪnˈtelˈleɪkʰ	MP																
L04	'ɪnˈtelˈleɪk	- -																
L05	'ɪnˈtelˈleɪk	- -																
L06	'ɪnˈtelˈleɪk																	
L07	'ɪnˈtelˈleɪk	MP																
L08	'ɪnˈtelˈleɪk	MP																
L09	'ɪnˈtelˈleɪk	MP																
L10	'ɪnˈtelˈleɪkʰ	- -																
L11	'ɪnˈtelˈleɪk	MP																
L12	'ɪnˈtelˈleɪkʰ	-																
L13	'ɪnˈtelˈleɪk	-																
L14	'ɪnˈtelˈleɪk	- -																
L15	'ɪnˈtelˈleɪk	-																

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population [ˌpɒp jə 'leɪ ʃən] (- - | - -) or (| - | -)

participants	Patterns		SW										MP
	BW	populate [ˌpɒp jə leɪt]	- - - -	- -	- - - -	- - - -	- - - -	- -	- - -	- -	- -	'pɒp jə leɪ ʃən'	
H01	popjə leɪt'	popjə leɪt'	- - - -	- -	- - - -	- - - -	- - - -	- -	- - -	- -	'pɒp jə leɪ ʃən'	- -	- -
H02	popjə leɪt'	popjə leɪt'	- - -	popjə leɪt ʃən									
H03	popjə leɪt'	popjə leɪt'	- -										
H04	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H05	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H06	popjə leɪt'	popjə leɪt ʃən	- -	popjə leɪt ʃən									
H07	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H08	popjə leɪt'	popjə leɪt ʃən	- -	popjə leɪt ʃən							popjə leɪt' ʃən'		
H09	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H10	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H11	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H12	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H13	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H14	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
H15	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									

participants	Patterns		SW										MP
	BW	populate [ˌpɒp jə leɪt]	- - - -	- -	- - - -	- - - -	- - - -	- -	- - -	- -	- -	'pɒp jə leɪ ʃən'	
L01	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L02	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L03	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L04	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L05	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L06	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L07	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L08	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L09	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L10	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L11	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L12	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L13	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L14	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									
L15	popjə leɪt'	popjə leɪt ʃən	- - -	popjə leɪt ʃən									

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agricultural [æ grɪ 'kʌl tʃə rəl] (- - | - - -) or (| - | - -)

Patterns participants	BW		SW										MP		
	agriculture [æ grɪ kʌl tʃə rəl]		- - - - -	- - - -	- - - - -	- - - - -	- - - - -	- - - -	- - -	- - - - -	- -	- - -			
H01	agriculture [æ grɪ kʌl tʃə rəl]	- -													
H02	'æb' grɪ kʌl dʒə	- - -													
H03	æ grɪ 'kʌl dʒə	- - -													
H04	a 'grɪb' kʌl dʒə	- - -													
H05	a 'grɪ kʌl dʒə	- - -													
H06	'æb' grɪ 'kʌl dʒə	- -													
H07	æ grɪ 'kʌl dʒə	- - -													
H08	æ grɪ kʌl dʒə	- - -													
H09	æ grɪ 'kʌl tʃə rəl	MP													
H10	'a' grɪ 'kʌl tʃə rəl	- -													
H11	æ grɪ kʌl dʒə	- - -													
H12	'æ dʒɪ kʌl tʃə rəl	MP													
H13	æ grɪ 'kʌl dʒə	- - -													
H14	'a grɪ kʌl tʃə rəl	- - -													
H15	'æ grɪ 'kʌl dʒə	- -													

Patterns participants	BW		SW										MP		
	agriculture [æ grɪ kʌl tʃə rəl]		- - - - -	- - - -	- - - - -	- - - - -	- - - - -	- - - -	- - -	- - - - -	- -	- - -			
L01	agriculture [æ grɪ kʌl tʃə rəl]	MP													
L02	a 'grɪb' kʌl tʃə rəl	MP													
L03	a 'grɪb' kʌl tʃə rəl	MP													
L04	a rɪ 'kʌl dʒə	MP													
L05	'æb' grɪ 'kʌl tʃə rəl	MP													
L06	a dʒɪ 'kʌl tʃə rəl	MP													
L07	a 'grɪb' kʌl tʃə rəl	MP													
L08	a grɪ 'kʌl tʃə rəl	MP													
L09	a grɪ 'kʌl tʃə rəl	- - -													
L10	a grɪ 'kʌl tʃə rəl	- - -													
L11	a 'grɪb' kʌl tʃə rəl	MP													
L12	a 'grɪb' kʌl tʃə rəl	MP													
L13	'æ dʒɪ kʌl tʃə rəl	MP													
L14	a 'grɪb' kʌl tʃə rəl	- - -													
L15	e dʒɪ 'kʌl tʃə rəl	MP													

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differentiate [dɪ fə 'ren ʃi ɛɪt] (- - | - -) or (| - | - -)

Patterns participants	BW		SW										MP		
	different ['dɪ fə ɪ ɔɪt]		-- --	--	-----	- ----	-	-	-	-	-	-		-	-
H01	dɪf fə 'renʃ	-		dɪf fə 'renʃ tɪ ɛɪt											
H02	'dɪf fə ɪ ɔɪt	- -													'dɪf fə ɪ ɔɪt
H03	dɪf fə 'renʃ	MP		dɪf fə 'renʃ tɪ ʃi ɛɪt											
H04	'dɪf fə ɪ ɔɪt	- -													
H05	'dɪf fə ɪ ɔɪt	- -		'dɪf fə 'renʃ tɪ ɛɪt											
H06	dɪf fə 'renʃ	-		'dɪf fə 'renʃ tɪ ʃi ɛɪt											
H07	'dɪf fə ɪ ɔɪt	- -													'dɪf fə 'renʃ tɪ ɛɪt
H08	dɪf fə 'renʃ	MP													
H09	'dɪf fə ɪ ɔɪt	- -													'dɪf fə ɪ ɔɪt
H10	'dɪf fə ɪ ɔɪt	- -		dɪf fə 'renʃ tɪ ɛɪt											
H11	dɪf fə 'renʃ	- -		dɪf fə 'renʃ tɪ ɛɪt											
H13	'dɪf fə ɪ ɔɪt	- -													
H14	'dɪf fə ɪ ɔɪt	- -													'dɪf fə 'renʃ tɪ ɛɪt
H15	'dɪf fə ɪ ɔɪt	- -		dɪf fə 'renʃ tɪ ɛɪt											

Patterns participants	BW		SW										MP		
	different ['dɪ fə ɪ ɔɪt]		-- --	--	-----	- ----	-	-	-	-	-	-		-	-
L01	dɪf fə 'renʃ	-													'dɪf fə 'renʃ tɪ ɛɪt
L02	dɪ 'ʃi ɔɪt	MP													dɪf fə 'renʃ tɪ ɛɪt
L03	'tɪ ɔɪt	MP													dɪf fə 'renʃ tɪ ɛɪt
L04	dɪf fə 'renʃ	-		dɪf fə 'renʃ tɪ ɛɪt											
L05	'dɪf fə ɪ ɔɪt	- -													
L06	dɪf fə 'renʃ	-													
L07	'dɪf fə ɪ ɔɪt	MP													'dɪf fə ɪ ɔɪt
L08	dɪf fə 'renʃ	-		dɪf fə 'renʃ tɪ ɛɪt											
L09	'dɪf fə ɪ ɔɪt	-													'dɪf fə ɪ ɔɪt
L10	dɪf fə 'renʃ	MP													'dɪf fə 'renʃ tɪ ɛɪt
L11	'dɪf fə ɪ ɔɪt	-													'dɪf fə 'renʃ tɪ ɛɪt
L12	dɪf fə 'renʃ	-													'dɪf fə 'renʃ tɪ ɛɪt
L13	'dɪf fə ɪ ɔɪt	-													'dɪf fə 'renʃ tɪ ɛɪt
L14	'dɪf fə ɪ ɔɪt	- -													'dɪf fə 'renʃ tɪ ɛɪt
L15	'dɪf fə ɪ ɔɪt	- -													'dɪf fə 'renʃ tɪ ɛɪt

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particularly [pə 'tɪ kjə lə li] (- | - - -)

Patterns participants	BW		SW										MP	
	particular [pə 'tɪ kjə lə li]		- - - -	- - - -	- - - - -	- - - - -	- - - -	- - - - -	- - - -	- - - -	- - - - -	- - - -		
H01	particular [pə 'tɪ kjə lə li]	- -												
H02	'pə ^m tɪ kə 'lɑː	- - - -												
H03	'pə ^m tɪ kə 'lɑː													
H04	'pə ^m tɪ kə 'lɑː	- - - -												
H05	pə 'tɪ kə lə	- - - -												
H06	'pə ^m tɪ kə lə	- - - -												
H07	pə 'tɪ kə 'lɑː	- - - -												
H08	pə 'tɪ kə 'lɑː	- - - -												
H09	'pə ^m tɪ kə 'lɑː	- -												
H10	pə 'tɪ kə 'lɑː	- - -												
H11	pə 'tɪ kə lə	- - - -												
H12	pə 'tɪ kə lə	- - - -												
H13	pə 'tɪ kə lə	- - - -												
H14	pə 'tɪ kə lə	- - - -												
H15	pə 'tɪ kə 'lɑː	- - - -												

Patterns participants	BW		SW										MP	
	particular [pə 'tɪ kjə lə li]		- - - -	- - - -	- - - - -	- - - - -	- - - -	- - - - -	- - - -	- - - -	- - - - -	- - - -		
L01	particular [pə 'tɪ kjə lə li]	- -												
L02	'pə ^m tɪ kə 'lɑː	MP												
L03	pə 'nɪ 'kɔː	MP												
L04	'pə ^m tɪ kə 'lɑː	- -												
L05	pə 'tɪ kə 'lɑː	- - - -												
L06	'pə ^m tɪ kə 'lɑː	- - -												
L07	'pə ^m tɪ kə 'lɑː	- -												
L08	'pə ^m tɪ kə 'lɑː	MP												
L09	pə 'tɪ kə lə	- - - -												
L10	'pə ^m tɪ kə 'lɑː	- -												
L11	pə 'tɪ kə 'lɑː	- - -												
L12	'pə ^m tɪ kə 'lɑː	MP												
L13	'pə ^m tɪ kə 'lɑː	- - - -												
L14	pə 'tɪ kə lə	- - - -												
L15	'pə ^m tɪ kə 'lɑː	MP												

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responsibility [ris ,pon sɪ 'bɪ lə tɪ] (- - - - | - - -) or (- - | - | - -)

Patterns participants	BW		SW						MP	
	responsible [ris ,pon sɪ bəl]		- - - - - - -	- - - - -	- - - - -	- - - - -	- - - -	- - - -		
H01	responsible [ris ,pon sɪ bəl]	---								
H02	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
H03	'res ^h ,pon sɪ 'bɪl	---								
H04	res ,pon sɪ bəl	- ---		res ,pon ^m sɪ 'bɪ lɪ tɪ						'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
H05	'res ^h ,pon sɪ bəl	---								
H06	'res ^h ,pon sɪ bəl	---								
H07	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
H08	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
H09	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
H10	'res ^h ,pon sɪ bəl	---		res ,pon ^m sɪ 'bɪ lɪ tɪ						
H11	'res ^h ,pon sɪ 'bɪl	---								
H12	'res ^h ,pon sɪ bəl	---								
H13	res ,pon sɪ bəl	- ---	ris ,pon sɪ 'bɪ lɪ tɪ							
H14	'res ^h ,pon sɪ 'bɪl	MP								'rɪ ^m ,spɒn ^m sɪ bɪ lɪ tɪ
H15	'res ^h ,pon sɪ bəl	---								'res ^h ,pon ^m sɪ 'bɪ lɪ tɪ

Patterns participants	BW		SW						MP	
	responsible [ris ,pon sɪ bəl]		- - - - - - -	- - - - -	- - - - -	- - - - -	- - - -	- - - -		
L01	responsible [ris ,pon sɪ bəl]	---								
L02	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ lɪ bɪ 'tɪ
L03	'rɪ ^h ,pɒ ^m rɪt	MP								'lɪ ^h ,pɒ ^m ,vɪ ^h lɪ f
L04	re 'pɒ ^h tʃən 'bɪl	MP								'rɪt ^h ,pɒs ^h bɪ lɪ 'tɪ
L05	res ,pon sɪ bəl	- ---								'rɪt ^h ,pɒs ^h sɪ bɪ lɪ 'tɪ
L06	'res ^h ,pon sɪ bəl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
L07	'res ^h ,pon sɪ 'bɪl	---								'res ^h ,pon ^m sɪ bɪ lɪ 'tɪ
L08	res ,pon sɪ bəl	- ---								'rɪ ^m ,spɒn ^m sɪ 'bɪ ^m lɪ lə 'tɪ
L09	re 'pɒn ^h sɪ bəl	MP								res ,pon ^m sɪ 'bɒ ^m lɪ tɪ
L10	res ,pon sɪ 'bɪl	- ---		res ,pon ^m sɪ 'bɪ lɪ tɪ						rɪ ,pɒn ^h sɪ bə 'lɪ tɪ
L11	rɪ ,pɒ ^h sɪt 'bɪl	MP								lɪ pɒ 'sɪt ^m lɪ bɪ 'tɪ
L12	re 'pɒ ^m sɪ 'bɪl	MP								res ^h ,pɒ sɪ 'bɪ ^h lə tɪ
L13	'res ^h ,pon sɪ 'bɪl	---								
L14	'res ^h ,pon sɪ bəl	---		res ,pon ^m sɪ 'bɪ lɪ tɪ						
L15	re ,pon sɪ bəl	MP								'res ^h ,pon ^m sɪ lɪ bɪ 'tɪ

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