

On the Phonovisual Method for Teaching Spellings and Sounds

A Thesis

Presented to

The Faculty of

the Graduate School of Language and Culture,

Hiroshima Jogakuin University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

By

Yumiko Nakamura

January 2005

## CONTENTS

|  |     |
|--|-----|
| Introduction · · · · ·   | 1   |
| Chapter 1  |     |
| The analysis of the pictorial charts · · · · ·                   | 5   |
| Chapter 2  |     |
| The relation between sounds and spellings · · · · ·              | 27  |
| Chapter 3  |     |
| Application of the Phonovisual Method to Japanese learners · · · | 92  |
| Conclusion · · · · ·   | 99  |
| Bibliography · · · · ·   | 102 |

## Introduction

Most Japanese students begin to study English with the memorizing of alphabet letters and naming of the letters. As soon as they finish learning the alphabets, mostly they are expected to read simple sentences by using textbooks. Then, they are confronted with the problems of how to read words.

We cannot read English words even though we know names of the letters in alphabetical sequence. To memorize names of the letters does not help us to read words. We must know the sounds of the letters in order to read words.

The Phonovisual Method is a phonics based method, which helps us to learn the relations between spellings and sounds. There are many phonics based method in the world. In this thesis, we take up one of the methods, the Phonovisual Method. We examine the system of the method and investigate the connections of spellings and sounds.

The Phonovisual Method (henceforth, PVM) was developed in America by Lucille D. Schoolfield and Josephine B. Timberlake who were teachers in the early 1940's. This method was produced through their experience of having lived with many children who did not read letters. Also, it was developed in the view that the learners can get a clue to read by learning the

relations between sounds and letters which represent the sounds.

The PVM is a teaching method which combines 'phone' (sound) and 'visual' (sight) literally. The characteristic teaching materials are two pictorial charts, which are the Vowel and Consonant Chart. By using the charts, we can use not only the auditory function but also the visual function. Therefore, the charts play an important role in the PVM.

Moreover, this method is not used for the improvement of reading skill; it is used for improving writing skills. In order to develop learners' skills clearly, the PVM asserts that it should be taught by the following procedure:

(1) The three basic steps

1. Teach all initial consonant sounds
2. Teach all initial and final consonant sounds
3. Teach the vowels (Smith, 1978:5)

In the first step, the initial consonants, like /d/ in *dog*, are taught so that learners can recognize, read, pronounce, and write the consonant sounds in relation to key words on the chart. At the second step, the first and last sounds, like /d/ and /g/ in *dog*, are taught. By listening to a word, learners practice identifying the both of the sounds, and then write them. Finally, learners learn to recognize and pronounce all vowel



sounds.

The question which we must consider here is why the initial consonant sounds are taught first. In chapter one we consider the reasons, and we also analyze the organization of two charts phonetically.

In Chapter two, we examine the initial consonant sounds in details with special emphasis on the relations between spellings and sounds. We also discuss the characteristics of each consonant with the word lists, and explain about the importance of the initial consonant.

The PVM was developed and it is mainly used for teaching young children who are English native speakers in the United States. However, the PVM asserts that it is not only for young native speakers as follows:

- (2) It [The Phonovisual Method] is useful for the average, the brilliant, the handicapped, in adult education, and in teaching English as a foreign language. (Smith, 1978:5)

The PVM insists that it can be applied to the teaching of English as a foreign language. In fact, the method is used in Japan, especially in Y.E.S. (Yamaguchi English School) where their teaching is based on the PVM and they produce significant achievement.

The question which we must consider next is whether it is

possible to apply the method to Japanese learners in the same way it is used to teach native speakers. Also, can we teach by using the same words as native speakers when we teach the pronunciations to Japanese learners? Or, do we have to change the words so that learners can easily recognize them? In order to answer these questions, we discuss how we can apply the PVM to Japanese learners in Chapter three.

## Chapter 1

### The analysis of the pictorial charts

#### 1.1 The Consonant Chart of PVM

##### 1.1.1 Initial consonants

Before we examine the consonant chart, we will begin our discussion by considering initial consonants. The two charts, which are the Consonant Chart and the Vowel Chart, are used as the basis of the method and the teaching materials as well. These charts are made to be used for training in auditory and visual discrimination. That is to say, learners can remember naturally by using these charts every lesson.

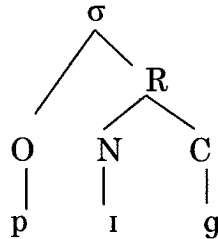
According to the procedure of teaching this method, the teaching begins with the initial consonants. Smith states the reasons as follows:

- (1) The Chart is taught first because there are more consonants than vowels. More words begin with a consonant than with a vowel. (Smith, 1978:6)

As Smith mentions above, it is true that English has many words which begin with consonants. We can describe the

syllable structure of CVC in English as follows:

(2) pig [pɪg]



The nucleus (abbreviated N) is a syllabic element that forms the core of a syllable ( $\sigma$ ). The coda (C) consists of elements that follow the nucleus in the same syllable. The rhyme (R) is made up of the nucleus and coda. The onset (O) is elements that precede the rhyme in the same syllable.

Most English words can be applied to this diagram, so it is natural to teach the sound of onsets first. Another reason is that by emphasizing the initial consonant, the mistakes of reversal reading from right to left will be reduced and also it will be helpful for children to read from left to right. The later data will show us the number of words including the initial consonants.

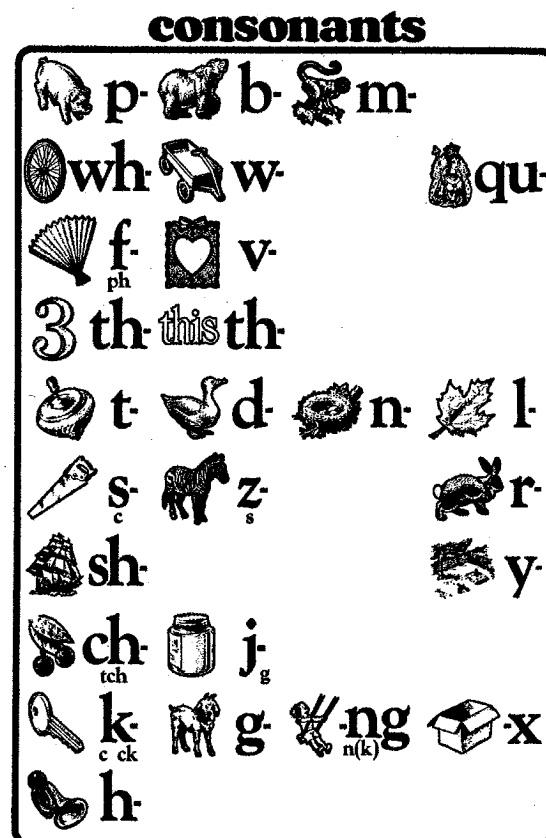
Moreover, consonants are sounds produced by modification of airflow and by the movement of tongue and lips. It is easier for learners to distinguish initial consonants than vowels because the characteristics of their features are shown more clearly. O'Grady and Dobrovolsky (1998:78) mention that a feature is

“the [smallest] unit of phonological structure, that make up segments.” A sound is represented by some features, and the sound is pronounced most clearly in the initial position of words. Therefore, the characteristics of their features are appeared more clearly. Judging from the above, it stands to reason that the initial consonants are taught in the beginning.

### 1.1.2 Confidence of the Consonant Chart

We will now analyze the Consonant Chart in detail. Let us look at the Consonant Chart which is used in the PVM.

#### (3) The Pictorial Consonant Chart of PVM



(Smith, 1978)

The Consonant Chart has 26 sounds. The thick letter in chart (3) represents the key sound and the dash after each key sound indicates “missing letters (Smith, 1978:6).” For example, the dash ‘f-’ indicates that this sound will be taught in the initial position and some letters come after the sound. On the other hand, ‘-ng’ shows that this sound will be taught in the final position and some letters come before the sound. The small letter under the key sound ‘ph’ represents the secondary or other spellings for which the pronunciation is the same as the key sound. The picture represents a word with the key sound.

These sounds are elaborately arranged, which are based on the chart of phonetic sounds. Chart (3) is arranged vertically and horizontally. The first vertical column is voiceless consonants; the second column is voiced ones; the third column is nasals; the fourth column is the remaining consonants, such as liquids, glide, and two other consonants: qu- and -x. On the other hand, the sounds are horizontally organized according to the point of articulation. The sounds of the first horizontal line are bilabials; the second is labials; the third is labiodentals; the fourth is dentals; the fifth and the sixth are alveolar; the seventh and the eighth are palatals; the ninth is velars; and the bottom is glottal. Although the sounds of sh- [ʃ], ch- [tʃ], j- [dʒ] and y- [j] are organized as the palatals in chart (3), they are divided into the postalveolar and the palatal in many books on phonetics. Moreover, the term of “alveopalatal” has

been used traditionally in the International Phonetic Alphabet (IPA); however, the term was revised to “postalveolar” in 1996. Therefore the palatals in chart (3) can be divided into the postalveolar, sh- [ʃ], ch- [tʃ], j- [dʒ] and the palatal, y- [j], according to the new IPA system. Therefore chart (3) can be represented as chart (4) by using the point of articulation.

(4) Point of articulation

| Point of articulation | Voiceless | Voiced | Nasal | Others |
|-----------------------|-----------|--------|-------|--------|
| Bilabial              | p-        | b-     | m-    |        |
| Labial                | wh-       | w-     |       | qu-    |
| Labiodental           | f-        | v-     |       |        |
| Dental                | th-       | th-    |       |        |
| Alveolar              | t-        | d-     | n-    | l-     |
|                       | s-        | z-     |       | r-     |
| Postalveolar          | sh-       |        |       |        |
|                       | ch-       | j-     |       |        |
| Palatal               |           |        |       | y-     |
| Velar                 | k-        | g-     | -ng   | x-     |
| Glottal               | h-        |        |       |        |

This arrangement almost coincides with the chart of English consonants. Since it is common to arrange the manner of articulation vertically and the point of articulation horizontally,

we can rearrange chart (4) to the general phonetic classification as follows:

(5) The chart of consonant articulation by means of the PVM

| Point of articulations<br>Manner of articulation |                  | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Palatal | Velar  | Glottal |
|--|------------------|----------|--------------|--------|----------|---------------|---------|--------|---------|
| Stop   | Voiceless        | p·[p]    |              |        | t·[t]    |               |         | k·[k]  |         |
|  | voiced           | b·[b]    |              |        | d·[d]    |               |         | g·[g]  |         |
| Fricative  | Voiceless        |          | f·[f]        | th·[θ] | s·[s]    | sh·[ʃ]        |         |        | h·[h]   |
|  | voiced           |          | v·[v]        | th·[ð] | z·[z]    |               |         |        |         |
| Affricate  | Voiceless        |          |              |        |          | ch·[tʃ]       |         |        |         |
|  | voiced           |          |              |        |          | j·[dʒ]        |         |        |         |
| Nasal  | voiced           | m·[m]    |              |        | n·[n]    |               |         | ·ng[ŋ] |         |
| Liquid   | voiced lateral   |          |              |        | l·[l]    |               |         |        |         |
|  | voiced retroflex |          |              |        | r·[r]    |               |         |        |         |
| Glide  | Voiceless        | wh·[hʷ]  |              |        |          |               |         |        |         |
|  | voiced           | w·[w]    |              |        |          |               | y·[j]   |        |         |
| Special Consonant                                |                  | qu·[kw]  |              |        |          |               |         | ·x[ks] |         |



## (6) English Phoneme of Consonants

| Point of articulations<br>Manner of articulation |                  | Bilabial | Labio-dental | Dental | Alveolar | Post-alveolar | Palatal | Velar | Glottal |
|--|------------------|----------|--------------|--------|----------|---------------|---------|-------|---------|
| Stop   | Voiceless        | p        |              |        | t        |               |         | k     |         |
|  | voiced           | b        |              |        | d        |               |         | g     |         |
| Fricative  | Voiceless        |          | f            | θ      | s        | ʃ             |         |       | h       |
|  | voiced           |          | v            | ð      | z        | ʒ             |         |       |         |
| Affricate  | Voiceless        |          |              |        |          | tʃ            |         |       |         |
|  | voiced           |          |              |        |          | dʒ            |         |       |         |
| Nasal  | voiced           | m        |              |        | n        |               |         | ŋ     |         |
| Liquid   | voiced lateral   |          |              |        | l        |               |         |       |         |
|  | voiced retroflex |          |              |        | r        |               |         |       |         |
| Glide  | Voiceless        | hw       |              |        |          |               |         |       |         |
|  | voiced           | w        |              |        |          |               | j       |       |         |

Compared with these two charts, the Consonant Chart of PVM is quite similar to the chart of English Phonemes. Accordingly, we can recognize that the Consonant Chart of PVM is a credible chart from the viewpoint of phonetics.

### 1.1.3 The phoneme /ɜ/

When we compare these two charts, we should notice a difference that the sound [ɜ] is missing in chart (5). In order to understand why, we need to mention the environment of the sound [ɜ] in the spelling and the sounds itself. The following lists words including the sound [ɜ]. The following angle bracket indicates grapheme which represents the spelling of words. We use < > to distinguish the spelling and phoneme.

(7) The words including [ʒ] sound

a. <s>

casual ['kæʒʊəl], illusion [ɪ'luʒən], occasion [ə'keɪʒən],  
treasure ['treɪʒə], pleasure ['pleɪʒə], usual ['juʒʊəl],  
measure ['meɪʒə], television ['teləvɪʒən]

b. <g>

negligee [ˌneglɪ'ʒeɪ], regime [rɪ'ʒɪm]  
montage [mɒn'tɑʒ], collage [kə'lɑʒ], rouge [ruʒ],  
garage [gə'rɑʒ]

The words in (7) show that the sound [ʒ] is spelled <s> and <g>. When we look at (7a), the sound [ʒ] occurs between vowels. These are examples of palatalization and we can formulate the process of pronunciation as in (8).

(8) The process of pronunciation

- a. casual: / kæsʊəl /  $\xrightarrow{(1)}$  / kæʒʊəl /  $\xrightarrow{(2)}$  / kæʒjʊəl /  $\xrightarrow{(3)}$  [ 'kæʒʊəl ]  
b. illusion: / ɪlusɪən /  $\xrightarrow{(1)}$  / ɪluzɪən /  $\xrightarrow{(3)}$  [ ɪ'luʒən ]

We see from (8a) and (8b) that /s/ is voiced between vowels and it is changed to /z/ as seen in the arrow (1). The palatal /j/ is inserted before the back vowel /ʊ/ in (2). The alveolar /z/ is finally palatalized to [ʒ] in (3), which is affected by /j/. The following indicates the rules for these.

(9) Voicing Rule

$$[-\text{voiced}] \rightarrow [+ \text{voiced}] \quad / \quad \text{V} \_\_\_\_\_\text{V}$$

(10) /j/ insertion

$$\emptyset \rightarrow /j/ \quad / \quad \_\_\_\_\_\left\{ \begin{array}{c} +\text{high} \\ +\text{back} \\ \text{V} \end{array} \right\}$$

(11) Palatalization

$$[+\text{alveolar}] \rightarrow [+ \text{palatal}] \quad / \quad \_\_\_\_\_\left\{ \begin{array}{c} +\text{high} \\ -\text{back} \end{array} \right\}$$

Let us now return to the explanation of the words in (7b). The sound [ʒ] is spelled <g> in the middle and final positions of words. Moreover, these words are loan words of French. In French <g> is originally pronounced to [g], and it is pronounced [ʒ] before <e> and <i>.

The first reason why [ʒ] is not listed in the Consonant Chart of PVM is that since onset is taught first in the PVM, as stated above, [ʒ] should not be taught because most of the words including [ʒ] are pronounced in the middle or the end of words, not in the initial position. The second reason is that as many words including the sound [ʒ] are originated from French, these loan words need not be taught at the first step. The third reason is that the PVM mentions that a teacher should choose monosyllabic words in order to make the sound and spelling easy to understand for learners. Therefore the polysyllabic

words, as seen in (7), should not be taught at the first level. From the reasons above, we understand why the sound [ʒ] has been unlisted in the Consonant Chart of PVM.

#### 1.1.4 Special consonants : <qu> and <-x>

From an examination of the Consonant Chart (3), we notice that there are two special consonants, which are <qu> [kw] and <-x> [ks]. Since these consonants are not English phonemes in chart (6), we need an explanation of why these two consonants are included in chart (3), although they are not single sounds.

Although English has many consonant clusters, why are these two, [kw] and [ks], taken up in the chart? As a purpose of the PVM is to develop spelling, reading, and writing skills, each alphabet letter takes an important role in the process of learning. Therefore, in order to make a learner recognize the spelling of all alphabet letters and their pronunciation, <q> and <x> should be listed in chart (3).

So, why is <qu>, not <q>, listed in the chart? The first reason is to distinguish [kw] from [k]. The pronunciation of <q> is represented by [k]. The pronunciation of <k> is also described as [k]. However, the phonetic description of <qu> is [kw], not [k]. Therefore, in order to make a clear distinction between the pronunciation [kw] and [k], we need to list <qu>, not <q> in the chart. The second reason of using [kw] is that many words including <q> are composed of the combination of

<q> and <u> as follows:

(12) The words including spelling <qu>

a. Initial position

quack, quilt, quit, quite, quiz, queen, quick, quest, quiet,  
quote, quake, question

b. Middle position

request, require, square, liquid, equal, adequate,  
equipment, frequent, sequence

As we have seen in (12), <q> is usually followed by <u>. Therefore, judging from the frequency of the usage, there is enough evidence to list <qu> in the Consonant Chart.

Next, in order to explain the position of <qu> and <x> in chart (3), we need to look at the sounds of [kw] and [ks]. The sound [kw] is in the second horizontal line, where labial sounds are listed. The sound [k] is not a labial sound; it is a velar sound. However, when we pronounce [kw], the lips are rounded to produce the following sound, [w]. From this viewpoint, it is appropriate to list [kw] as a labial sound.

On the other hand, [ks] is listed in velars, the ninth horizontal line. Since [ks] is pronounced by beginning with the velar sound, [k] in the point of articulation, [ks] is inevitably listed in velars. Moreover, [k] is not influenced by the following [s] in the pronunciation. Thus, it is proper to list

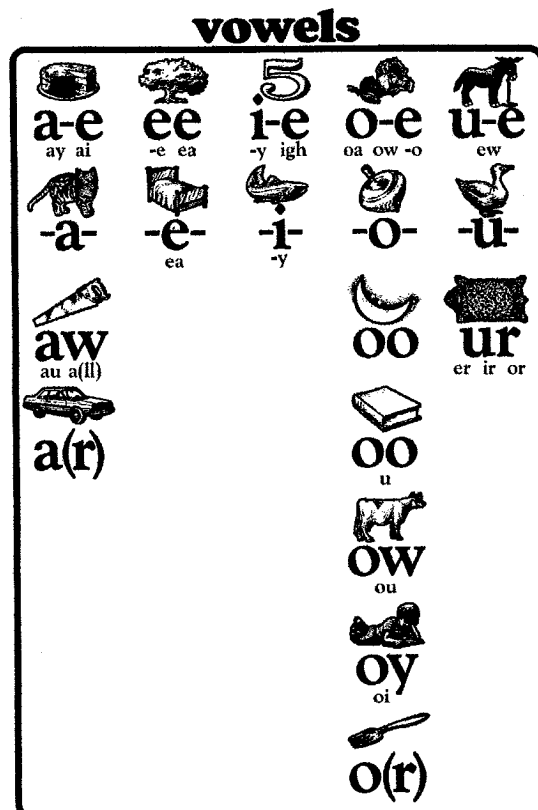
<x> on velars in chart (3).

From what has been discussed above, we can conclude that the Consonant Chart is faithfully formed on the basis of the chart of English phonemes and is considerably meaningful.

## 1.2 The Vowel Chart

We analyzed the Consonant Chart above. Next, we will take a close look at the Vowel Chart, which is another main chart of the PVM. The following chart is the Vowel Chart which is used in the PVM.

### (13) The Pictorial Vowel Chart of the PVM



(Smith, 1978)

We see in chart (13) that there are eighteen vowel sounds listed. The dash represents a missing consonant sound. The picture represents the key word which includes a vowel. We also know the pronunciation of each letter from these pictures.

### 1.2.1 The spelling <ee>

In the teaching of PVM, <ee> is taught first in the Vowel Chart. The reason is that it is easy to hear, easy to identify visually, and easy to write since <ee> is the same sound as the letter name of the alphabet, <e>.

The other four sounds followed by the silent <e> in the first row are pronounced by their letter name as we know them in the alphabet. Silent <e> means that there is a letter <e> in the spelling, but it is not pronounced. We notice that <e-e> is not listed in the row; moreover <ee> which has the same sound is listed instead of <e-e>. To explain the reason a comparison of the words including <e-e> and <ee> will be helpful.

#### (14) The comparison of <e-e> and <ee>

##### a. <e-e>

eve, mete, cede, Pete, gene, cete, deme

##### b. <ee>

peek, peel, peep, wheel, fee, feet, feel, teeth, see, seed,  
seem, sheep, sheet, cheek, cheep, keel, keen, keep, need,  
heel, bee, beech, beef, wee, weed, week, thee, deed, deem,

deep, jeep, meek, meet, need, queen, lee, leech, leek,  
reed, reef, reek

The words in (14) show the difference in the number of words. It is obvious that the words <e-e> are fewer than the words <ee>. When we look up the words <e-e> in a dictionary, we will find more words than the words in (14). However, most of those words are not in common use especially in the child's vocabulary. Judging from the frequency of usage, we believe that <ee> is appropriate to be listed.

#### 1.2.2 The phonetic transcription for vowels

Next, to look more carefully into the Vowel Chart, we can use the phonetic transcription in chart (15) as follows:



(15) The Phonetic transcription for each spelling

|                       |                    |                        |                          |                       |
|-----------------------|--------------------|------------------------|--------------------------|-----------------------|
| <b>a – e</b><br>ay ai | <b>ee</b><br>-e ea | <b>i – e</b><br>-y igh | <b>o – e</b><br>oa ow -o | <b>u – e</b><br>ew    |
| [eɪ]                  | [i]                | [aɪ]                   | [oʊ]                     | [ju]                  |
| <b>– a –</b>          | <b>– e –</b><br>ea | <b>– i –</b><br>-y     | <b>– o –</b>             | <b>– u –</b>          |
| [æ]                   | [ɛ]                | [ɪ]                    | [ɑ]                      | [ʌ]                   |
| <b>aw</b>             |                    |                        | <b>oo</b>                | <b>ur</b><br>er ir or |
| [ɔ]                   |                    |                        | [u]                      | [ɜ]                   |
| <b>a(r)</b>           |                    |                        | <b>oo</b><br>u           |                       |
| [ɑɜ]                  |                    |                        | [ʊ]                      |                       |
|                       |                    |                        | <b>ow</b><br>ou          |                       |
|                       |                    |                        | [aʊ]                     |                       |
|                       |                    |                        | <b>oy</b><br>oi          |                       |
|                       |                    |                        | [ɔɪ]                     |                       |
|                       |                    |                        | <b>o(r)</b>              |                       |
|                       |                    |                        | [ɔɜ]                     |                       |

Many English dictionaries published in Japan, like *Taishukan's Genius English-Japanese Dictionary* (1994), distinguish [i:] from [i] by using a marker of long vowel, [:]. On the other hand, since the differences of both sounds are not only according to the length of sounds but also the quality itself, many American English dictionaries adopt [i] and [ɪ]. In order to emphasize the differences of quality, we refer *Longman Advanced American Dictionary* (2000) and adopt [i], [u] and [ɪ], [ʊ].

Another point to notice is the pronunciation in <u–e>. We use [ju] as the phonetic transcription for <u–e>. One of the reasons is that the vowel followed by a consonant and the silent <e> is generally pronounced as the letter name; the letter name of <u> is pronounced [ju] as follows:

(16) The pronunciation of <u-e>: [ju]

cube [kjuβ], cute [kjut], fume [fjum], fuse [fjuz],  
mule [mjuɫ], mute [mjut], huge [hjuɔ̃], use [juz]

However, when /ju/ follows alveolars or dentals, /ju/ tends to be deleted in General American Speech (henceforth, GA) as the following rule indicates.

(17) /j/ deletion

$$/j/ \rightarrow \emptyset \text{ / } \left[ \begin{array}{l} +\text{alveolar} \\ +\text{dental} \end{array} \right] \text{ —}$$

(18) The words rule (17) applies to include:

/t/: tube [tub], tune [tun]

/d/: duke [duk], dune [dun]

/n/: nude [nud]

/z/: resume [rɪ'zum]

/l/: lute [lut]

/r/: rude [rud], ruse [ruz]

Even if there is a deletion of /j/ in fact as (18) shows, it will be easy for learners to study the sound based on a definite rule; the vowel followed by a consonant and the silent <e> is pronounced as the letter name. In addition, these deletions should be taught gradually after the rule and the sound are established. Therefore we use [ju] for the phonetic transcription of <u-e> to

distinguish [ju] from the sound [u] for <oo>.

### 1.2.3 The classification of vowels

This brings us to the second point, which is the classification of the vowels.

Smith (1978:13) states in the manual book of the PVM that “Horizontally, the top row gives the five long vowels” and “The next row, horizontally, gives the five short vowel sounds.” The question we have to ask here is whether we can classify [eɪ], [aɪ], [oʊ] into long vowels. Payne (1995:7) says that the sounds /eɪ/, /i/, /aɪ/, /oʊ/, and /ju/ are long vowel sounds in his book as well. Payne and Smith have taken a position that [eɪ], [aɪ], and [oʊ] are long vowels as well as [i] and [ju].

However, we cannot deny the objections that [eɪ], [aɪ], and [oʊ] are not long vowels, but diphthongs. According to Horiguchi (2000:21), he states that when one sound is similar to another sound phonetically and they can make pairs as /i:/ and /ɪ/, /u:/ and /ʊ/, /ɔ:/ and /ɒ/, and /ɑ:/ and /ɑ/, the classification as a long vowel is meaningful. From this point of view, since [eɪ], [aɪ], and [oʊ] can not make pairs of the similar sound, these three sounds should not be classified as long vowels.

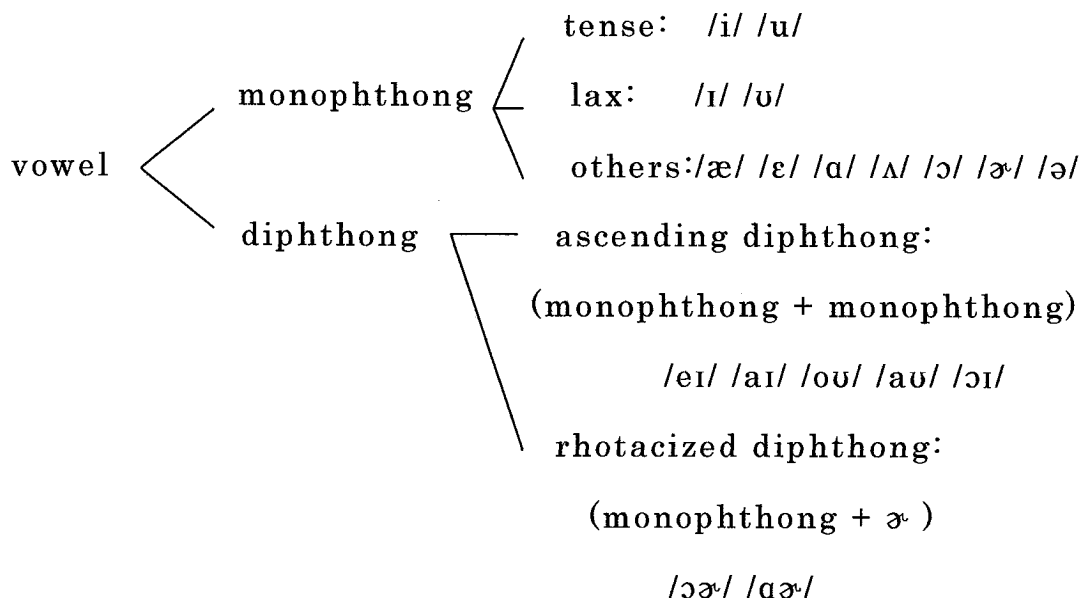
Moreover, many linguists say that /i/ and /u/ are long vowels. However we consider that /i/ and /u/ are not long vowels underlyingly, and tense vowels which are distinct from /ɪ/ and /ʊ/. Thus, judging from the discussion above, we will classify

these five vowels into two tense vowels, /i/, /u/, and three diphthongs, /eɪ/, /aɪ/, /oʊ/ in the horizontal top row.

The remaining sounds are independent of each other. There is no relationship in a row horizontally. When we look at the chart vertically, we can see the connection in each column. The leftmost column has the sounds of the spelling <a>. They are arranged in order of <e>, <i>, <o>, and <u> from left to right. In this point we know that this Vowel Chart (13) is based on spelling rather than sound. What should be remembered is that the two pictorial charts are used for learners to help them understand and remember easily. For the learners who do not know phonetic transcriptions, the Vowel Chart organized on the basis of phonetic transcription would not make any sense. Therefore we believe that the arrangement based on the spelling in chart (13) has considerable validity.

There are several classifications in English vowels, as stated above. Since we have taken a position against the idea of long vowels in /aɪ/, /eɪ/, and /oʊ/, we would use the term “diphthong” to describe these sounds. Horiguchi (2000:22) describes the classification in the movement of tongue as follows: when we articulate a monophthong, the position and shape of the tongue are almost fixed. The tongue is moved from an articulatory position of a sound to the other point of articulation in a diphthong or triphthong. In this thesis, we will classify the vowels on the basis of the movement of tongue as follows:

(19) The classification of eighteen vowels



As we have seen above, since we do not use the distinction of long vowel and short vowel, we divide vowels into monophthong and diphthong in the diagram (19). The monophthong is divided into three groups, which are tense-lax vowels, and other vowels. The seven other vowels do not have a pair in the viewpoint of tense-lax vowels. Thus we merely classify these vowels as monophthongs.

The diphthongs are divided into two groups. One is the ascending diphthong which consists of the combination of two monophthongs. Another is the rhotacized diphthong which is the combination of monophthong and /ɔ̃/, which is spelled <r>.

The spelling <r> is transcribed differently according to the following vowels. For example, in an English dictionary which is made in Japan, like *Kenkyusha's English-Japanese*

*Dictionary for the General Reader* (1984) and *Tishukan's Genius English-Japanese Dictionary* (1994), a symbol of long vowel, [ː] and Italic [r] are used as [ɑːr] to represent a phonetic transcription of *ar* in *car*. By the use of [ː] it will be possible that *ar* is pronounced as a longer [ɑ] and [r], however, we should avoid such pronunciation because it is unnatural.

Additionally, when <r> is pronounced with the preceding vowel, the vowel is rhotacized: [əːr] in *burn* is represented as [ɤ̞]. Since the tongue is moved from the vowel to /r/ smoothly when we articulate the sound of a vowel + /r/, we can say that they have a diphthongized character. Accordingly, we use the rhotacized vowel, [ɤ̞] for the sound which consists of a vowel and <r>, and we classify them as diphthongs.

Although only two sounds, /ɔ̞/ /ɑ̞/, are listed in the chart of the PVM, there are other rhotacized diphthongs such as [ɪ̞], [ɛ̞], and [ʊ̞]. The PVM does not deal with a triphthong; therefore we will not discuss it in this paper.

#### 1.2.4 Confidence of the Vowel Chart

In order to make it clear whether the Vowel Chart of the PVM covers all English phonemes, we will compare the vowels of the PVM with the general phonemes of English vowels. We can represent phonemes of vowels in the following diagram.

(20) The English phonemes of vowels

|   |      |   |
|---|------|---|
| i |      | u |
| ɪ |      | ʊ |
| e | ɜ    | o |
| ɛ | ə ɜ̃ |   |
|   | ʌ    |   |
| æ | a    | ɔ |
|   | ɑ    |   |

(21) The vowels in the Vowel Chart

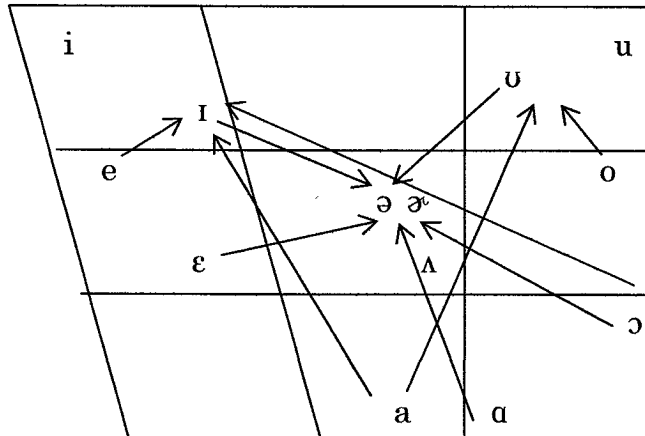
|         |         |         |
|---------|---------|---------|
| i (ee)  |         | u (oo)  |
| (-i-) ɪ |         | ʊ (oo)  |
|         | ɜ (ur)  |         |
| ɛ (-e-) | (-u-) ʌ |         |
| æ (-a-) |         | ɔ (aw)  |
|         |         | ɑ (-o-) |

We notice that a few vowels are missing in chart (21). The phonemes of /e/, /o/, /a/ are not listed as single sound and but as diphthongs. Schwa /ə/ is appeared in the stressless syllable. Also, /ɜ/ is pronounced in American English when there is a stressed vowel followed by <r>. Excluding these five sounds, (21) completely covers the major English vowels.

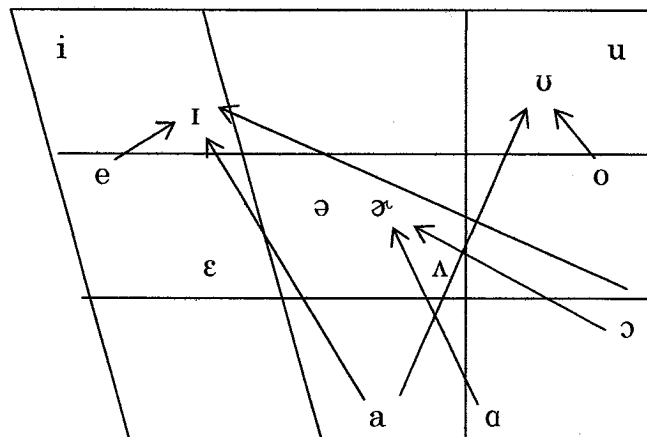
The following diagrams show the differences between the diphthongs in the PVM and the diphthongs in GA. The arrows

represent the movement of the vowels in diphthongs.

(22) The diphthongs in GA



(23) The diphthongs in the PVM



As stated above, three rhotacized diphthongs, [ɪə], [eə], and [ʊə] are missing in the Vowel Chart (13). However, compared with these diagrams, we know that the Vowel Chart of PVM is created by considering the phonetic viewpoint sufficiently since it covers almost all vowels in English. The results clearly show that the Vowel Chart of PVM is of great value phonetically.



## Chapter 2

### The relation between sounds and spellings

#### 2.1 Voiceless sounds

As stated previously in the organization of the Consonant Chart, the letters printed in small type under the primary spellings present other spellings of the same sound. The secondary spellings on the Charts do not cover all other spellings of the sounds. The secondary spellings which are most frequently used in elementary text-books or commonly needed are listed. They are determined in actual count by the authors of PVM. Moreover, presenting too many spellings on the Chart would confuse learners and the Chart itself would also be cluttered. Since the secondary spellings aim to help learners attain independence in the words which they have already learned, we understand that to list all secondary or other spellings will not only lose learner's interests and motivation, but is also meaningless.

On the other hand, the knowledge of all other spellings of the same sound should be needed for the teachers who will teach the PVM. In order to clear the relationships between the sound and the spellings we will examine the secondary or other

spellings of consonants and vowels in this chapter.

Moreover, some data below will show us what vowels can follow initial consonants. From the data we will find the prominent differences of each consonant and clarify the relationship between the initial consonants and the following vowels.

### 2.1.1 Voiceless Bilabial Stop: /p/

The phoneme /p/ is usually spelled <p> in the initial position. What we have to notice is its pronunciation. When the lips are apart from one another, there is a brief puff of air. We can describe the derivation of the aspiration as follows:

#### (1) Aspiration Rule

$$/p/ \rightarrow [+aspirated] / \sigma \quad \text{---} \quad \left( \begin{bmatrix} - \text{syllabic} \\ + \text{sonorant} \end{bmatrix} \right) \begin{bmatrix} + \text{vowel} \\ + \text{stressed} \end{bmatrix}$$

#### (2) The words rule (1) applies to include:

- a. peach [p<sup>h</sup>iʃ]
- b. pet [p<sup>h</sup>et]
- c. plan [p<sup>h</sup>læn]

As we seen in the data below, initial sounds /p/ is usually followed by most of single vowels. The phoneme /p/ can also take other consonants and vowels, which are represented as

C<sup>1</sup>C<sup>2</sup>+V. C<sup>2</sup> presents liquids; /r/, /l/, and glide; /j/ here. And /p/ can also be aspirated before these sounds. Moreover, liquids and glides are devoiced after syllable-initial voiceless stops; /p/, /t/, /k/. We can describe the rule as follows:

(3) Devoicing Rule

$$\begin{bmatrix} -\text{syllabic} \\ +\text{sonorant} \end{bmatrix} \rightarrow [-\text{voice}] / \sigma \begin{bmatrix} -\text{syllabic} \\ -\text{continuant} \\ -\text{voice} \end{bmatrix} \text{ ---}$$

(4) The words rule (3) applies to include:

- a. plan [p<sup>h</sup>læn]
- b. pride [p<sup>h</sup>raɪd]

We made the word lists to show the relationships between the initial consonant and its following vowels in the spelling. The lists are made by referring to the word lists of the PVM; however, they are not covered with all vowels which follow a consonant. Therefore, we re-select the words to show the relations between a consonant and the following possible vowels. We choose words which are familiar to Japanese as loan words of English and are also easy to understand such as the name of an object as much as possible. We do not choose non-standard dialect, slang and words of more than three syllables. When we cannot find high-frequency words, we will sometimes use unfamiliar words in order to represent all possible spellings for

a sound.

The following table shows us the words that begin with /p/. They are classified according to the vowels which follow /p/. The vowels are also grouped in accordance with their spelling. The unshaded portions represent the spellings which are the primary or secondary spellings of the Vowel Chart of PVM. The shaded portions represent other spellings which are added by the writer. Also, the mark '---' means that there are no words of the spelling.

(5) Initial /p/

| C <sup>1+</sup> | V    | spelling |  |
|-----------------|------|----------|--|
| /p/+            | /i/  | <ee>     | peek[p <sup>h</sup> ik], peel [p <sup>h</sup> it]    |
|                 |      | <ea>     | peach[p <sup>h</sup> iʃ], pea [p <sup>h</sup> i]     |
|                 |      | <-e>     | ---  |
|                 |      | <e-e>    | Pete[p <sup>h</sup> it]                              |
|                 |      | <eo>     | people[p <sup>h</sup> ipɪ]                           |
|                 |      | <e>      | Peter[p <sup>h</sup> itə]                            |
|                 | /ɪ/  | <i>      | pin[p <sup>h</sup> ɪn], pig[p <sup>h</sup> ɪg]       |
|                 |      | <y>      | pyramid[p <sup>h</sup> ɪrəˈmɪd]                      |
|                 | /ɛ/  | <e>      | pet[p <sup>h</sup> et], pen[p <sup>h</sup> ɛn]       |
|                 |      | <ea>     | peasant[p <sup>h</sup> ɛzənt]                        |
|                 | /æ/  | <a>      | pan[p <sup>h</sup> æn], pack[p <sup>h</sup> æk]      |
|                 | /ʌ/  | <u>      | pug[p <sup>h</sup> ʌg], puff[p <sup>h</sup> ʌf]      |
|                 | /u/  | <oo>     | pool[p <sup>h</sup> uɪ], poodle[p <sup>h</sup> uɪdɪ] |
|                 | /ʊ/  | <oo>     | ---  |
|                 |      | <u>      | push[p <sup>h</sup> ʊʃ], put[p <sup>h</sup> ʊt]      |
|                 | /ɔ/  | <aw>     | paw[p <sup>h</sup> ɔ], pawn[p <sup>h</sup> ɔn]       |
|                 |      | <au>     | pause[p <sup>h</sup> ɔz]                             |
|                 |      | <a(11)>  | pall[p <sup>h</sup> ɔɪ]                              |
|                 | /ɑ/  | <o>      | pop[p <sup>h</sup> ɑp], pot[p <sup>h</sup> ɑt]       |
|                 |      | <a>      | palm[p <sup>h</sup> ɑm]                              |
|                 | /ə/  | <ur>     | purple[p <sup>h</sup> əpɪ], purse[p <sup>h</sup> əs] |
|                 |      | <er>     | per[p <sup>h</sup> ə], perm[p <sup>h</sup> əm]       |
|                 |      | <ir>     | ---  |
|                 |      | <or>     | ---  |
|                 |      | <ear>    | pearl[p <sup>h</sup> ɜɪ]                             |
|                 | /ju/ | <u-e>    | puke[p <sup>h</sup> juk]                             |

|      |  |         |  |
|------|--|---------|--|
|      |  | <ew>    | pew[p <sup>h</sup> jʊ]                                   |
| /eɪ/ |  | <a-e>   | page[p <sup>h</sup> eɪdʒ], pace[p <sup>h</sup> eɪs]      |
|      |  | <ay>    | pay[p <sup>h</sup> eɪ]                                   |
|      |  | <ai>    | paint[p <sup>h</sup> eɪnt], paid[p <sup>h</sup> eɪd]     |
| /aɪ/ |  | <i-e>   | pipe[p <sup>h</sup> aɪp], pine[p <sup>h</sup> aɪn]       |
|      |  | <-y>    | ---  |
|      |  | <igh>   | ---  |
|      |  | <i>     | pilot [p <sup>h</sup> aɪlət], pint [p <sup>h</sup> aɪnt] |
|      |  | <ie>    | pie[p <sup>h</sup> aɪ]                                   |
|      |  | <y>     | pylon[p <sup>h</sup> aɪlən]                              |
| /aʊ/ |  | <ow>    | powder[p <sup>h</sup> audə]                              |
|      |  | <ou>    | pouch[p <sup>h</sup> auʃ], pound[p <sup>h</sup> aʊnd]    |
| /oʊ/ |  | <o-e>   | pole[p <sup>h</sup> oʊl], poke[p <sup>h</sup> oʊk]       |
|      |  | <oa>    | poach[p <sup>h</sup> oʊʃ]                                |
|      |  | <ow>    | ---  |
|      |  | <-o>    | post[p <sup>h</sup> oʊst], polo[p <sup>h</sup> oʊləʊ]    |
|      |  | <oe>    | poet[p <sup>h</sup> oʊt], poem[p <sup>h</sup> oʊəm]      |
| /ɔɪ/ |  | <oy>    | ---  |
|      |  | <oi>    | point[p <sup>h</sup> ɔɪnt], poison[p <sup>h</sup> ɔɪzən] |
| /ɑː/ |  | <a(r)>  | party[p <sup>h</sup> ɑːtɪl], part[p <sup>h</sup> ɑːt]    |
| /ɔː/ |  | <o(r)>  | port[p <sup>h</sup> ɔːt], pork[p <sup>h</sup> ɔːk]       |
|      |  | <our>   | pour[p <sup>h</sup> ɔː]                                  |
| /ʊə/ |  | <oo(r)> | poor[p <sup>h</sup> ʊə]                                  |
| /ɛə/ |  | <ea(r)> | pear[p <sup>h</sup> ɛə]                                  |
|      |  | <ai(r)> | pair[p <sup>h</sup> ɛə]                                  |
|      |  | <are>   | pare[p <sup>h</sup> ɛə], parent[p <sup>h</sup> ɛərənt]   |
| /ɪə/ |  | <ee(r)> | peer[p <sup>h</sup> ɪə]                                  |
|      |  | <ie(r)> | pier[p <sup>h</sup> ɪə], pierce[p <sup>h</sup> ɪəs]      |

| C <sup>1</sup> C <sup>2</sup> | +V |  |
|-------------------------------|----|--|
| /pl/                          |    | plan[p <sup>h</sup> læn], plus[p <sup>h</sup> lʌs], play[p <sup>h</sup> leɪ] |
| /pr/                          |    | pride[p <sup>h</sup> raɪd], prune[p <sup>h</sup> rʌn]                        |

What we have to notice is consonants in the spelling of vowels, which are <a(ll)> and <V+(r)>. The reason of representing <ll> after <a> is that <a> is pronounced /ɔ/ only when it is followed by <ll>. Since <ll> is a consonant, parentheses ( ) are used in order to distinguish consonants and vowels. Parentheses are also used for <r> in <V+(r)>. The phoneme /r/ here is combined to the preceding vowels, and

makes diphthongs like /aɤ/, /ɔɤ/, etc. It is pronounced /aɤ/ when <a> is followed by <r>.

In order to explain the pronunciations, we use the narrow transcriptions for the velarized-l and the syllabic consonants. The phoneme /l/ is velarized at the end of words or before a consonant. We can describe the rule of velarization as follows:

(6) Velarization Rule

$$/l/ \rightarrow [ɭ] / \text{ — } \left\{ \begin{array}{c} \# \\ C \end{array} \right\}$$

(7) The words rule (6) applies to include:

- a. peel [piɭ]
- b. pool [puɭ]
- c. pall [pɔɭ]

Schwa /ə/ plus consonantal sonorants; /r/, /l/, /m/, /n/, and /ŋ/, are reduced to syllabic consonants at the end of words. The syllabic rule is indicated as follows:

(8) Syllabic Rule

$$/ə/ + \left[ \begin{array}{c} +\text{consonantal} \\ +\text{sonorant} \end{array} \right] \rightarrow \left[ \begin{array}{c} +\text{syllabic} \\ +\text{sonorant} \end{array} \right] / \text{ — } ]\text{syl}$$

(9) The words rule (8) applies to include:

- a. purple [pɤpəɤ] → [pɤpɭ]

- b. poison [pɔɪzən] → [pɔɪzn̩]  
 c. poodle [puðəl] → [puðn̩]

The diacritic mark under the phonetically described consonants indicates that they are syllabic.

### 2.1.2 Voiceless Bilabial Glide: /hw/

There are two kinds of pronunciation for <wh->, which are [hw̩] and [w]. Since [hw̩] is generally used in GA, we transcribe <wh-> as [hw̩]. Also, <wh-> is clearly distinguished from <w-> in the PVM; <w-> is represented as a voiced sound, however <wh-> is a voiceless sound in the Chart of PVM. In order to clarify the difference between voiced and voiceless sounds, [hw̩] should be used for <wh->. The following table shows the words which begin with <wh>.

#### (10) Initial /hw/

| C <sup>1</sup> C <sup>2</sup> + | V   | spelling |                                  |
|---------------------------------|-----|----------|----------------------------------|
| /hw/+                           | /i/ | <ee>     | wheel[hwi̩t]                     |
|                                 |     | <ea>     | wheat[hwi̩t]                     |
|                                 |     | <-e>     | ---                              |
|                                 | /ɪ/ | <i>      | which[hwi̩tʃ], whiskey['hwi̩ski] |
|                                 |     | <y>      | ---                              |
|                                 | /ɛ/ | <e>      | when[hwen], whether['hwe̩ðə]     |
|                                 |     | <ea>     | ---                              |
|                                 | /æ/ | <a>      | whack[hwæk], wham [hwæm]         |
|                                 | /ʌ/ | <u>      | what[hwʌt]                       |
|                                 | /u/ | <oo>     | ---                              |
|                                 | /ʊ/ | <oo>     | ---                              |
|                                 |     | <u>      | ---                              |
|                                 | /ɔ/ | <aw>     | ---                              |
|                                 |     | <au>     | ---                              |

|  |      |         |                          |
|--|------|---------|--------------------------|
|  |      | <a(11)> | ---                      |
|  | /a/  | <o>     | ---                      |
|  | /ə/  | <ur>    | ---                      |
|  |      | <er>    | ---                      |
|  |      | <ir>    | whirl[hwɜɪ]              |
|  |      | <or>    | ---                      |
|  | /ju/ | <u-e>   | ---                      |
|  |      | <ew>    | ---                      |
|  | /eɪ/ | <a-e>   | whale[hweɪ]              |
|  |      | <ay>    | ---                      |
|  |      | <ai>    | ---                      |
|  | /aɪ/ | <i-e>   | while[hwaɪ], white[hwaɪ] |
|  |      | <-y>    | why[hwaɪ]                |
|  |      | <igh>   | ---                      |
|  | /au/ | <ow>    | ---                      |
|  |      | <ou>    | ---                      |
|  | /ou/ | <o-e>   | ---                      |
|  |      | <oa>    | ---                      |
|  |      | <ow>    | ---                      |
|  |      | <-o>    | ---                      |
|  | /ɔɪ/ | <oy>    | ---                      |
|  |      | <oi>    | ---                      |
|  | /ɑɜ/ | <a(r)>  | ---                      |
|  | /ɔɜ/ | <o(r)>  | wharf[hwɔɜf]             |
|  | /ʊɜ/ |         | ---                      |
|  | /ɛɜ/ | <ere>   | where[hweɜ]              |
|  | /ɪɜ/ |         | ---                      |

The position in which <wh> appears is very restricted. That is, <wh> appears only in the initial position. In other words, <wh> never occurs in the final position. Furthermore, /hw/ does not come before high-back vowels; /u/, /ʊ/, and /ou/, and /hw/ is pronounced /h/ by means of the deletion of /w/. The derivation rule is indicated as follows:

$$(11) \text{ /w/ Deletion Rule}$$

$$/hw/ \rightarrow /h/ \text{ / } \left[ \begin{array}{l} +\text{back} \\ -\text{low} \\ +\text{syllabic} \end{array} \right]$$



(12) The words rule (11) applies to include:

- a. who [hu]
- b. whose [huz]
- c. whom [hum]
- d. whole [houɫ]

### 2.1.3 Voiceless Labio-dental Fricative: /f/

In most words, /f/ is spelled <f> in initial position. It is spelled <ph> in some words of Greek origin.

Many technical words which are used in science and other academic disciplines, and also many everyday words, are of Greek origin. The following indicates the words which begin with <ph>.

(13) The <ph> words of Greek origin

phase [feɪz], philosophy [fɪ'ləsəfi], physical ['fɪzɪkəl],  
photograph ['fəʊtəgræf], phone [fəʊn], phrase [freɪz]

Oguri explains the origin of the <ph> words as follows:

(14) Around the time when the Romans wrote the Greek language by means of the letters of their own language, the Greek letters were pronounced [p] + [h]. Then, the Romans used <ph> for their spellings. Later, since <ph> came to be pronounced /f/ in Greek, the Romans

also pronounced the same sound, [f]. However, its spelling remains and is reflected in English as well.

[The writer's translation] (Oguri, 1968:87)

Through this historical background, <ph> has been used as the spelling of /f/; however the overwhelming majority of the spelling of the sound /f/ is <f>, especially in the beginning of words. The following table designates the words which begin with the sound /f/.

(15) Initial /f/

| C <sup>1</sup> + | V    | spelling |                          |
|------------------|------|----------|--------------------------|
| /f/+             | /i/  | <ee>     | feet[fit], feel [fiɪ]    |
|                  |      | <ea>     | feast[fist], feat [fiɪ]  |
|                  |      | <-e>     | ---                      |
|                  |      | <e>      | fever[fivə]              |
|                  |      | <ie>     | field[fiɪd]              |
|                  | /ɪ/  | <i>      | fish[fiʃ], film[fiɪm]    |
|                  |      | <y>      | ---                      |
|                  | /ɛ/  | <e>      | fence[fɛns], felt[fɛɪt]  |
|                  |      | <ea>     | feather['fɛðə]           |
|                  | /æ/  | <a>      | fan[fæn], fast[fæst]     |
|                  | /ʌ/  | <u>      | fun[fʌn], fund[fʌnd]     |
|                  | /u/  | <oo>     | fool[fuɪ], food [fud]    |
|                  |      | <oo>     | foot[fut]                |
|                  |      | <u>      | full[fuɪ]                |
|                  | /ɔ/  | <aw>     | fawn[fɔn]                |
|                  |      | <au>     | fault[fɔɪt]              |
|                  |      | <a(ɪl)>  | fall[fɔɪ]                |
|                  | /ɑ/  | <o>      | fox[fɔks], fog[fɔg]      |
|                  |      | <a>      | father['fɑðə]            |
|                  | /ə/  | <ur>     | fur[fə]                  |
|                  |      | <er>     | fern[fən]                |
|                  |      | <ir>     | firm[fəm], first[fɜst]   |
|                  |      | <or>     | for[fə], forget[fə'get]  |
|                  | /ju/ | <-u-e>   | fuse[fjuz]               |
|                  |      | <ew>     | few[fju]                 |
|                  | /eɪ/ | <a-e>    | fake[fɛɪk], face[fɛɪs]   |
|                  |      | <ay>     | fay[fɛɪ]                 |
|                  |      | <ai>     | faint[fɛɪnt], fail[fɛɪt] |

|      |         |                            |             |
|------|---------|----------------------------|-------------|
|      |         | <e>                        | fete[feɪt]  |
|      |         | <ei>                       | feign[feɪn] |
|      |         | <ey>                       | fey[feɪ]    |
| /aɪ/ | <i-e>   | five[faɪv], file[faɪl]     |             |
|      | <-y>    | ---                        |             |
|      | <igh>   | fight[faɪt]                |             |
| /aʊ/ | <ou>    | foul[faʊl]                 |             |
|      | <ow>    | fowl[faʊl]                 |             |
| /oʊ/ | <o-e>   | ---                        |             |
|      | <oa>    | foam[fəʊm]                 |             |
|      | <ow>    | ---                        |             |
|      | <-o>    | folk[fəʊk], focus['fəʊkəs] |             |
| /ɔɪ/ | <oy>    | foyer[fɔɪə]                |             |
|      | <oi>    | foil[fɔɪl]                 |             |
| /ɑə/ | <a(r)>  | far[fɑə], farm[fɑəm]       |             |
| /ɔə/ | <o(r)>  | form[fɔəm], fork[fɔək]     |             |
|      | <our>   | four[fɔə]                  |             |
|      | <ore>   | forecast['fɔəkæst]         |             |
| /ʊə/ |         | ---                        |             |
| /ɛə/ | <ea(r)> | fear[fɛə]                  |             |
|      | <ai(r)> | fair[fɛə], fairy['feəri]   |             |
|      | <are>   | fare[fɛə]                  |             |
| /ɪə/ | <ea(r)> | fear[fɪə]                  |             |

| C <sup>1</sup> C <sup>2</sup> | +V |  |
|-------------------------------|----|--|
| /fl/                          |    | flag[flæg], flash[flæʃ], France[flæns] |
| /fr/                          |    | frog[frɒg], fresh[flɛʃ], free[fri]     |

The table shows that /f/ cannot come before /ʊə/ in the initial position and /f/ can make initial clusters with /l/ and /r/.

#### 2.1.4 Voiceless Dental Fricative: /θ/

The fricative /θ/ is always spelled <th> and it usually occurs in the word initially. However some vowels cannot occur after /θ/, which are /ʊ/, /u/, /ɔɪ/, /oʊ/, /ʊə/, /ɛə/, and /ɪə/. The phoneme /θ/ enters into the initial cluster; /θr/, /θw/. Although /θ/ can be followed by /ju/ like /θju/ 'thew', we do not have to teach them since those words are not appropriate for beginners.

The following table shows the words which begin with /θ/.

(16) Initial /θ/

| C <sup>1</sup> + | V    | spelling |                             |
|------------------|------|----------|-----------------------------|
| /θ/+             | /i/  | <ee>     | ---                         |
|                  |      | <ea>     | ---                         |
|                  |      | <-e>     | ---                         |
|                  |      | <e>      | theme[θɪm], thesis ['θɪsɪs] |
|                  |      | <ie>     | thief[θɪf]                  |
|                  | /ɪ/  | <i>      | thing[θɪŋ], think[θɪŋk]     |
|                  |      | <y>      | ---                         |
|                  | /ɛ/  | <e>      | therapy['θerəpi]            |
|                  |      | <ea>     | ---                         |
|                  | /æ/  | <a>      | thank[θæŋk]                 |
|                  | /ʌ/  | <u>      | thunder['θʌndə], thumb[θʌm] |
|                  | /u/  | <oo>     | ---                         |
|                  | /ʊ/  | <oo>     | ---                         |
|                  |      | <u>      | ---                         |
|                  |      | <aw>     | thaw[θɔ]                    |
|                  |      | <au>     | ---                         |
|                  |      | <a(ɪl)>  | ---                         |
|                  |      | <ough>   | thought[θɔt]                |
|                  | /ɑ/  | <o>      | thong[θɒŋ]                  |
|                  | /ə/  | <ur>     | Thursday['θɜzdeɪ]           |
|                  |      | <er>     | thermo[θɜməʊ]               |
|                  |      | <ir>     | third[θɜd], thirsty['θɜsti] |
|                  |      | <or>     | ---                         |
|                  | /ju/ | <u-e>    | Thule[θjuɫ]                 |
|                  |      | <ew>     | thew[θju]                   |
|                  | /eɪ/ | <a-e>    | thane[θeɪn]                 |
|                  |      | <ay>     | ---                         |
|                  |      | <ai>     | ---                         |
|                  | /aɪ/ | <i-e>    | ---                         |
|                  |      | <-y>     | ---                         |
|                  |      | <igh>    | thigh[θaɪ]                  |
|                  | /aʊ/ | <ou>     | thousand[θaʊzənd]           |
|                  |      | <ow>     | ---                         |
|                  | /oʊ/ | <o-e>    | ---                         |
|                  |      | <oa>     | ---                         |
|                  |      | <ow>     | ---                         |
|                  |      | <-o>     | ---                         |
|                  | /ɔɪ/ | <oy>     | ---                         |
|                  |      | <oi>     | ---                         |
|                  | /ɑɜ/ | <a(r)>   | ---                         |
|                  | /ɔɜ/ | <o(r)>   | thorn[θɔɜn]                 |
|                  | /ʊɜ/ |          | ---                         |
|                  | /ɛɜ/ |          | ---                         |
|                  | /ɪɜ/ |          | ---                         |

|  |      |                 |
|--|------|-----------------|
|  | /ɪə/ | theater['θiətə] |
|--|------|-----------------|

| C <sup>1</sup> C <sup>2</sup> | +V |  |
|-------------------------------|----|--|
| /θr/                          |    | three[θri], throw[θrou], thrill [θrɪl] |
| /θw/                          |    | thwack[θwæk], thwart[θwɔət]            |

The phoneme /θ/ is combined with many vowels at the beginning of words, but the spellings of the vowels are very restricted; in another word, one sound does not have a variety of spellings.

The spelling of /θ/ is <th>; there are no other spellings. It means that it is easy to recognize the relation between the spelling and its sound. Although making the sound of [θ] is difficult for Japanese learners, we believe that it is easy to remember the sound as the articulation is very unique.

#### 2.1.5 Voiceless Alveolar Stop: /t/

The spelling <t> is used for the phoneme /t/ in initial position. There are no other spellings for /t/ in the Consonant Chart of PVM, and most of the words which begin with /t/ are spelled <t>. However, the spelling <th>, is sometimes pronounced as /t/. According to Kurath (1967:42), the spelling <th> appears in words taken from Greek and in foreign names as in *thyme*, *Thames*, and *Thomas*. Since there are not so many words which are spelled <th>, we understand the spelling <th> is not listed as a secondary spelling in the Consonant Chart of PVM.

Another important spelling to note is <tt> pronounced as /t/

although <tt> does not appear in the word initial position. The double consonant <tt> is always used in the medial position of a word as follows:

(17) The words including the spelling <tt>:

- a. fitting ['fɪtɪŋ]
- b. butter ['bʌtə]
- c. bitter ['bɪtə]
- d. letter ['letə]
- e. button [bʌtən]
- f. little [lɪtəl]
- g. bottle [batl]
- h. battle [bætl]

The spelling <tt> is found between a stressed vowel and unstressed vowel or syllabic /n/, /l/. In GA the phoneme /t/ is flapped in the case of (17); /t/ occurs between two syllabic sounds and the second is unstressed. We can formalize the rule as follows:

(18) Flapping Rule

$$/t/ \rightarrow [ɾ] / [+vowel] \text{ — } \left[ \begin{array}{c} +\text{syllabic} \\ -\text{stress} \end{array} \right]$$

(19) The pronunciation of words (17) rule (18) applies

- a. fitting ['fɪtɪŋ] → ['fɪɾɪŋ]

- b. butter ['bʌtə] → ['bʌrə]
- c. bitter ['bɪtə] → ['bɪrə]
- d. letter ['letə] → ['leɾə]
- e. button [bʌtn̩] → [bʌr̩n̩]
- f. little [lɪt̩l̩] → [lɪr̩t̩l̩]
- g. bottle [bɒt̩l̩] → [bɒr̩t̩l̩]
- h. battle [bæt̩l̩] → [bær̩t̩l̩]

We know that we do not need to teach the sound [r] emphatically for beginners. The teacher, however, should use the sound [r] in the words when they teach other initial consonants. Many words in (19) are used in Japanese as loan words; in fact it is hard for the Japanese to pronounce them properly. However, since we have to avoid pronouncing these like Japanese and approach a more natural pronunciation, teachers need to understand the rule and use the flapping [r]. Therefore, we emphasize the intermediate <tt> as an important spelling for its pronunciation.

The following table shows the words which begin with the phoneme /t/ for the spelling <t>.

(20) Initial /t/

| C'+  | V   | spelling |   |
|------|-----|----------|---|
| /t/+ | /i/ | <ee>     | teen[t <sup>h</sup> ɪn], teeth [t <sup>h</sup> iθ]  |
|      |     | <ea>     | tea[t <sup>h</sup> i], team [t <sup>h</sup> ɪm]     |
|      |     | <-e>     | ...   |
|      | /ɪ/ | <i>      | ticket[t <sup>h</sup> ɪkɪt], tip[t <sup>h</sup> ɪp] |
|      |     | <y>      | typical[t <sup>h</sup> ɪpɪk̩l̩]                     |

|  |       |         |  |
|--|-------|---------|--|
|  | /ɛ/   | <e>     | ten[t <sup>h</sup> ɛn], test[t <sup>h</sup> ɛst]               |
|  |       | <ea>    | ---  |
|  | /æ/   | <a>     | tag[t <sup>h</sup> æɡ], tap[t <sup>h</sup> æp]                 |
|  | /ʌ/   | <u>     | tub[t <sup>h</sup> ʌb], tunnel [t <sup>h</sup> ʌnəl]           |
|  |       | <o>     | tongue[t <sup>h</sup> ʌŋ], ton[t <sup>h</sup> ʌn]              |
|  |       | <ou>    | touch[t <sup>h</sup> ʌf], tough[t <sup>h</sup> ʌf]             |
|  | /u/   | <oo>    | tool[t <sup>h</sup> uɪ], tooth[t <sup>h</sup> uθ]              |
|  |       | <ou>    | toupee[tu <sup>h</sup> p <sup>h</sup> ei]                      |
|  |       | <o>     | tomb[t <sup>h</sup> ʌm]  |
|  |       | <-o>    | to[t <sup>h</sup> u]   |
|  |       | <u>     | tulip[t <sup>h</sup> ʌlɪp], tutu[t <sup>h</sup> ʌtu]           |
|  |       | <wo>    | two[t <sup>h</sup> u]  |
|  | /ʊ/   | <oo>    | took[t <sup>h</sup> ʊk]  |
|  |       | <u>     | ---  |
|  | /ɔ/   | <aw>    | tawny[t <sup>h</sup> ɔni]                                      |
|  |       | <au>    | taunt[t <sup>h</sup> ɔnt]                                      |
|  |       | <a(1l)> | tall[t <sup>h</sup> ɔl]  |
|  |       | <o>     | toss[t <sup>h</sup> ɔs]  |
|  |       | <a(l)>  | talk[t <sup>h</sup> ɔk]  |
|  |       | <augh>  | taught[t <sup>h</sup> ɔt]                                      |
|  | /ɑ/   | <o>     | top[t <sup>h</sup> ɑp], topic[t <sup>h</sup> ɑpɪk]             |
|  | /ɔr/  | <ur>    | turn[t <sup>h</sup> ɔrn], turtle[t <sup>h</sup> ɔrtl]          |
|  |       | <er>    | term[t <sup>h</sup> ɔrm]                                       |
|  |       | <ir>    | ---  |
|  |       | <or>    | ---  |
|  | /ju/  | <u-e>   | tube[t <sup>h</sup> jub], tune[t <sup>h</sup> jun]             |
|  |       | <ew>    | ---  |
|  | /eɪ/  | <a-e>   | tape[t <sup>h</sup> eɪp], tale[t <sup>h</sup> eɪl]             |
|  |       | <ay>    | ---  |
|  |       | <ai>    | tail[t <sup>h</sup> eɪl]                                       |
|  | /aɪ/  | <i-e>   | time[t <sup>h</sup> aɪm], tide[t <sup>h</sup> aɪd]             |
|  |       | <-y>    | type[t <sup>h</sup> aɪp]                                       |
|  |       | <igh>   | tight[t <sup>h</sup> aɪt]                                      |
|  |       | <ie>    | tie [t <sup>h</sup> aɪ]  |
|  | /aʊ/  | <ow>    | town[t <sup>h</sup> aʊn], tower[t <sup>h</sup> aʊə]            |
|  |       | <ou>    | tout[t <sup>h</sup> aʊt]                                       |
|  | /oʊ/  | <o-e>   | tone[t <sup>h</sup> oʊn]                                       |
|  |       | <oa>    | toast[t <sup>h</sup> oʊst]                                     |
|  |       | <ow>    | tow[t <sup>h</sup> oʊ]   |
|  |       | <-o>    | ---  |
|  |       | <oe>    | toe[t <sup>h</sup> oʊ]   |
|  |       | <o>     | total[t <sup>h</sup> oʊtəl], topaz[t <sup>h</sup> oʊpæz]       |
|  | /ɔɪ/  | <oy>    | toy[t <sup>h</sup> ɔɪ]   |
|  |       | <oi>    | toilet[t <sup>h</sup> ɔɪlɪt]                                   |
|  | /ɑr/  | <a(r)>  | target[t <sup>h</sup> ɑrɡɪt]                                   |
|  | /ɔr/  | <o(r)>  | torn[t <sup>h</sup> ɔrn]                                       |
|  |       | <ore>   | tore[t <sup>h</sup> ɔə]  |
|  | /ʊr/  | <ou(r)> | tour[t <sup>h</sup> ʊə]  |
|  | /ɛər/ | ---     | terrace[t <sup>h</sup> ɛərs], terrible[t <sup>h</sup> ɛərəbəl] |
|  | /ɪər/ | <ea(r)> | tear[t <sup>h</sup> ɪə]  |



| C <sup>1</sup> C <sup>2</sup> | +V |   |
|-------------------------------|----|---|
| /tr/                          |    | truck[t <sup>h</sup> rʌk], train[t <sup>h</sup> reɪn], tree[t <sup>h</sup> ri]    |
| /tw/                          |    | twin[t <sup>h</sup> wɪn], twist[t <sup>h</sup> wɪst], twelve[t <sup>h</sup> wetv] |

The phoneme /t/, as well as /p/, is aspirated before a stressed vowel, as we have seen above. It is also aspirated when it is followed by a sonorant. The words which the aspiration rule (1) is applied to as follows:

(21) The words rule (1) applies to include:

- a. top [t<sup>h</sup>ʌp]
- b. turn [t<sup>h</sup>ɜ:n]
- c. ten [t<sup>h</sup>ɛn]

### 2.1.6 Voiceless Alveolar Fricative:/s/

The phoneme /s/ is commonly spelled <s> in the initial position. But in Latinate words, <c> is also pronounced /s/ before front vowels; <e>, <i>, or <y>. We call <c> pronounced /s/ soft C. The Soft Rule to pronounce /s/ for <c> is as follows:

(22) Soft Rule

$$<c> \rightarrow /s/ \quad / \quad \text{---} \quad \left[ \begin{array}{l} + \text{syllabic} \\ - \text{back} \end{array} \right]$$

(23) The words rule (22) applies to include:

- a. Latin Origin

cease [siz], ceiling ['silɪŋ], cent [sɛnt], cell [sɛl]  
city ['sɪtɪ], circle ['sɜ:kɪ]

b. Greek origin

cycle ['saɪkɪ], cyber ['saɪbɜ:]

Although there are only two spellings, <s> and <c> to pronounce [s] in the Consonant Chart of PVM, [s] is in fact pronounced for other spellings.

(24) The other spellings for /s/

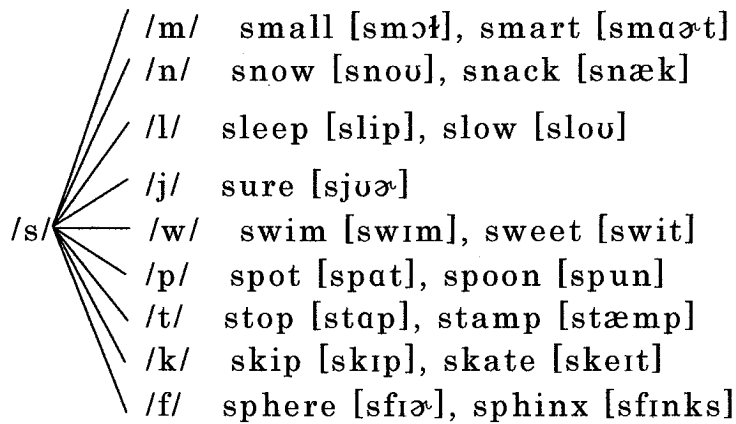
- a. <sc> science ['saɪəns], scissors ['sɪzəz], scene [sin],  
scent [sɛnt]
- b. <ps> psychology [saɪ'kɒlədʒi], psyche ['saɪki],  
pseudo [sɪdʊl]
- c. <sch> schism [sɪzm]
- d. <sw> sword [sɔ:d]

Since most of these words have more than two syllables and some of them originated from Latin and Greek, they are not familiar to beginners, even native English speakers. Therefore these spellings are not appropriate to teach to primary learners. That is the reason why only <s> and <c> are listed on the Consonant Chart.

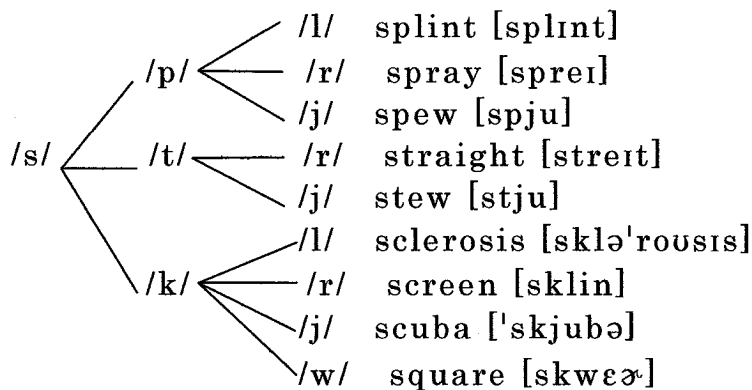
Another point is that /s/ is an important segment of consonant clusters. The phoneme /s/ comes before sonorants;

/m/, /n/, /l/, /j/, and /w/ in clusters. It also forms clusters with the plosives; /p/, /t/, /k/, in the initial position of words. The following diagram shows the word initial clusters of the sound /s/.

(25) The initial C<sub>1</sub>C<sub>2</sub> clusters



(26) The initial C<sub>1</sub>C<sub>2</sub>C<sub>3</sub> clusters



The phoneme /s/ is the essential first segment of C<sub>1</sub>C<sub>2</sub>C<sub>3</sub> clusters, and the second segment is a plosive, and the third segment must be one of /l/, /r/, /j/, /w/. We have a possibility of 12 C<sub>1</sub>C<sub>2</sub>C<sub>3</sub>

sequences; however /spw-/, /stl-/, /stw-/ do not occur. /C<sub>1</sub>C<sub>2</sub>j/ occurs only before /u/, /ʊə/, and /ʊə/.

When we teach the sound /s/, we should first teach the words which begin with CV because learners may be confused by the complication of consonant clusters. However, /s/ is the most meaningful sound in the teaching of consonant clusters, especially in the word initial position. Moreover, English has more consonant clusters than Japanese, and it is effective to teach the differences of syllable structures between English and Japanese. Therefore, consonant clusters beginning with /s/ need to be taught in the advanced level.

The following table (27) indicates the words which begin with /s/. Since consonant clusters were explained with the diagram (25) and (26) above, they are omitted in the following table.

(27) Initial /s/

| C <sup>+</sup> | V   | spelling |                                |
|----------------|-----|----------|--------------------------------|
| /s/+           | /i/ | <ee>     | see[sɪ], seesaw ['si:ɔ]        |
|                |     | <ea>     | sea[sɪ], seat [sit]            |
|                |     | <-e>     | ---                            |
|                |     | <ei>     | seize[sɪz]                     |
|                | /ɪ/ | <i>      | sit[sɪt], sing[sɪŋ]            |
|                |     | <y>      | syrup['sɪrəp], system['sɪstəm] |
|                |     | <e>      | sedan[sɪ'dæn]                  |
|                | /ɛ/ | <e>      | set[set], seven[sɛvn]          |
|                |     | <ea>     | ---                            |
|                |     | <ai>     | said[sɛd]                      |
|                |     | <ay>     | says[sɛz]                      |
|                | /æ/ | <a>      | sad[sæd], sand[sænd]           |
|                | /ʌ/ | <u>      | sun[sʌn], summer['sʌmə]        |
|                | /u/ | <oo>     | soon[sun]                      |
|                |     | <ou>     | soup[sʊp]                      |
|                |     | <u>      | super[sʊpə]                    |
|                |     | <ui>     | suit[sut]                      |

|  |      |          |   |
|--|------|----------|---|
|  | /ʊ/  | <oo>     | soot[sʊt]                                       |
|  |      | <u>      | ---   |
|  | /ɔ/  | <aw>     | saw[sɔ]   |
|  |      | <au>     | sauce[sɔs]                                      |
|  |      | <a(11)>  | ---   |
|  |      | <o>      | soft[sɔft], song[sɔŋ]                           |
|  |      | <a(l)>   | salt[sɔlt]                                      |
|  |      | <ough>   | sought [sɔt]                                    |
|  | /ɑ/  | <o>      | soccer['sɒkə], sock[sɒk]                        |
|  |      | <ur>     | surf[sɜf]                                       |
|  |      | <er>     | service['sɜvɪs], serve[sɜv]                     |
|  |      | <ir>     | sir[sɜ]   |
|  |      | <or>     | ---   |
|  |      | <ear>    | search[sɜtʃ]                                    |
|  | /ju/ | <u-e>    | sure[sjʊə]→ [ʃʊə]                               |
|  |      | <ew>     | ---   |
|  | /eɪ/ | <a-e>    | same[seɪm], safe[seɪf]                          |
|  |      | <ay>     | say[seɪ]  |
|  |      | <ai>     | sail[seɪl], sailor['seɪlə]                      |
|  | /aɪ/ | <i-e>    | size[sɑɪz], side[sɑɪd]                          |
|  |      | <-y>     | ---   |
|  |      | <igh>    | sigh[sɑɪ], sight[sɑɪt]                          |
|  |      | <i>      | sinus [saɪnəs]                                  |
|  |      | <ig>     | sign[sɑɪn]                                      |
|  | /aʊ/ | <ow>     | sow[sau]  |
|  |      | <ou>     | sound[sauɪd], south[sauθ]                       |
|  | /oʊ/ | <o-e>    | sole[souf]                                      |
|  |      | <oa>     | soap[souɪp], soak[souk]                         |
|  |      | <ow>     | sow[sou]  |
|  |      | <-o>     | so[sou], sofa['soufə]                           |
|  |      | <ew>     | sew[sou]  |
|  |      |          |   |
|  | /ɔɪ/ | <oy>     | soy[sɔɪ]  |
|  |      | <oi>     | soil[sɔɪl]                                      |
|  | /ɑɹ/ | <a(r)>   | sardine[sɑɹ'dɪn]                                |
|  |      |          |   |
|  | /ɔɹ/ | <o(r)>   | sort[sɔɹt], sore[sɔɹ]                           |
|  |      | <our>    | source[sɔɹs]                                    |
|  |      | <oar>    | soar[sɔɹ]                                       |
|  |      | <wor>    | sword[sɔɹd]                                     |
|  | /ʊə/ | <ewe(r)> | sewer[sʊə]                                      |
|  |      |          |   |
|  | /ɛə/ | <e(r)>   | Serajevo [ˌsɛərəˈjeɪvə], serenade [ˌsɛərəˈneɪd] |
|  |      |          |   |
|  | /iə/ | <ee(r)>  | seer[sɪə]                                       |
|  |      |          |   |

### 2.1.7 Voiceless Postalveolar Fricative: /ʃ/

The most common spelling of /ʃ/ is <sh>. Some other spellings are used for /ʃ/. The following table shows the other spellings for /ʃ/ in the word initial position.

(28) The other spellings for /ʃ/

- a. <ch> chef [ʃɛf], charade [ʃə'reɪd], Chicago [ʃɪ'kɑɡoʊ],  
Charlotte ['ʃɑɪlət] champagne [ʃæm'peɪn],
- b. <sch> Schmidt [ʃmɪt], Schnauzer ['ʃnaʊzə]
- c. <s> sugar ['ʃʊɡə], sure [ʃʊə], surely ['ʃʊəli],  
sugary ['ʃʊɡəri]

On the Consonant Chart of PVM the secondary spelling for /ʃ/ is not listed. One reason is that there are not so many words with <s> in (28c). In addition, the spelling <s> occurs only before <u>. Another reason is that the words begin with <ch> in (28a) and <sch> in (28b) are derived from foreign words; French and German. We cannot find so many of these words in a dictionary as well as the words of <s> as we have seen in (28c). That is, for these reasons, we do not need to teach these spellings as the secondary spellings. Consequently, it is reasonable to suppose that those spellings are not listed on the Consonant Chart of PVM.

The following table represents the words which begin with <sh>.

(29) Initial /ʃ/

| C <sup>1</sup> + | V   | spelling |                          |
|------------------|-----|----------|--------------------------|
| /ʃ/+             | /i/ | <ee>     | sheep[ʃɪp], sheet [ʃɪt]  |
|                  |     | <ea>     | sheaf[ʃɪf], sheath [ʃiθ] |
|                  |     | <-e>     | she[ʃi]                  |
|                  |     | <ie>     | shield[ʃɪld]             |
|                  | /ɪ/ | <i>      | shift[ʃɪft], ship[ʃɪp]   |

|      |         |                                  |
|------|---------|----------------------------------|
|      | <y>     | ---                              |
| /ɛ/  | <e>     | shelf[ʃɛɪf], shell[ʃɛɪ]          |
|      | <ea>    | ---                              |
| /æ/  | <a>     | shampoo[ʃæm'pu], shaft[ʃæft]     |
| /ʌ/  | <u>     | shut[ʃʌt], shuttle[ʃʌtɪ]         |
|      | <o>     | shovel[ʃʌvəl]                    |
| /u/  | <oo>    | shoot[ʃʊt]                       |
|      | <oe>    | shoe[ʃu]                         |
| /ʊ/  | <oo>    | shook[ʃʊk]                       |
|      | <u>     | ---                              |
|      | <oul>   | should[ʃʊd]                      |
| /ɔ/  | <aw>    | shawl[ʃɔɪ]                       |
|      | <au>    | ---                              |
|      | <a(11)> | ---                              |
| /ɑ/  | <o>     | shock[ʃʌk], shop[ʃʌp], shot[ʃʌt] |
| /ə/  | <ur>    | ---                              |
|      | <er>    | sherbet['ʃɛbɪt]                  |
|      | <ir>    | shirk[ʃɜ:k], shirt[ʃɜ:t]         |
|      | <or>    | ---                              |
| /ju/ | <u-e>   | ---                              |
|      | <ew>    | ---                              |
| /eɪ/ | <a-e>   | shake[ʃeɪk], shape[ʃeɪp]         |
|      | <ay>    | ---                              |
|      | <ai>    | ---                              |
| /aɪ/ | <i-e>   | shine[ʃaɪn]                      |
|      | <-y>    | shy[ʃaɪ]                         |
|      | <igh>   | ---                              |
| /au/ | <ow>    | shower['ʃauə]                    |
|      | <ou>    | shout[ʃaʊt]                      |
| /ou/ | <o-e>   | shone[ʃəʊn]                      |
|      | <oa>    | shoal[ʃəʊl]                      |
|      | <ow>    | show[ʃəʊ]                        |
|      | <-o>    | ---                              |
|      | <ou>    | shoulder['ʃəʊldə]                |
| /ɔɪ/ | <oy>    | ---                              |
|      | <oi>    | ---                              |
| /ɑə/ | <a(r)>  | shard[ʃɑəd]                      |
| /ɔə/ | <o(r)>  | shore[ʃɔə], short[ʃɔət]          |
| /ʊə/ |         | ---                              |
| /ɛə/ | <are>   | share[ʃɛə]                       |
| /ɪə/ | <ea(r)> | shear[ʃɪə]                       |
|      | <ee(r)> | sheer[ʃɪə]                       |

|      |    |                              |
|------|----|------------------------------|
| C¹C² | +V |                              |
| /ʃr/ |    | shrink[ʃrɪŋk], shrimp[ʃrɪmp] |

We see from the table (29) that /ʃ/ does not occur before the sound /ɔɪ/. Moreover, on the initial consonant clusters, there

are no other clusters of /ʃ/ and other consonants, except /ʃr/.

### 2.1.8 Voiceless Postalveolar Affricate: /tʃ/

The phoneme /tʃ/ is regularly spelled <ch> in the initial position of words. In fact, some other spellings are used for the phoneme /tʃ/. Kurath(1967:45) states that “In names and technical terms adopted from other languages, the foreign spelling is usually retained, as in *cello*, *Cench*, *Puccini*, *Czech*, *Tchaikovsky*.” However, since these words are not familiar to young learners, we do not recognize the necessity as a secondary spelling.

The following table shows the words which begin with /tʃ/. The table below shows that /tʃ/ does not occur before /ʊ/ and /ʊə/.

#### (30) Initial /tʃ/

| C+    | V   | spelling |   |
|-------|-----|----------|---|
| /tʃ/+ | /i/ | <ee>     | cheese[tʃiz], cheek[tʃik]               |
|       |     | <ea>     | cheap[tʃip], cheat[tʃit]                |
|       |     | <-e>     | ...                                     |
|       |     | <ie>     | chief[tʃif]                             |
|       | /ɪ/ | <i>      | chip[tʃɪp], chicken[tʃɪkən], chin[tʃɪn] |
|       |     | <y>      | ...                                     |
|       | /ɛ/ | <e>      | check[tʃɛk]                             |
|       |     | <ea>     | ...                                     |
|       | /æ/ | <a>      | chat[tʃæt], champ[tʃæmp]                |
|       | /ʌ/ | <u>      | chunk[tʃʌŋk], chuck[tʃʌk]               |
|       | /u/ | <oo>     | choose[tʃuz]                            |
|       |     | <ew>     | chew[tʃu]                               |
|       | /ʊ/ | <oo>     | ...                                     |
|       |     | <u>      | ...                                     |
|       | /ɔ/ | <aw>     | chaw[tʃɔ]                               |
|       |     | <au>     | Chaucer['tʃɔsə]                         |
|       |     | <a(ɪ)>   | ...                                     |
|       |     | <a(ɪ)>   | chalk[tʃɔk]                             |
|       | /ɑ/ | <o>      | chop[tʃɒp], chocolate['tʃɒklɪt]         |
|       | /ə/ | <ur>     | church[tʃəʃ]                            |



|  |      |         |                             |
|--|------|---------|-----------------------------|
|  |      | <er>    | ---                         |
|  |      | <ir>    | chirp[ʧəp]                  |
|  |      | <or>    | ---                         |
|  | /ju/ | <u-e>   | ---                         |
|  |      | <ew>    | ---                         |
|  | /eɪ/ | <a-e>   | change[ʧeɪndʒ], chase[ʧeɪs] |
|  |      | <ay>    | ---                         |
|  |      | <ai>    | chain[ʧeɪn]                 |
|  | /aɪ/ | <i-e>   | chime[ʧaɪm]                 |
|  |      | <-y>    | ---                         |
|  |      | <igh>   | ---                         |
|  |      | <i>     | China['ʧaɪnə], child[ʧaɪld] |
|  | /aʊ/ | <ow>    | chowder['ʧaʊdə]             |
|  |      | <ou>    | ---                         |
|  | /oʊ/ | <o-e>   | choke[ʧoʊk], chose[ʧoʊz]    |
|  |      | <oa>    | ---                         |
|  |      | <ow>    | ---                         |
|  |      | <-o>    | ---                         |
|  | /ɔɪ/ | <oy>    | ---                         |
|  |      | <oi>    | choice[ʧɔɪs]                |
|  | /ɑʊ/ | <a(r)>  | chart[ʧɑʊt], chiarm[ʧɑʊm]   |
|  | /ɔʊ/ | <o(r)>  | chore[ʧɔʊ]                  |
|  | /ʊʊ/ |         | ---                         |
|  | /ɛə/ | <aɪ(r)> | chair[ʧɛə], cherry['ʧɛəri]  |
|  | /iə/ | <ee(r)> | cheer[ʧiə]                  |

We have mainly insisted on the importance of initial sounds so far and we are not concerned with the spellings of medial and final positions unless there is necessity. <tch> is listed as the secondary spelling of /ʧ/ and <tch> is never used word initially. The question here is why <tch> is listed as the secondary spelling on the Consonant Chart of PVM although <tch> is used only in the middle or final positions of words. We will look at the characteristics of spelling <tch> and the reasons why <tch> is listed.

First, we compare the words which include <ch> and <tch> in order to find differences of them.

(31) Word medial /tʃ/

a. <ch>

exchange [ɪks'tʃeɪndʒ], archery ['ɑːtʃəri],  
merchant ['mɜːtʃənt], purchase ['pɜːtʃəs]

b. <tch>

itchy ['ɪtʃi], ketchup ['kɛtʃəp], pitcher ['pɪtʃə],  
kitchen ['kɪtʃən]

(32) Word final /tʃ/

a. <ch>

peach [piːtʃ], bench [bɛntʃ], march [mɑːtʃ], beech [biːtʃ],  
reach [riːtʃ], church [tʃɜːtʃ], arch [ɑːtʃ], each [iːtʃ]

b. <tch>

switch [swɪtʃ], patch [pætʃ], catch [kætʃ], pitch [pɪtʃ],  
sketch [skɛtʃ], watch [wɒtʃ], witch [wɪtʃ], stretch [streɪtʃ],  
match [mætʃ]

From (31b) and (32b), we can find a rule that <tch> is basically used after a short vowel in both word-medial and final positions although there are some exceptions where a short vowel is followed by <ch>, such as *rich*, *touch*, *attach*, *much*, *such*, *which*, *sandwich*, and *spinach*.

With regard to <ch> in word final position, we can suggest a rule. When /tʃ/ is used after two vowel letters or a consonant letter, /tʃ/ is commonly spelled <ch>. Two vowel letters mean

the two vowel spellings as <ea> in *peach*. The spelling for /tʃ/ is <ch> when a consonant is followed by /tʃ/, like *bench* and *arch*.

From (31) and (32), we can recognize that <tch> is used very frequently even though <tch> does not occur in the initial position of words. From the viewpoint of frequency it is appropriate that <tch> is listed as the secondary spelling of /tʃ/ on the Consonant Chart of PVM.

#### 2.1.9 Voiceless Velar Stop: /k/

The phoneme /k/ is written three ways; <k>, <c>, and <ch> in the initial position of a word. The phoneme /k/ is usually spelled <c>, especially before <a>, <o>, or <u>. On the other hand, /k/ is spelled <k> without any conditioning environments. We can illustrate this with rules as follows:

(33) Spelling rules for /k/

- a. <c> → /k/ / \_\_\_\_\_ <a, o, u>
- b. <k> → /k/ / \_\_\_\_\_ elsewhere

From the viewpoint of the number of words we may say that the spelling <c> is used more frequently than <k> because we cannot find so many words which are spelled <k> in the initial position of words, as the following table shows. However, the primary spelling for /k/ is <k>, not <c>, in the Consonant Chart of PVM. There are some reasons for supporting this.

First, <k> is pronounced [k] and there are no other variations of its pronunciation. On the other hand, <c> is pronounced in two different ways as [s] and [k]. If we use <c> as the main spelling, it would confuse learners because the spelling <c> does not have the target sound.

Second, <k> is pronounced /k/ without any special rules while <c> is pronounced /k/ under the conditioning environment, as we have seen in (33). It means that no rule to pronounce a sound is easy for learners.

Thus, there is considerable validity to the judgment that the PVM adopt <k> as the main spelling of /k/.

Another spelling for /k/ is word initial <ch>. Kurath(1967:49) says that <ch> is a frequent spelling for /k/ in the words adopted from Latin, like *character*, *chaos*, *chorus*, *Christmas*, etc. There are relatively few <ch> words, so <ch> is not listed on the Consonant Chart of PVM.

The following tables show the words which begin with <k> and <c>. In order to prove clearly the frequency of the spelling <c>, we make the table (35) although <c> is a secondary spelling and we have not made the table for the second spelling so far. The phoneme /k/ is aspirated before a stressed vowel, as well as /p/ and /t/ we have seen above. The phoneme /k/ is also aspirated when it is followed by a sonorant. We apply the aspiration rule (1) again in the following tables.

(34) Initial /k/ spelled <k>

| C <sup>1</sup> + | V    | spelling |  |
|------------------|------|----------|--|
| /k/+             | /i/  | <ee>     | keep[k <sup>h</sup> ip], keen [k <sup>h</sup> in]            |
|                  |      | <ea>     | ---  |
|                  |      | <-e>     | ---  |
|                  |      | <i>      | kiwi[k <sup>h</sup> iwi]                                     |
|                  |      | <ey>     | key[k <sup>h</sup> i]  |
|                  | /ɪ/  | <i>      | kiss[k <sup>h</sup> ɪs], kick[k <sup>h</sup> ɪk]             |
|                  |      | <y>      | ---  |
|                  | /ɛ/  | <e>      | ketchup['k <sup>h</sup> ɛʃʌp], kept[k <sup>h</sup> ɛpt]      |
|                  |      | <ea>     | ---  |
|                  | /æ/  | <a>      | karat['k <sup>h</sup> ærət], kangaroo[k <sup>h</sup> æŋə'ru] |
|                  | /ʌ/  | <u>      | kung fu[,k <sup>h</sup> ʌŋ 'fu]                              |
|                  | /u/  | <oo>     | ---  |
|                  | /ʊ/  | <oo>     | ---  |
|                  |      | <u>      | Kuwait[k <sup>h</sup> ʊ'weɪt]                                |
|                  | /ɔ/  | <aw>     | ---  |
|                  |      | <au>     | ---  |
|                  |      | <a(ɪ)>   | ---  |
|                  | /ɑ/  | <o>      | ---  |
|                  |      | <ur>     | Kurd[k <sup>h</sup> ɜd]                                      |
|                  |      | <er>     | kernel[k <sup>h</sup> ɜnɪ]                                   |
|                  |      | <ir>     | ---  |
|                  |      | <or>     | ---  |
|                  | /ju/ | <u-e>    | ---  |
|                  |      | <ew>     | ---  |
|                  | /eɪ/ | <a-e>    | kale[k <sup>h</sup> eɪl]                                     |
|                  |      | <ay>     | ---  |
|                  |      | <ai>     | ---  |
|                  | /aɪ/ | <i-e>    | kite[k <sup>h</sup> aɪt]                                     |
|                  |      | <-y>     | ---  |
|                  |      | <igh>    | ---  |
|                  |      | <i>      | kind[k <sup>h</sup> aɪnd]                                    |
|                  | /aʊ/ | <ow>     | ---  |
|                  |      | <ou>     | ---  |
|                  | /oʊ/ | <o-e>    | ---  |
|                  |      | <oa>     | ---  |
|                  |      | <ow>     | ---  |
|                  |      | <-o>     | koala[k <sup>h</sup> oʊ'ɑlə]                                 |
|                  | /ɔɪ/ | <oy>     | ---  |
|                  |      | <oi>     | ---  |
|                  | /ɑɜ/ | <a(r)>   | ---  |
|                  | /ɔɜ/ | <o(r)>   | ---  |
|                  | /ʊɜ/ |          | ---  |
|                  | /ɛɜ/ |          | ---  |
|                  | /ɪɜ/ |          | ---  |

| C <sup>2</sup> C <sup>1</sup> | +V |                                |
|-------------------------------|----|--------------------------------|
| /kl/                          |    | Kleenex[k <sup>h</sup> lɪneks] |

(35) Initial /k/ spelled <c>

| C <sup>1</sup> + | V    | spelling |  |
|------------------|------|----------|--|
| /k/+             | /i/  | <ee>     | ---  |
|                  |      | <ea>     | ---  |
|                  |      | <-e>     | ---  |
|                  | /ɪ/  | <i>      | ---  |
|                  |      | <y>      | ---  |
|                  | /ɛ/  | <e>      | Celt [k <sup>h</sup> ɛɪt]  |
|                  |      | <ea>     | ---  |
|                  | /æ/  | <a>      | cat[k <sup>h</sup> æt], camp[k <sup>h</sup> æmp], can[k <sup>h</sup> æn]         |
|                  | /ʌ/  | <u>      | cut[k <sup>h</sup> ʌt], cup[k <sup>h</sup> ʌp], cub[k <sup>h</sup> ʌb]           |
|                  |      | <o>      | color['k <sup>h</sup> ʌlə], come[k <sup>h</sup> ʌm], cover ['k <sup>h</sup> ʌvə] |
|                  | /u/  | <oo>     | cool[k <sup>h</sup> uɪ], coop[k <sup>h</sup> uɪp]                                |
|                  |      | <ou>     | coup[k <sup>h</sup> uɪp], coupon['k <sup>h</sup> uɪpən]                          |
|                  | /ʊ/  | <u>      | cushion['k <sup>h</sup> ʊʃən]  |
|                  |      | <oo>     | cook[k <sup>h</sup> ʊk], cookie['k <sup>h</sup> ʊki]                             |
|                  |      | <oul>    | could[k <sup>h</sup> ʊd]   |
|                  | /ɔ/  | <aw>     | caw[k <sup>h</sup> ɔ]  |
|                  |      | <au>     | cause[k <sup>h</sup> ɔz]   |
|                  |      | <a(ɪ)>   | call[k <sup>h</sup> ɔɪ]  |
|                  |      | <o>      | cost[k <sup>h</sup> ɔst],  |
|                  |      | <augh>   | caught [k <sup>h</sup> ɔt]   |
|                  | /ɑ/  | <o>      | cop[k <sup>h</sup> ɑp], copy['k <sup>h</sup> ɑpi]                                |
|                  | /ə/  | <ur>     | curb[k <sup>h</sup> əb], curl[k <sup>h</sup> əɪ]                                 |
|                  |      | <er>     | ---  |
|                  |      | <ir>     | ---  |
|                  |      | <or>     | ---  |
|                  | /ju/ | <u-e>    | cupid['k <sup>h</sup> jupɪd], cube[k <sup>h</sup> jub], cute[k <sup>h</sup> jut] |
|                  |      | <ew>     | ---  |
|                  | /eɪ/ | <a-e>    | cake[k <sup>h</sup> eɪk], case[k <sup>h</sup> eɪs], cane[k <sup>h</sup> eɪn]     |
|                  |      | <ay>     | ---  |
|                  |      | <ai>     | ---  |
|                  | /aɪ/ | <i-e>    | ---  |
|                  |      | <-y>     | ---  |
|                  |      | <igh>    | ---  |
|                  | /aʊ/ | <ow>     | cow[k <sup>h</sup> au]   |
|                  |      | <ou>     | count[k <sup>h</sup> aʊnt], couch[k <sup>h</sup> auʃ]                            |
|                  | /oʊ/ | <o-e>    | code[k <sup>h</sup> oʊd], coke[k <sup>h</sup> oʊk]                               |
|                  |      | <oa>     | coach[k <sup>h</sup> oʊʃ], coat[k <sup>h</sup> oʊt]                              |
|                  |      | <ow>     | ---  |
|                  |      | <-o>     | ---  |
|                  | /ɔɪ/ | <oy>     | coy[k <sup>h</sup> ɔɪ]   |
|                  |      | <oi>     | coin[k <sup>h</sup> ɔɪn], coil[k <sup>h</sup> ɔɪt]                               |
|                  | /ɑə/ | <a(r)>   | car[k <sup>h</sup> ɑə], card[k <sup>h</sup> ɑəd], carp[k <sup>h</sup> ɑəp]       |
|                  | /ɔə/ | <o(r)>   | corn[k <sup>h</sup> ɔəɪn], cord[k <sup>h</sup> ɔəd], core[k <sup>h</sup> ɔə]     |
|                  |      | <our>    | course[k <sup>h</sup> ɔəɪs], court[k <sup>h</sup> ɔət]                           |
|                  |      | <oar>    | coarse[k <sup>h</sup> ɔəɪs]  |
|                  | /ʊə/ |          | ---  |
|                  | /ɛə/ | <are>    | care [k <sup>h</sup> ɛə]   |
|                  | /ɪə/ |          | ---  |

| C <sup>1</sup> C <sup>2</sup> | +V |                                       |
|-------------------------------|----|---------------------------------------|
| /kɪ/                          |    | clip[kɪɪp], close[kɪoʊz], club[kɪʌb]  |
| /kr/                          |    | crack[kræk], crab[kræb], crepe[kreɪp] |
| /kw/                          |    | cuisine[kwɪ'zɪn]                      |

Another secondary spelling we have to notice is <ck>. The spelling <ck> never occurs in the initial position of words, and it only occurs in the medial and final positions. The phoneme /k/ is basically spelled <ck> after a short vowel in both medial and final positions. The following lists words where <ck> is used.

(36) The words including <ck>

a. medial position

pocket, jacket, chicken, cricket, flicker, sticky, stocking,  
tackle, jockey, package, hockey...

b. final position

attack, lack, stock, track, black, block, check, back, rock,  
quick...

The reason for listing <ck> is that the spelling <ck> is one of the easy digraphs to recognize the sound. In another word, since both <c> and <k> are pronounced [k], we may say that it is easy for learners to perceive that the spelling <ck> is also pronounced [k]. In fact, there are other spellings of the phoneme /k/, such as <-cc->. However the digraph of the same

consonant letter as <cc> exists in other consonants, which are not taken up in the Consonant Chart of PVM. Therefore, the PVM lists two spellings; <c> and <ck> as the secondary spellings.

#### 2.1.10 Voiceless Glottal Fricative: /h/

The phoneme /h/ occurs only before vowels. It does not occur in the final position of words. The phoneme /h/ is regularly spelled <h>, except for a few words which are spelled <wh>. Since we have already discussed the words in 2.1.2 which are spelled <wh> and are pronounced [h] in the words, like *who*, *whose*, *whom*, we do not explain here. On the spelling <hV>, /j/ is inserted before high-back vowels; /u/ and /u/. As the rule is explained in 1.1.3, we give only the words including the sounds /hj/.

(37) The words including /hj/

- a. hew [hju]
- b. hue [hju]
- c. huge [hjuɢ]
- d. human ['hjumən]
- e. humor ['hjumə]

The following table indicates the words which begin with /h/. The phoneme /h/ can take all vowels, but /h/ cannot make



consonant clusters in the initial of words.

(38) Initial /h/

| C <sup>1</sup> + | V    | spelling |                                     |
|------------------|------|----------|-------------------------------------|
| /h/+             | /i/  | <ee>     | heel[hɪt]                           |
|                  |      | <ea>     | heat[hɪt],                          |
|                  |      | <-e>     | he[hi]                              |
|                  | /ɪ/  | <i>      | hint[hɪnt], hit[hɪt], hip[hɪp]      |
|                  |      | <y>      | hysteric [hɪs'tɛərɪk]               |
|                  |      | <e>      | heroic[hɪ'rouɪk]                    |
|                  | /ɛ/  | <e>      | help[hɛɪp], hen[hɛn]                |
|                  |      | <ea>     | head[hɛd], health[hɛɪθ]             |
|                  | /æ/  | <a>      | hand[hænd], hat[hæt], ham[hæm]      |
|                  | /ʌ/  | <u>      | hug[hʌg], hustle[hʌst]              |
|                  |      | <o>      | honey['hʌni]                        |
|                  | /u/  | <oo>     | hoop[hup]                           |
|                  | /ʊ/  | <oo>     | hoot[hʊt]                           |
|                  |      | <u>      | hurray[hʊ'reɪ]                      |
|                  | /ɔ/  | <aw>     | hawk[hɔk]                           |
|                  |      | <au>     | haul[hɔt]                           |
|                  |      | <a(ɪl)>  | hall[hɔt]                           |
|                  | /ɑ/  | <o>      | hop[hʌp], hot[hʌt], hockey['hʌki]   |
|                  | /ɜ/  | <ur>     | hurt[hɜt], hurdle[hɜdɪ]             |
|                  |      | <er>     | herb[hɜb], her[hɜ]                  |
|                  |      | <ir>     | ---                                 |
|                  |      | <or>     | ---                                 |
|                  |      | <ear>    | hearse[hɜs]                         |
|                  | /ju/ | <u-e>    | huge[hjuɔ]                          |
|                  |      | <ue>     | hue[hju]                            |
|                  |      | <ew>     | hew[hju]                            |
|                  |      | <u>      | human['hjumən], humor['hjumə]       |
|                  | /eɪ/ | <a-e>    | hate[hɛɪt]                          |
|                  |      | <ay>     | hay[hɛɪ]                            |
|                  |      | <ai>     | hail[hɛɪt]                          |
|                  |      | <a>      | hazel[hɛɪzɪ]                        |
|                  |      | <ey>     | hey[hɛɪ]                            |
|                  |      |          |                                     |
|                  | /aɪ/ | <i-e>    | hide[hɑɪd], hike[hɑɪk]              |
|                  |      | <-y>     | hyper['haɪpə]                       |
|                  |      | <igh>    | high[hɑɪ]                           |
|                  |      | <i>      | hi[hɑɪ]                             |
|                  |      | <eigh>   | height[hɑɪt]                        |
|                  | /aʊ/ | <ow>     | how[hau], howl[hauɪ]                |
|                  |      | <ou>     | house[hauɪs], hound[hauɪnd]         |
|                  | /oʊ/ | <o-e>    | hole[houɪt], home[houm], hope[houp] |
|                  |      | <oa>     | hoax[houks]                         |
|                  |      | <ow>     | ---                                 |
|                  |      | <-o>     | ---                                 |
|                  |      | <o>      | host[houst], hotel[hoo'tɛɪt]        |

|  |      |         |                         |
|--|------|---------|-------------------------|
|  | /ɔɪ/ | <oy>    | ---                     |
|  |      | <oi>    | hoist[hɔɪst]            |
|  | /ɑɜ/ | <a(r)>  | harp[hɑɜp], hard[hɑɜd]  |
|  | /ɔɜ/ | <o(r)>  | horn[hɔɜn], horse[hɔɜs] |
|  |      | <oar>   | hoarse[hɔɜs]            |
|  | /ʊɜ/ |         | ---                     |
|  | /eɜ/ | <ai(r)> | hair[hɛɜ]               |
|  |      | <are>   | hare[hɛɜ]               |
|  | /ɪɜ/ | <ea(r)> | hear[hɪɜ]               |
|  |      | <ere>   | here[hɪɜ]               |

## 2.2 Voiced consonants

### 2.2.1 Voiced Bilabial Stops: /b/

The phoneme /b/ is always spelled <b> in the initial position. Although the other spellings like <bb> are used in the middle position, we never see the spellings beside /b/ in the initial position. This means that learners will master it in a relatively short time because the agreement between the sound and spelling is considerably easy for learners. The words which begin with /b/ are shown in the following table.

#### (39) Initial /b/

| C <sup>1</sup> + | V   | spelling |                                  |
|------------------|-----|----------|----------------------------------|
| /b/+             | /i/ | <ee>     | bee[bɪ], beef[bɪf], beetle[bɪtl] |
|                  |     | <ea>     | bean[bɪn], beach[bɪʃ], beat[bɪt] |
|                  |     | <-e>     | be[bɪ]                           |
|                  | /ɪ/ | <i>      | bit[bɪt], big[bɪg]               |
|                  |     | <y>      | ---                              |
|                  |     | <e>      | begin[bɪ'gɪn], believe[bɪ'lɪv]   |
|                  |     | <u>      | busy['bɪsɪ]                      |
|                  |     | <ui>     | build[bɪld]                      |
|                  | /ɛ/ | <e>      | best[best], bed[bɛd], belt[bɛlt] |
|                  |     | <ea>     | ---                              |
|                  | /æ/ | <a>      | back[bæk], bag[bæg], bat[bæt]    |
|                  | /ʌ/ | <u>      | bus[bʌs], bug[bʌg], but[bʌt]     |
|                  | /u/ | <oo>     | boot[bʊt], booth[bʊθ], boom[bʊm] |
|                  | /ʊ/ | <oo>     | book[bʊk]                        |
|                  |     | <u>      | bull[bʊl], bush[bʊʃ]             |

|  |      |         |  |
|--|------|---------|--|
|  | /ɔ/  | <aw>    | bawl[bɔʔ]                                |
|  |      | <au>    | ---                                      |
|  |      | <a(l)>  | ball[bɔʔ]                                |
|  |      | <ough>  | bought[bɔʔ]                              |
|  | /ɑ/  | <o>     | body[bɒdi], boss[bɒs], box[bɒks]         |
|  |      | <u-e>   | ---                                      |
|  |      | <ew>    | ---                                      |
|  |      | <eau>   | beauty['bjuti]                           |
|  | /ɜ/  | <ur>    | burger['bɜ:gə], burn[bɜ:n]               |
|  |      | <er>    | berth[bɜ:θ]                              |
|  |      | <ir>    | bird[bɜ:d], birth[bɜ:θ]                  |
|  |      | <or>    | ---                                      |
|  | /eɪ/ | <a-e>   | babe[beɪb], bake[beɪk], base[beɪs]       |
|  |      | <ay>    | bay[beɪ]                                 |
|  |      | <ai>    | bail[beɪt]                               |
|  |      | <a>     | baby['beɪbi], bass[beɪs], bacon['beɪkən] |
|  | /aɪ/ | <i-e>   | bike[baɪk], bite[baɪt]                   |
|  |      | <-y>    | by[baɪ]                                  |
|  |      | <igh>   | ---                                      |
|  |      | <i>     | bind[baɪnd], Bible[baɪbəl]               |
|  | /aʊ/ | <ow>    | bow[baʊ]                                 |
|  |      | <ou>    | bound[baʊnd]                             |
|  |      | <o-e>   | bone[bəʊn]                               |
|  |      | <oa>    | boat[bəʊt]                               |
|  | /oʊ/ | <ow>    | bowl[bəʊl], bow[bəʊ]                     |
|  |      | <-o>    | ---                                      |
|  |      | <o>     | bold[bəʊld], bolt[bəʊlt]                 |
|  |      | <oy>    | boy[bɔɪ]                                 |
|  | /ɔɪ/ | <oi>    | boil[bɔɪl]                               |
|  |      | <a(r)>  | bark[bɑ:k], bar[bɑ:]                     |
|  |      | <o(r)>  | bore[bɔ:, bɔ:n], born[bɔ:n]              |
|  |      | <oar>   | board[bɔ:d]                              |
|  | /ʊə/ | <oo(r)> | boor[bʊə]                                |
|  |      | <ea(r)> | bear[beə]                                |
|  |      | <are>   | bare[beə]                                |
|  |      | <ee(r)> | beer[biə]                                |
|  | /iə/ | <ea(r)> | beard[biəd]                              |
|  |      | <ee(r)> | beer[biə]                                |
|  |      | <ea(r)> | beard[biəd]                              |
|  |      | <ee(r)> | beer[biə]                                |

| C¹C² | +V |   |
|------|----|---|
| /bl/ |    | black[blæk], block[blak], bless[bles]       |
| /br/ |    | break[breɪk], branch[bræŋʃ], bridge[bri:dʒ] |

We see from the table (39) that /b/ is appeared before all vowels. Also /b/ can be followed by /l/ and /r/ in the sequence of initial consonants.

### 2.2.2 Bilabial Glide: /w/

The phoneme /w/ is usually spelled <w>; however it is spelled <wh> in the beginning of many words. Some speakers pronounce *where* [wɛə], and others pronounce [hʍɛə]. However, the PVM distinguishes clearly the sounds /w/ and /hw/ by the voice, in order to help learners from confusing these two sounds.

Here, we will discuss the spelling <w> since we have already discussed /hw/ in 2.1.2. Moreover, since learners have mastered the sound /hw/ before they learn voiced /w/ in the procedure of PVM, they will have no difficulty in seeing and hearing the differences when they encounter the sound /w/.

The phoneme /w/ occurs only before vowels and it appears before most of vowels in the initial of a word. The phoneme /w/ does not occur at the end of a word. As for the initial consonant cluster, we see some words which begin with <wr>, as in *wrap, write, wrong, wrist*. However, <wr> is not pronounced [wr]; it is pronounced [r]. According to Kurath (1967:81), the initial cluster /wr/ was reduced to /r/ by 1650 in the process of the historical sound changes. Since /wC/ is not found at the beginning of a word, we can say that /w/ cannot be followed by other consonants. The following table shows the words which begin with /w/.

#### (40) Initial /w/

| C <sup>1</sup> + | V   | spelling |                      |
|------------------|-----|----------|----------------------|
| /w/+             | /i/ | <ee>     | week[wik], weed[wid] |

|      |         |                                      |
|------|---------|--------------------------------------|
|      | <ea>    | weak[wɪk], weave[wɪv]                |
|      | <-e>    | we[wɪ]                               |
| /ɪ/  | <i>     | wink[wɪŋk], wing[wɪŋ], witch[wɪtʃ]   |
|      | <y>     | ---                                  |
| /ɛ/  | <e>     | wet[wɛt], web[wɛb], west[wɛst]       |
|      | <ea>    | wealth[wɛɪθ]                         |
| /æ/  | <a>     | wax[wæks], wagon['wægən]             |
| /ʌ/  | <u>     | won[wʌn], wonder['wʌndə]             |
| /u/  | <oo>    | woo[wu]                              |
|      | <ou>    | wound[wʌnd]                          |
| /u/  | <oo>    | wood[wʊd], wool[wʊl]                 |
|      | <u>     | ---                                  |
|      | <o>     | wolf[wʊlf], woman['wʊmən]            |
| /ɔ/  | <aw>    | ---                                  |
|      | <au>    | ---                                  |
|      | <a(ɪ)>  | wall[wɔɪ]                            |
|      | <a>     | water['wɔtə], walk[wɔk]              |
| /ɑ/  | <o>     | wok[wɔk]                             |
|      | <a>     | wash[wɔʃ], watch[wɔtʃ], waffle[wɔfɪ] |
| /ju/ | <u-e>   | ---                                  |
|      | <ew>    | ---                                  |
| /ə/  | <ur>    | ---                                  |
|      | <er>    | were[wə]                             |
|      | <ir>    | ---                                  |
|      | <or>    | word[wɜd], work[wɜk], world[wɜɪd]    |
| /eɪ/ | <a-e>   | wave[weɪv], wake[weɪk]               |
|      | <ay>    | way[weɪ]                             |
|      | <ai>    | wait[weɪt], waist[weɪst]             |
|      | <eigh>  | weigh[weɪ], weight[weɪt]             |
| /aɪ/ | <i-e>   | wine[waɪn], wife[waɪf]               |
|      | <-y>    | ---                                  |
|      | <igh>   | ---                                  |
|      | <i>     | wild[waɪld]                          |
| /aʊ/ | <ow>    | wow[waʊ]                             |
|      | <ou>    | wound[waʊnd]                         |
| /oʊ/ | <o-e>   | woke[wʊk]                            |
|      | <oa>    | ---                                  |
|      | <ow>    | ---                                  |
|      | <-o>    | ---                                  |
| /ɔɪ/ | <oy>    | ---                                  |
|      | <oi>    | ---                                  |
| /ɑr/ | <a(r)>  | ---                                  |
| /ɔr/ | <o(r)>  | wore[wɔr], worn[wɔrn]                |
|      | <a(r)>  | warm[wɔrm], war[wɔr], ward[wɔrd]     |
| /ʊr/ |         | ---                                  |
| /ɛr/ | <ea(r)> | wear[weər]                           |
|      | <are>   | ware[weər]                           |
| /ɪr/ | <ei(r)> | weird[waɪrd]                         |
|      | <ea(r)> | weary[waɪrɪ]                         |

### 2.2.3 Voiced Labiodental Fricative: /v/

The phoneme /v/ is usually spelled <v>. It appears before most of vowels, but it does not occur before /ʊ/ and /ʊæ/. It also does not have any initial consonant clusters. There is no other spelling for /v/ in the beginning of words.

#### (41) Initial /v/

| C'+  | V    | spelling |                                       |
|------|------|----------|---------------------------------------|
| /v/+ | /i/  | <ee>     | ---                                   |
|      |      | <ea>     | veal[viɪ]                             |
|      |      | <-e>     | ---                                   |
|      |      | <i>      | visa[ˈvɪzə]                           |
|      |      | <e>      | vehicle[ˈviːkl̩]                      |
|      | /ɪ/  | <i>      | visit[ˈvɪsɪt], vivid[ˈvɪvɪd]          |
|      |      | <y>      | ---                                   |
|      | /ɛ/  | <e>      | vest[vest], vet[vet], velvet[ˈvɛɪvɛt] |
|      |      | <ea>     | ---                                   |
|      | /æ/  | <a>      | van[væn], value[ˈvælju]               |
|      | /ʌ/  | <u>      | Vulcan[ˈvʌlkən]                       |
|      | /u/  | <oo>     | voodoo[ˈvʊdu]                         |
|      | /ʊ/  | <oo>     | ---                                   |
|      |      | <u>      | ---                                   |
|      | /ɔ/  | <aw>     | ---                                   |
|      |      | <au>     | vault[vɔʊt]                           |
|      |      | <a(11)>  | ---                                   |
|      | /ɑ/  | <o>      | volume[ˈvɒljum], volley[ˈvɒli]        |
|      | /ju/ | <u-e>    | ---                                   |
|      |      | <ew>     | ---                                   |
|      |      | <iew>    | view[vju]                             |
|      | /ə/  | <ur>     | ---                                   |
|      |      | <er>     | verb[vəb], verse[vəs]                 |
|      |      | <ir>     | virgin[ˈvɜːdʒɪn]                      |
|      |      | <or>     | ---                                   |
|      | /eɪ/ | <a-e>    | vase[veɪs], vale[veɪ]                 |
|      |      | <ay>     | ---                                   |
|      |      | <ai>     | vain[veɪn]                            |
|      |      | <a>      | vacant[ˈveɪkənt]                      |
|      |      | <ei>     | veil[veɪl]                            |
|      | /aɪ/ | <i-e>    | vine[vaɪn], vice[vaɪs]                |
|      |      | <-y>     | vying[vaɪŋ]                           |
|      |      | <igh>    | ---                                   |
|      |      | <i>      | violet[ˈvaɪələɪt], violin[vaɪəˈlɪn]   |
|      | /aʊ/ | <ow>     | vowel[ˈvaʊl]                          |
|      |      | <ou>     | vouch[ˈvaʊtʃ]                         |

|      |         |                           |
|------|---------|---------------------------|
| /ou/ | <o-e>   | vote[vout]                |
|      | <oa>    | ---                       |
|      | <ow>    | ---                       |
|      | <-o>    | ---                       |
|      | <o>     | vocal[voukɪ], volt[voult] |
| /ɔɪ/ | <oy>    | voyage['vɔɪɪdʒ]           |
|      | <oi>    | voice[vɔɪs]               |
| /ʌə/ | <a(r)>  | varnish['vʌəʃnɪʃ]         |
| /ɔə/ | <o(r)>  | vortex['vɔəteks]          |
| /ʊə/ |         | ---                       |
| /eə/ | <e(r)>  | very['veri]               |
|      | <a(r)>  | vary['veri]               |
| /iə/ | <ee(r)> | veer[vɪə]                 |

#### 2.2.4 Voiced Dental Fricative: /ð/

The phoneme /ð/ is always spelled <th>. Since the digraph is also used for /θ/, it is considered to be one of the difficult spellings to distinguish. Moreover, a word ‘this’ is represented in the Consonant Chart instead of a picture because the words using /ð/ in the initial position are usually demonstrative pronouns. For the learners who are not native English speakers, the word, ‘this’ is a difficult word to understand. The PVM emphasizes that to learn the initial sound first is meaningful to acquire the sound /ð/ itself. However after learners learn to articulate it correctly, the frequent proper nouns, like *mother* and *father*, may be useful for the non-native learners to practice the sound /ð/, although /ð/ does not occur in the initial position of these words.

The phoneme /ð/ is not found in consonant clusters in the initial of a word, on the other hand, /θ/ occurs in clusters, as in /θr/ and /θw/. This is one of the important remarks to

distinguish /ð/ and /θ/ which have the same spelling, <th>.

(42) Initial /ð/

| C <sup>1</sup> + | V    | spelling |                          |
|------------------|------|----------|--------------------------|
| /ð/+             | /i/  | <ee>     | these[ðiz]               |
|                  |      | <ea>     | ---                      |
|                  |      | <-e>     | ---                      |
|                  | /ɪ/  | <i>      | this[ðɪs], the[ðɪ]       |
|                  |      | <y>      | ---                      |
|                  | /e/  | <e>      | then[ðɛn], them[ðɛm]     |
|                  |      | <ea>     | ---                      |
|                  | /æ/  | <a>      | that[ðæt], than[ðæn]     |
|                  | /ʌ/  | <u>      | thus[ðʌs]                |
|                  | /u/  | <oo>     | ---                      |
|                  | /ʊ/  | <oo>     | ---                      |
|                  |      | <u>      | ---                      |
|                  | /ɔ/  | <aw>     | ---                      |
|                  |      | <au>     | ---                      |
|                  |      | <a(11)>  | ---                      |
|                  | /ɑ/  | <o>      | ---                      |
|                  | /ju/ | <u-e>    | ---                      |
|                  |      | <ew>     | ---                      |
|                  | /ɜ/  | <ur>     | ---                      |
|                  |      | <er>     | ---                      |
|                  |      | <ir>     | ---                      |
|                  |      | <or>     | ---                      |
|                  | /eɪ/ | <a-e>    | ---                      |
|                  |      | <ay>     | ---                      |
|                  |      | <ai>     | ---                      |
|                  |      | <ey>     | they[ðeɪ]                |
|                  | /aɪ/ | <i-e>    | thine[ðaɪn]              |
|                  |      | <-y>     | thy[ðaɪ]                 |
|                  |      | <igh>    | ---                      |
|                  | /aʊ/ | <ow>     | ---                      |
|                  |      | <ou>     | thou[ðaʊ]                |
|                  | /oʊ/ | <o-e>    | those[ðoʊz]              |
|                  |      | <oa>     | ---                      |
|                  |      | <ow>     | ---                      |
|                  |      | <-o>     | ---                      |
|                  |      | <ough>   | though[ðoʊ]              |
|                  | /ɔɪ/ | <oy>     | ---                      |
|                  |      | <oi>     | ---                      |
|                  | /ɑɜ/ | <a(r)>   | ---                      |
|                  | /ɔɜ/ | <o(r)>   | ---                      |
|                  | /ʊɜ/ |          | ---                      |
|                  | /eɜ/ | <e(r)e>  | there[ðeɜ]               |
|                  |      | <ei(r)>  | their[ðeɜ], theirs[ðeɜz] |
|                  | /ɪɜ/ |          | ---                      |



### 2.2.5 Voiced Alveolar Stop: /d/

In most words, /d/ is spelled <d> in the beginning of words. The phoneme /d/ is not represented by other spellings in the beginning of a word. The phoneme /d/ occurs before all vowels and it appears with /r/ and /w/ as the initial consonant clusters.

We have already discussed the flapping rule in 2.1.5 which applies to the phoneme /t/ between a stressed vowel and unstressed vowel. The flapping rule is sometimes applied to the phoneme /d/ as well as /t/. The following examples show the words including /d/ in the medial of a word and their pronunciation which the flapping rule is applied to.

(43) The pronunciation of the words including /d/

- a. daddy ['dædi] → ['dæɾi]
- b. ladder ['lædə] → ['læɾə]
- c. pudding ['puɾɪŋ] → ['puɾɪŋ]
- d. body ['bɒdi] → ['bɒɾi]
- e. radish ['rædɪʃ] → ['ræɾɪʃ]

The flap /ɾ/ should not be taught emphatically to the beginners, because, as we have mentioned before, it may confuse the learners by using /ɾ/ too much. It is, however, important for the teachers to know the flapping rule because some native speakers use the flap /ɾ/ as one of the natural sound effects.

The following table indicates the words which begin with /d/.

## (44) Initial /d/

| C <sup>+</sup> | V    | spelling |                                     |
|----------------|------|----------|-------------------------------------|
| /d/+           | /i/  | <ee>     | deep[dip], deet[dit]                |
|                |      | <ea>     | deal[di:t]                          |
|                |      | <-e>     | ---                                 |
|                |      | <ie>     | diesel['di:zəl]                     |
|                | /ɪ/  | <i>      | dish[dɪʃ], dig[dɪŋ], did[dɪd]       |
|                |      | <y>      | dysfunction[dɪs'fʌŋkʃən]            |
|                |      | <e>      | deny[dɪ'naɪ], design[dɪ'zaɪn]       |
|                | /ɛ/  | <e>      | desk[dɛsk], devil[dɛvəl]            |
|                |      | <ea>     | dead[dɛd], death[dɛθ]               |
|                | /æ/  | <a>      | dash[dæʃ], dad[dæd], dance[dæns]    |
|                | /ʌ/  | <u>      | duck[dʌk], dunk[dʌŋk]               |
|                |      | <o>      | does[dʌz], done[dʌn], dove[dʌv]     |
|                |      | <ou>     | double[dʌbəl]                       |
|                | /u/  | <oo>     | doom[dum]                           |
|                |      | <o>      | do[du]                              |
|                |      | <ue>     | due[du]                             |
|                |      | <u>      | duty['duti]                         |
|                | /ʊ/  | <oo>     | ---                                 |
|                |      | <u>      | dual[duəl]                          |
|                | /ɔ/  | <aw>     | dawn[dɔn]                           |
|                |      | <au>     | daub[dɔb]                           |
|                |      | <a(11)>  | ---                                 |
|                |      | <o>      | dog[dɒg]                            |
|                |      | <augh>   | daughter['dɔ:tə]                    |
|                | /ɑ/  | <o>      | doll[dɒl], dot[dɒt], doctor['dɒktə] |
|                | /ju/ | <u-e>    | duke[djuk]                          |
|                |      | <ew>     | dew[dju]                            |
|                | /ə/  | <ur>     | ---                                 |
|                |      | <er>     | Derby['dɜ:bi]                       |
|                |      | <ir>     | dirt[dɜ:t], dirty['dɜ:ti]           |
|                |      | <or>     | ---                                 |
|                | /eɪ/ | <a-e>    | date[deɪt]                          |
|                |      | <ay>     | day[deɪ]                            |
|                |      | <ai>     | daisy['deɪzi], daily['deɪli]        |
|                |      | <a>      | data['deɪtə]                        |
|                | /aɪ/ | <i-e>    | dice[dais], dive[dɑɪv], dime[dɑɪm]  |
|                |      | <-y>     | ---                                 |
|                |      | <igh>    | ---                                 |
|                |      | <y>      | dynamic[dɑɪ'næmɪk]                  |
|                |      | <ie>     | die[dɑɪ]                            |
|                |      | <ye>     | dye[dɑɪ]                            |
|                | /aʊ/ | <ow>     | down[daʊn]                          |
|                |      | <ou>     | ---                                 |
|                |      | <oub>    | doubt[daʊt]                         |
|                | /oʊ/ | <o-e>    | dove[douv], dome[doum]              |
|                |      | <oa>     | ---                                 |
|                |      | <ow>     | ---                                 |
|                |      | <-o>     | ---                                 |

|  |      |         |                               |
|--|------|---------|-------------------------------|
|  |      | <ough>  | dough[dou], doughnut['doʊnʌt] |
|  |      | <oe>    | doe[dou]                      |
|  |      | <o>     | donor['doʊnə]                 |
|  | /ɔɪ/ | <oy>    | doyen[dɔɪən]                  |
|  |      | <oi>    | doily['dɔɪli]                 |
|  | /ɑɹ/ | <a(r)>  | dark[dɑɹk], dart[dɑɹt]        |
|  | /ɔɹ/ | <o(r)>  | dorm[dɔɹm]                    |
|  |      | <oo(r)> | door[dɔɹ]                     |
|  | /ʊɹ/ | <u(r)>  | during[dʊɹɪŋ]                 |
|  | /ɛɹ/ | <are>   | dare[dɛɹ]                     |
|  | /ɪɹ/ | <ee(r)> | deer[dɪɹ]                     |
|  |      | <ea(r)> | dear[dɪɹ]                     |

| C¹C² | +V |                                       |
|------|----|---------------------------------------|
| /dr/ |    | dress[dres], drink[drɪŋk], drum[dram] |
| /dw/ |    | dwarf[dwɔɹf], dwell[dwɛl]             |

### 2.2.6 Voiced Alveolar Fricative: /z/

In initial position the phoneme /z/ is usually spelled <z>. This means that it is easy to distinguish the spelling of the sound, although we have another spelling <x> for /z/, as in *xylophone*, *Xerox*, *xenophobia*, these words are fairly few. Therefore it is understandable that <x> is not listed on the Consonant Chart of PVM.

The PVM employs only one spelling, <s>, as the secondary spelling which comes in the middle and end of words. However, <z> and <zz> also occur in medial and final positions of words. The following indicates the words which include the phoneme /z/ at the medial and final positions.

(45) The phoneme /z/ in the medial and final positions

a. medial

<s>: easy ['izi], design [dɪ'zaɪn], visit ['vɪzɪt],  
 music ['mjuzɪk], season ['sizən]  
 <ss>: dessert[dɪ'zɜ:t], scissors ['sɪzəz], possess [pə'zɛs]  
 <z>: crazy ['kʰreɪzi], wizard ['wɪzəd], lazy ['leɪzi]  
 <zz>: puzzle [pʰʌzəl], dizzy ['dɪzi], buzzer ['bʌzə]

#### b. final

<s>: days [deɪz], hours [aʊəz], says [seɪz], times [tʰaɪmz]  
 was [wʌz], as [æz], his [hɪz], is [ɪz],  
 always ['ɔːlweɪz], news [n(j)uz],  
 <se>: close [kʰləʊz], use [juːz], lose [luːz], please [pʰleɪz]  
 <z>: quiz [kʰwɪz], topaz ['tʰoʊpæz]  
 <zz>: jazz [jæz], buzz [bʌz]  
 <ze>: size [saɪz], prize [pʰraɪz], maze [meɪz]

There are some spelling variations for the phoneme /z/ as we have seen above. However if the learners learn the spelling <z> for the phoneme /z/, they will be able to understand the other spellings including <s>.

However, we must explain the spelling <s> and <ss> for /z/ with some rules. The spelling <s> is always pronounced /s/ in the initial position, but when <s> comes in the medial and final position, it is often pronounced /z/. In another word, <s> is pronounced /z/ after a voiced sound. We can formulate a rule in the following way:

(46) Assimilation rule for <s>

<s> → /z/ / [+voiced] \_\_\_\_

As for <ss>, it occurs only in the middle position and final positions. However, when it comes between voiced sounds, it is only pronounced /z/. On the other hand, when <ss> appears in the final position, it is pronounced /s/, as in *pass*, *toss*, *access*. To sum up, we can make a rule as follows:

(47) Assimilation rule for <ss>

<ss> → /z/ / [+voiced] \_\_\_\_ [+voiced]

Since the spelling <s> is underlyingly recognized /s/, we have to pay special attention to teach the sound /z/ which is spelled <s>. Therefore, even though <s> for /z/ is not used in the initial position, we need to teach as the secondary spelling. The secondary spelling <s> for /z/ is the most meaningful spellings in many other spellings for /z/.

(48) Initial /z/

| C <sup>+</sup> | V   | spelling |                         |
|----------------|-----|----------|-------------------------|
| /z/+           | /i/ | <ee>     | ...                     |
|                |     | <ea>     | zeal[ziɪ]               |
|                |     | <-e>     | ...                     |
|                |     | <e>      | zebra[ˈzibrə]           |
|                | /ɪ/ | <i>      | zip[zip], zipper[ˈzipə] |
|                |     | <y>      | ...                     |
|                |     | <e>      | zero[ˈziroʊ]            |
|                | /ɛ/ | <e>      | zest[zɛst]              |
|                |     | <ea>     | zealous[ˈzeləs]         |

|  |      |         |                    |
|--|------|---------|--------------------|
|  | /æ/  | <a>     | zap[zæp]           |
|  | /ʌ/  | <u>     | ---                |
|  | /u/  | <oo>    | zoo[zu], zoom[zum] |
|  |      | <u>     | zucchini[zu'kini]  |
|  | /ʊ/  | <oo>    | ---                |
|  |      | <u>     | ---                |
|  | /ɔ/  | <aw>    | ---                |
|  |      | <au>    | ---                |
|  |      | <a(11)> | ---                |
|  | /ɑ/  | <o>     | zombie['zambi]     |
|  | /ju/ | <u-e>   | ---                |
|  |      | <ew>    | ---                |
|  | /ɝ/  | <ur>    | ---                |
|  |      | <er>    | ---                |
|  |      | <ir>    | ---                |
|  |      | <or>    | ---                |
|  | /eɪ/ | <a-e>   | ---                |
|  |      | <ay>    | ---                |
|  |      | <ai>    | ---                |
|  |      | <a>     | zany['zeɪni]       |
|  | /aɪ/ | <i-e>   | ---                |
|  |      | <-y>    | ---                |
|  |      | <igh>   | ---                |
|  |      | <i>     | zion['zi:ən]       |
|  | /aʊ/ | <ow>    | ---                |
|  |      | <ou>    | ---                |
|  | /oʊ/ | <o-e>   | zone[zoun]         |
|  |      | <oa>    | ---                |
|  |      | <ow>    | ---                |
|  |      | <-o>    | ---                |
|  |      | <o>     | zodiac['zouɪ,æk]   |
|  | /ɔɪ/ | <oy>    | ---                |
|  |      | <oi>    | ---                |
|  | /ɑɝ/ | <a(r)>  | ---                |
|  | /ɔɝ/ | <o(r)>  | ---                |
|  | /ʊɝ/ |         | ---                |
|  | /eɝ/ |         | ---                |
|  | /iɝ/ |         | ---                |

### 2.2.7 Voiced Postalveolar Affricate: /dʒ/

The phoneme /dʒ/ is commonly spelled <j> at the beginning of a word. The spelling <g> is also used for /dʒ/ as the secondary spelling. The phoneme /dʒ/ is basically spelled <g> before <e>, <i> and <y>. On the other hand, /dʒ/ is spelled without any conditioned environment. We can formulate the rules as

follows:

(49) Spelling Rules for /ɟ/

- a. <g> → /ɟ/ / \_\_\_\_\_ <e, i, y>  
b. <j> → /ɟ/ / \_\_\_\_\_ elsewhere

(50) The words rule (49a) is applied to include:

<e>: gene [ɟin], gentle ['ɟɛntɫ]

<i>: gin [ɟin], giant ['ɟaɪənt]

<y>: gym [ɟɪm], gypsy ['ɟɪpsi]

(51) The words rule (49b) is applied to include:

<a>: jar [ɟɑə], jacket ['ɟækɪt]

<e>: jelly ['ɟɛli], jet [ɟɛt], Jesus ['ɟɪzəs], jewel ['ɟuəl]

<i>: jigsaw ['ɟɪɡzɔ], jingle ['ɟɪŋɡɫ], jive [ɟaɪv]

<o>: jockey ['ɟɔki], joke [ɟouk], join [ɟɔɪn],

<u>: judge [ɟʌɟ], juice [ɟus], July [ɟu'laɪ]

From (51) we determined that <j> is always pronounced /ɟ/ regardless of the following environment. On the other hand, <g> is not always pronounced /ɟ/; <g> is pronounced /g/ before <a>, <u>, <o>. The phoneme /g/ will be mentioned in detail in the next section.

The following table indicates the words which begin with /ɟ/ and which are spelled <j>.

## (52) Initial /ʤ/

| C'+  | V    | spelling |                                       |
|------|------|----------|---------------------------------------|
| /ʤ/+ | /i/  | <ee>     | jeep [ʤip]                            |
|      |      | <ea>     | jeans [ʤɪnz]                          |
|      |      | <-e>     | ---                                   |
|      |      | <e>      | Jesus ['ʤɪzəs]                        |
|      | /ɪ/  | <i>      | jinx [ʤɪŋks], jingle [ʤɪŋɡl]          |
|      |      | <y>      | ---                                   |
|      | /e/  | <e>      | jest [ʤɛst], jet [ʤet], jelly ['ʤɛli] |
|      |      | <ea>     | jealous [ʤɛləs]                       |
|      | /æ/  | <a>      | jam [ʤæm], jazz [ʤæz]                 |
|      | /ʌ/  | <u>      | jump [ʤʌmp], just [ʤʌst], judge [ʤʌʤ] |
|      | /u/  | <oo>     | ---                                   |
|      |      | <u-e>    | June [ʤʊn]                            |
|      |      | <u>      | junior ['ʤʊnjə]                       |
|      |      | <ew>     | Jew [ʤu], jewel [ʤuəl]                |
|      |      | <ui>     | juice [ʤus], juicy ['ʤusi]            |
|      | /ʊ/  | <oo>     | ---                                   |
|      |      | <u>      | July [ʤʊ'laɪ]                         |
|      | /ɔ/  | <aw>     | jaw [ʤɔ]                              |
|      |      | <au>     | ---                                   |
|      |      | <a(ɪl)>  | ---                                   |
|      | /ɑ/  | <o>      | jog [ʤɔg], jot [ʤɔt], jockey ['ʤɔki]  |
|      | /ɜ/  | <ur>     | ---                                   |
|      |      | <er>     | jerk [ʤɜ:k], jerky ['ʤɜ:ki]           |
|      |      | <ir>     | ---                                   |
|      |      | <or>     | ---                                   |
|      |      | <our>    | journal [ʤəʊnəl]                      |
|      | /ju/ | <u-e>    | ---                                   |
|      |      | <ew>     | ---                                   |
|      | /eɪ/ | <a-e>    | jade [ʤeɪd]                           |
|      |      | <ay>     | jay [ʤeɪ]                             |
|      |      | <ai>     | jail [ʤeɪl]                           |
|      | /aɪ/ | <i-e>    | jive [ʤaɪv]                           |
|      |      | <-y>     | ---                                   |
|      |      | <igh>    | ---                                   |
|      | /aʊ/ | <ow>     | jowl [ʤaʊl]                           |
|      |      | <ou>     | joust [ʤaʊst]                         |
|      | /oʊ/ | <o-e>    | joke [ʤoʊk]                           |
|      |      | <oa>     | ---                                   |
|      |      | <ow>     | ---                                   |
|      |      | <-o>     | ---                                   |
|      |      | <o>      | jolt [ʤoʊlt]                          |
|      | /ɔɪ/ | <oy>     | joy [ʤɔɪ]                             |
|      |      | <oi>     | join [ʤɔɪn], joint [ʤɔɪnt]            |
|      | /ɑɜ/ | <a(r)>   | jar [ʤɑɜ]                             |
|      | /ɔɜ/ | <o(r)>   | Jordan [ʤɔɜdn]                        |
|      | /ʊɜ/ | <u(r)>   | jury [ʤʊɜ]                            |
|      | /eɜ/ |          | ---                                   |
|      | /ɪɜ/ | <ee(r)>  | jeer [ʤɪɜ]                            |



The table above shows that /ɖʒ/ is not followed by a consonant in the initial cluster. Also, /ɖʒ/ is not appeared before /ɛə/.

#### 2.2.8 Voiced Velar Stop: /g/

The phoneme /g/ is usually spelled <g> at the beginning of words. Although the other spellings for /g/ are fairly rare in the initial position, there are some spellings like <gu> and <gh>. The following shows the words of other spellings for /g/ in initial position.

##### (53) Other spellings for /g/

<gu>: guess [gɛs], guest [gɛst], guild [gɪɫd], guilt [gɪɫt],  
guard [gɑɹd], guide [gaɪd], guile [gaɪɫ],  
guitar [gɪ'tɑɹ]

<gh>: ghost [gəʊst], ghastly ['gæst(t)li], ghetto ['gɛtəʊ]

The PVM tends to adopt the secondary spelling by its frequency. The words which begin with <gu> and <gh> in (53) are few, so these spellings are not adopted as the secondary spellings.

However, the words in (53) include some words, such as *guest*, *guide*, and *guitar*, and they are frequently used by Japanese learners. The learners will naturally encounter these words through books and advertisements, with the advance of learning, even though the teacher does not teach them. When Japanese learners encounter the word '*guest*' for the first time, they will

make a mistake of the pronunciation like \*[gʌest]. Also, when they hear the sound [gɛst] for the first time, they will spell it like \**gest*. When they make these mistakes, the teacher should correct the errors and teach the correct spellings. We believe that this is the right time to introduce <gu> and <gh> in order to avoid using Roman letters for these words.

The following table shows the words which begin with /g/.

(54) Initial /g/

| C <sup>1</sup> + | V    | spelling |                                      |
|------------------|------|----------|--------------------------------------|
| /g/+             | /i/  | <ee>     | geese[gis]                           |
|                  |      | <ea>     | ---                                  |
|                  |      | <-e>     | ---                                  |
|                  | /ɪ/  | <i>      | gift[gɪft], give[gɪv]                |
|                  |      | <y>      | ---                                  |
|                  | /ɛ/  | <e>      | get[gɛt]                             |
|                  |      | <ea>     | ---                                  |
|                  | /æ/  | <a>      | gas[gæs], gang[gæŋ], gap[gæp]        |
|                  | /ʌ/  | <u>      | gulf[gʌtf], gum[gʌm], gun[gʌn]       |
|                  |      | <o>      | govern[ˈgʌvərn]                      |
|                  | /u/  | <oo>     | goose[gus], goofi [ˈgufi]            |
|                  | /ʊ/  | <oo>     | good[gʊd], goods[gʊðz]               |
|                  |      | <u>      | ---                                  |
|                  | /ɔ/  | <aw>     | gawk[gɔk]                            |
|                  |      | <au>     | gauze[gɔz], gaudy[ˈgɔdi]             |
|                  |      | <a(ɪl)>  | gall[gɔt]                            |
|                  | /ɑ/  | <o>      | God[gad], golf[gʌtf], gospel[ˈgaspɪ] |
|                  | /ɜ/  | <ur>     | gurgle[ˈgɜgɪ]                        |
|                  |      | <er>     | ---                                  |
|                  |      | <ir>     | girl[gɜt]                            |
|                  |      | <or>     | ---                                  |
|                  | /eɪ/ | <a-e>    | game[geɪm], gate[geɪt], gavel[geɪv]  |
|                  |      | <ay>     | gay[geɪ]                             |
|                  |      | <ai>     | gain[geɪn], gait[geɪt]               |
|                  | /aɪ/ | <i-e>    | guide[gaɪd], guise[gaɪz]             |
|                  |      | <-y>     | guy[gaɪ]                             |
|                  |      | <igh>    | ---                                  |
|                  | /aʊ/ | <ow>     | gown[gaʊn]                           |
|                  |      | <ou>     | gouge[gaʊdʒ]                         |
|                  | /oʊ/ | <o-e>    | ---                                  |
|                  |      | <oa>     | goat[gout], goal[gout]               |

|  |      |         |                                  |
|--|------|---------|----------------------------------|
|  |      | <ow>    | ---                              |
|  |      | <-o>    | go[ɡou]                          |
|  |      | <o>     | gold[ɡoʊd]                       |
|  | /ɔɪ/ | <oy>    | goy[ɡɔɪ]                         |
|  |      | <oi>    | goiter[ɡɔɪtə]                    |
|  | /ɑə/ | <a(r)>  | garden[ˈɡɑədən], garlic[ˈɡɑəlɪk] |
|  | /ɔə/ | <o(r)>  | gorgeous[ˈɡɔəʒəs]                |
|  | /ʊə/ | ou(r)   | gourmet[ɡʊəˈmet]                 |
|  | /ɛə/ | a(r)    | garish[ˈɡeərɪʃ]                  |
|  | /ɪə/ | <ea(r)> | gear[ɡɪə]                        |

| C <sup>1</sup> C <sup>2</sup> | +V |  |
|-------------------------------|----|--|
| /gr/                          |    | green[ɡrɪn], grass[ɡræs], grape[ɡreɪp] |
| /gl/                          |    | glass[ɡlæs], glove[ɡlʌv], gloss[ɡlɒs]  |
| /gw/                          |    | Guam[ɡwʌm]                             |

The phoneme /g/ is basically pronounced /dʒ/ before <e>, <i>, <y> as the rule (49) shows. The words, *geese*, *gift*, *give*, *get* are exceptions to the rule. Also, we cannot find the spelling, \*<gi-e>, \*<gy->, \*<gih-> for the sound /gaɪ-/. However, as the spelling to represent the sound /gaɪ-/, we found the words which begin with <gu->. Therefore, these words are listed as exceptions in the right part of the column in table (54).

## 2.3 Nasals

### 2.3.1 Bilabial Nasal: /m/

The phoneme /m/ is usually spelled <m> at the beginning of a word, and it can be followed by all vowels as the following table (55) shows. Also, /m/ is not contained in consonant clusters.

(55) Initial /m/

| C <sup>1</sup> + | V   | spelling |                      |
|------------------|-----|----------|----------------------|
| /m/+             | /i/ | <ee>     | meet[mit], meek[mik] |

|       |         |                                     |
|-------|---------|-------------------------------------|
|       | <ea>    | meat[mit], mean[mi:n]               |
|       | <-e>    | me[mi]                              |
|       | <e>     | media['mi:diə], meter['mitə]        |
|       | <e-e>   | mete[mit]                           |
| /ɪ/   | <i>     | milk[mɪk], middle[mɪdɪ], mint[mɪnt] |
|       | <y>     | mystery['mɪstəri], myth[mɪθ]        |
|       | <e>     | mechanic[mɪ'kænɪk]                  |
| /e/   | <e>     | men[mɛn], medal[mɛdɪ], menu['mɛnju] |
|       | <ea>    | measure['mɛʒə], meant[mɛnt]         |
|       | <a>     | many['meni]                         |
| /æ/   | <a>     | mat[mæt], map[mæp], mask[mæsk]      |
| /ʌ/   | <u>     | mug[mʌg], much[mʌʃ], must[mʌst]     |
|       | <o>     | money['mʌni], monkey['mʌŋki]        |
| /u/   | <oo>    | moon[mun], mood[mud]                |
|       | <o>     | move[mu:v], movie['muvi]            |
|       | <ou>    | mouse[mʌs]                          |
| /ʊ/   | <oo>    | ---                                 |
|       | <u>     | Muslim['mʊsləm]                     |
| /ɔ/   | <aw>    | maw[mɔ]                             |
|       | <au>    | maul[mɔɪ]                           |
|       | <a(ɪ)>  | mall[mɔɪ]                           |
|       | <o>     | moth[mʊθ]                           |
| /ɑ/   | <o>     | mom[mʌm], mop[mʌp], model['mɒdɪ]    |
| /ɜ/   | <ur>    | murmur['mɜ:mɜ], murder['mɜ:də]      |
|       | <er>    | merge[mɜ:ʒ], mercy['mɜ:si]          |
|       | <ir>    | mirth[mɜ:θ]                         |
|       | <or>    | ---                                 |
| /ju/  | <u-e>   | mute[mjut], mule[mjuɪ]              |
|       | <ew>    | mew[mju]                            |
|       | <u>     | music['mjuzɪk]                      |
| /eɪ/  | <a-e>   | make[meɪk], mate[meɪt], male[meɪɪ]  |
|       | <ay>    | May[meɪ], maybe['meɪbi]             |
|       | <ai>    | main[meɪn], mail[meɪɪ]              |
| /aɪ/  | <i-e>   | mice[maɪs], mine[maɪn], mile[maɪɪ]  |
|       | <-y>    | my[maɪ]                             |
|       | <igh>   | might[maɪt]                         |
|       | <i>     | mild[maɪd], mind[maɪnd]             |
| /aʊ/  | <ow>    | ---                                 |
|       | <ou>    | mouth[maʊθ], mouse[maʊs]            |
| /oʊ/  | <o-e>   | mode[moud], mole[mouɪ]              |
|       | <oa>    | moan[moun], moat[mout]              |
|       | <ow>    | mow[mou]                            |
|       | <-o>    | ---                                 |
|       | <o>     | most[mʊst], motor['mʊtə]            |
| /ɔɪ/  | <oy>    | ---                                 |
|       | <oi>    | moist[mʊɪst]                        |
| /ɑ:ɪ/ | <a(r)>  | mark[mɑ:k], marble[mɑ:bɪ]           |
| /ɔ:ɪ/ | <o(r)>  | more[mɔ:], morning['mɔ:nɪŋ]         |
|       | <ou(r)> | mourn[mɔ:n]                         |

|  |      |         |               |
|--|------|---------|---------------|
|  | /ʊə/ | <oo(r)> | moor[mʊə]     |
|  | /eə/ | <e(r)>  | merit['mɛəɪt] |
|  | /ɪə/ | <e(r)e> | mere[mɪə]     |

### 2.3.2 Alveolar Nasal: /n/

In most words the sound /n/ is spelled <n> in the initial position of a word. The other spelling patterns for /n/, like <gn> and <kn>, are fairly rare, and usually involve silent consonants. A silent consonant means that there is a consonant letter in the spelling, but it is not pronounced. The spelling <g> in <gn> and <k> in <kn> are the silent consonants.

The pronunciation of a word has changed with a change of the spelling through the historical sound changes. Although <gn> used to be pronounced [gn] and <kn> used to be pronounced [kn], the pronunciations had simplified to /n/ in early Modern English, but the spellings have not changed.

The following shows the words which begin with <gn> and <kn>.

#### (56) The other spellings for /n/

<gn>: gnash [næʃ], gnat [næt], gnaw [nɔ]

<kn>: knave [neɪv], knee [ni], knife [naɪf], know [noʊ],

knot [nɒt], knuckle ['nʌkəl], knock [nɒk]

Regardless of the position where they appear, English has many silent consonants, as in <b> in *comb*, <l> in *calm*, <h> in

*hour*, <w> in *write*, etc. It is likely that learners will mistake the pronunciations of these words. That is, they will pronounce them incorrectly, like *comb* \*[coumb], *calm* \*[kaʔm], and *hour* \*[haʊə]. Although there might be some differences between English native learners and English non-native learners according to the incorrect pronunciations, it is not to be denied that there is a possibility that the learners pronounce the silent consonant as a phoneme. Therefore, for teaching a complex of spelling should be avoided in the PVM.

The following table indicates the words which begin with /n/. It shows that there are no \*/n/+/ʊə/ sequences in the initial positions.

(57) Initial /n/

| C <sup>1</sup> + | V   | spelling |  |
|------------------|-----|----------|--|
| /n/+             | /i/ | <ee>     | need[nid],                             |
|                  |     | <ea>     | neat[nit]                              |
|                  |     | <-e>     | ---                                    |
|                  |     | <ie>     | niece[nis]                             |
|                  |     | <ei>     | neither[ <sup>1</sup> nɪðə]            |
|                  |     | <e>      | neon[ <sup>1</sup> nɪən]               |
|                  | /ɪ/ | <i>      | nick[nɪk], nifty[ <sup>1</sup> nɪftɪ]  |
|                  |     | <y>      | nymph[nɪmf]                            |
|                  | /ɛ/ | <e>      | net[nɛt], nest[nɛst], next[nɛkst]      |
|                  |     | <ea>     | ---                                    |
|                  | /æ/ | <a>      | nap[næp], napkin[ <sup>1</sup> næpkɪn] |
|                  | /ʌ/ | <u>      | nut[nʌt], number[ <sup>1</sup> nʌmbə]  |
|                  |     | <o>      | none[nʌn]                              |
|                  | /u/ | <oo>     | noon[nun]                              |
|                  |     | <ew>     | new[n(j)u], news[n(j)uz]               |
|                  |     | <u>      | nude[nud]                              |
|                  | /ʊ/ | <oo>     | nook[nʊk]                              |
|                  |     | <u>      | ---                                    |
|                  |     | <augh>   | naughty[ <sup>1</sup> nɒtɪ]            |
|                  | /ɔ/ | <aw>     | ---                                    |
|                  |     | <au>     | nautical[ <sup>1</sup> nɒtɪkəl]        |
|                  |     | <a(1l)>  | ---                                    |

|  |      |         |                               |
|--|------|---------|-------------------------------|
|  | /ɑ/  | <ο>     | not[nɑt], nod[nɑd]            |
|  |      | <a>     | naive[nɑ'iv]                  |
|  | /ɜ/  | <ur>    | nurse[nɜs]                    |
|  |      | <er>    | nerve[nɜv]                    |
|  |      | <ir>    | ---                           |
|  |      | <or>    | ---                           |
|  | /ju/ | <u-e>   | nude[n(j)ud]                  |
|  |      | <ew>    | new[nju]                      |
|  |      | <eu>    | neutral['nju:trɪ]             |
|  | /eɪ/ | <a-e>   | name[neɪm]                    |
|  |      | <ay>    | ---                           |
|  |      | <ai>    | nail[neɪl]                    |
|  |      | <a>     | navy['neɪvɪ], nature['neɪtʃə] |
|  | /aɪ/ | <i-e>   | nice[naɪs], nine[naɪn]        |
|  |      | <-y>    | ---                           |
|  |      | <igh>   | night[naɪt]                   |
|  |      | <y>     | nylon['naɪlən]                |
|  | /aʊ/ | <ow>    | now[naʊ]                      |
|  |      | <ou>    | noun[naʊn]                    |
|  | /oʊ/ | <o-e>   | note[nout], nose[nouz]        |
|  |      | <oa>    | ---                           |
|  |      | <ow>    | ---                           |
|  |      | <-o>    | no[nou]                       |
|  |      | <o>     | noble['noʊbəl]                |
|  | /ɔɪ/ | <oy>    | ---                           |
|  |      | <oi>    | noise[nɔɪz], noisy['nɔɪzi]    |
|  | /ɑɜ/ | <a(r)>  | narc[nɑɜk]                    |
|  | /ɔɜ/ | <o(r)>  | north[nɔɜθ], normal[nɔɜmɪ]    |
|  | /ʊɜ/ |         | ---                           |
|  | /eɜ/ |         | ---                           |
|  | /ɪɜ/ | <ea(r)> | near[nɪɜ]                     |

Gimson (1970:241) refers to the fact /n/ is followed by /ɛɜ/ in word initial CV. However, we could not find the word from dictionaries, so the column of /ɛɜ/ remains blank.

### 2.3.3 Velar Nasal: /ŋ/

The phoneme /ŋ/ does not occur at the beginning of words and it is spelled <ng> in the final position. The phoneme /ŋ/ also occurs before /k/ or /g/ and it is spelled <n> before <c>, <g>, and <k>. The spelling <-ng> in the final position of a word is

always pronounced /ŋ/ as the following rule (58) shows. The words in (59) are examples including the spelling <ng> at the end of a word.

(58) Pronunciation Rule for <ng>

$$\langle \text{ng} \rangle \rightarrow / \eta / \text{ / } \_\_\_ \#$$

(59) The words rule (58) applies to include:

- a. swing [swɪŋ]
- b. king [kɪŋ]
- c. ring [rɪŋ]
- d. long [lɔŋ]
- e. young [jʌŋ]

On the other hand, when <ng> appears in the middle of words, it is pronounced /ŋg/. We can formulate a rule as follows:

(60) Pronunciation Rule for <ng>

$$\langle \text{ng} \rangle \rightarrow / \eta g / \text{ / } \_\_\_ \text{ Seg}$$

(Seg is a segment)

(61) The words rule (60) applies to include:

- a. angry ['æŋgri]
- b. finger ['fɪŋgə]



- c. England ['ɪŋɡlənd]
- d. single ['sɪŋɡl̩]
- e. hunger ['hʌŋɡə]

However, words like *singer* and *singing* are pronounced [sɪŋə] and [sɪŋɪŋ] because they consist of the stem <sing> and suffix <-er> and <-ing> and the stem does not have any changes in its pronunciation. It is considered to be different from the words in (61) even though <ng> appears in the middle of the word.

There is, however, an exception to this rule. When a comparative <-er> or superlative <-est> are added to the adjective like *long* and *strong*, the rule (61) is applied to the pronunciation of these words; *longer* ['lɒŋɡə], and *strongest* ['strɒŋɡɛst]. We can explain this from the viewpoint of morphology. That is, when a derivational morpheme, which can convert a word category, is added to a word, it is pronounced /ŋ/. On the other hand, when an inflectional morpheme, which cannot convert a word category, is added to a word, it is pronounced /ŋg/.

The secondary spelling for /ŋ/ is only <-n(k)> in the Consonant Chart of PVM. However, <n(c)> is also pronounced /ŋ/, and <nk> appears not only in the final position, but also in the medial position.

(62) The other spellings for /ŋ/

<-nk->: ankle ['æŋkəl], blanket ['blæŋkɪt],  
                   monkey ['mʌŋki]  
 <-nk>: ink [ɪŋk], bank [bæŋk], pink [pɪŋk], sink [sɪŋk],  
                   thank [θæŋk], think [θɪŋk], wink [wɪŋk]  
 <-nc->: uncle ['ʌŋkəl], function ['fʌŋkʃən]

We have discussed the detail of /ŋ/ phonologically and morphologically in this section. The learners, however, do not need to know these complicated phonological rules. The knowledge of this rule is quite useful in teacher's respect. Therefore we dared to discuss in this section.

## 2.4 Other Consonants

### 2.4.1 Alveolar Lateral: /l/

The phoneme /l/ is usually spelled <l> in the beginning of a word. The other spellings for /l/ are rarely used in the initial position. In the middle and final position, <ll> is often used. There are some differences between the initial /l/ and the medial and final /l/ in their pronunciations. Within the phoneme /l/, three main allophones are heard: [l], [ɫ], and [ɫ̥]. We have already discussed the voiceless [ɫ̥] and velarized [ɫ] in 2.1.1. We have also formalized each rule there. So, we will sum up the allophones for /l/ briefly here.

The sound [l] is called clear /l/. It occurs before vowels as in *leaf*, *listen*, *land*, *lady*, *believe*, and *select*. It also appears

after voiced consonants in the initial clusters: *blow, glad*.

Devoiced [ɫ̥] occurs in the initial position, when [ɫ̥] follows voiceless stops in accented syllables, as in *play, please, clean, clap*.

Velarized [ɫ̠] is seen in the final position like *tall, pole, tail, table, middle*, and *eagle*. It also occurs after a vowel and before a consonant in the middle position, as in *field, shelf, help*. The velarized [ɫ̠] is also called dark /l/.

The reason why we mentioned the sound [ɫ̥] and [ɫ̠] again here is that we have to emphasize the differences of their sounds. For Japanese learners, the phoneme /l/ is one of the most difficult sounds to pronounce as we know. Without regard to the learner's age, Japanese learners tend to substitute Japanese <ra, ri, ru, re, ro> for English /l/. An English word, 'apple' should not be pronounced \*[appurɯ]. In order to pronounce English correctly, teachers should recognize these differences and offer the correct sounds to the learners.

The following table indicates the words which begin with clear /l/. We must teach clear /l/ before all other allophones of /l/ because the phoneme is pronounced most clearly in the initial position and it is easy to distinguish the phoneme. In order to practice the pronunciation of phoneme /l/, we can use the following words:

#### (63) Initial /l/

| C <sup>+</sup> | V    | spelling |                                     |
|----------------|------|----------|-------------------------------------|
| /l/+           | /i/  | <ee>     | lee[li]                             |
|                |      | <ea>     | leaf[lif], lead[lid], league[liɡ]   |
|                |      | <-e>     | ---                                 |
|                |      | <e>      | legal['liɡt]                        |
|                |      | <ei>     | leisure['liʒə]                      |
|                | /ɪ/  | <i>      | list[lɪst], lip[lɪp], limit['lɪmɪt] |
|                |      | <y>      | lynx[lɪŋks]                         |
|                | /ɛ/  | <e>      | left[lɛft], leg[lɛɡ], lemon[lɛmən]  |
|                |      | <ea>     | leaden['lɛdn]                       |
|                |      | <eo>     | leopard['lɛpəd]                     |
|                | /æ/  | <a>      | land[lænd], lamp[læmp], last[læst]  |
|                |      | <au>     | laugh[læf]                          |
|                | /ʌ/  | <u>      | lunch[lʌŋʃ], luck[lʌk]              |
|                |      | <o>      | love[lʌv]                           |
|                | /u/  | <oo>     | loose[lus], loop[lup]               |
|                |      | <u-e>    | lude[lud]                           |
|                | /ʊ/  | <oo>     | look[luk]                           |
|                |      | <u>      | ---                                 |
|                | /ɔ/  | <aw>     | law[lɔ]                             |
|                |      | <au>     | laud[lɔd]                           |
|                |      | <a(ɪ)>   | ---                                 |
|                |      | <o>      | lost[lɔst], long[lɔŋ]               |
|                | /ɑ/  | <o>      | lobby['lɒbi], lock[lɒk]             |
|                | /ɔː/ | <ur>     | lurch[lɜːʃ]                         |
|                |      | <er>     | ---                                 |
|                |      | <ir>     | ---                                 |
|                |      | <or>     | ---                                 |
|                |      | <ear>    | learn[lɜːn]                         |
|                | /eɪ/ | <a-e>    | lace[leɪs], lane[leɪn], lake[leɪk]  |
|                |      | <ay>     | lay[leɪ], layer['leɪə]              |
|                |      | <ai>     | laid[leɪd], lain[leɪn]              |
|                |      | <a>      | lady['leɪdi], lacy['leɪsi]          |
|                | /aɪ/ | <i-e>    | line[laɪn], life[laɪf], like[laɪk]  |
|                |      | <-y>     | ---                                 |
|                |      | <igh>    | light[laɪt]                         |
|                |      | <ie>     | lie[laɪ]                            |
|                |      | <y>      | lying['laɪŋ]                        |
|                |      | <i>      | lion[laɪən], liar[laɪə]             |
|                | /aʊ/ | <ow>     | ---                                 |
|                |      | <ou>     | loud[laʊd], lounge[laʊndʒ]          |
|                | /oʊ/ | <o-e>    | lonely['ləʊnli]                     |
|                |      | <oa>     | loan[loʊn], load[loʊd]              |
|                |      | <ow>     | low[loʊ]                            |
|                |      | <-o>     | ---                                 |
|                |      | <o>      | local[loʊkəl], lotus['ləʊtəs]       |
|                | /ɔɪ/ | <oy>     | loyal['ləɪəl]                       |
|                |      | <oi>     | loiter['ləɪtə]                      |
|                | /ɑː/ | <a(r)>   | large[lɑːʒ], lark[lɑːk]             |
|                | /ɔː/ | <o(r)>   | lord[lɔːd], lore[lɔː]               |
|                | /ʊə/ | <u(r)>   | lure[lʊə]                           |

|  |      |         |           |
|--|------|---------|-----------|
|  | /eə/ | <ai(r)> | lair[lɛə] |
|  | /ɪə/ | <ee(r)> | leer[lɪə] |

#### 2.4.2 Alveolar Retroflex: /r/

In most words, the phoneme /r/ is spelled <r> in the beginning of a word. The phoneme /r/ is sometimes spelled <rh>, as in *rhythm*, *rhyme*, *rhino*. The words of <rh> are mostly Greek in origin. The number of words which begins with <rh> is few. Therefore it is appropriate that <rh> is not taught as a secondary spelling for /r/. The following table shows the words which begin with /r/. It also indicates that /r/ is not followed by /ə/ and /ɑə/ in the initial position.

#### (64) Initial /r/

| C <sup>1</sup> + | V   | spelling |                                    |
|------------------|-----|----------|------------------------------------|
| /r/+             | /i/ | <ee>     | reel[rɪt], reed[rɪd]               |
|                  |     | <ea>     | read[rɪd], reach[rɪʃ], real[rɪt]   |
|                  |     | <-e>     | ---                                |
|                  | /ɪ/ | <i>      | rich[rɪʃ], risk[rɪsk]              |
|                  |     | <y>      | ---                                |
|                  |     | <e>      | relax[rɪ'læks], report[rɪ'pɔ:t]    |
|                  | /e/ | <e>      | red[rɛd], rest[rɛst], rent[rɛnt]   |
|                  |     | <ea>     | ready['rɛdi]                       |
|                  | /æ/ | <a>      | rat[ræt], rap[ræp], rabbit['ræbɪt] |
|                  | /ʌ/ | <u>      | run[rʌn], rug[rʌg], rub[rʌb]       |
|                  |     | <ou>     | rough[rʌf]                         |
|                  | /u/ | <oo>     | room[rʊm], roof[rʊf]               |
|                  |     | <u-e>    | rude[rʊd], rule[rʊl]               |
|                  |     | <ou>     | route[rʊt], rouge[rʊʒ]             |
|                  | /ʊ/ | <oo>     | rookie['rʊki]                      |
|                  |     | <u>      | ---                                |
|                  | /ɔ/ | <aw>     | raw[rɔ]                            |
|                  |     | <au>     | raucous['rɔkəs]                    |
|                  |     | <a(ɪ)>   | ---                                |
|                  | /ɑ/ | <o>      | rock[rak], rocket['rakit]          |
|                  | /ə/ | <ur>     | ---                                |
|                  |     | <er>     | ---                                |
|                  |     | <ir>     | ---                                |
|                  |     | <or>     | ---                                |

|  |      |         |                                    |
|--|------|---------|------------------------------------|
|  | /eɪ/ | <a-e>   | race[reɪs], rate[reɪt]             |
|  |      | <ay>    | ray[reɪ]                           |
|  |      | <ai>    | rain[reɪn], rail[reɪt]             |
|  |      | <ei>    | rein[reɪn]                         |
|  | /aɪ/ | <i-e>   | ride[raɪd], rise[raɪz]             |
|  |      | <-y>    | ---                                |
|  |      | <igh>   | right[raɪt]                        |
|  |      | <ye>    | rye[raɪ]                           |
|  | /aʊ/ | <ow>    | row[raʊ]                           |
|  |      | <ou>    | round[raʊnd]                       |
|  | /oʊ/ | <o-e>   | rose[rouz], rope[roup], roll[roul] |
|  |      | <oa>    | road[roud], roast[roust]           |
|  |      | <ow>    | row[rou]                           |
|  |      | <-o>    | ---                                |
|  | /ɔɪ/ | <oy>    | royal['rɔɪəl]                      |
|  |      | <oi>    | roil[roɪl]                         |
|  | /ʊə/ |         | ---                                |
|  | /ɔə/ | <o(r)>  | roar[rɔə]                          |
|  | /ʊə/ | <u(r)>  | rural['ruərəl]                     |
|  | /ɛə/ | <a(r)e> | rare[rɛə]                          |
|  | /ɪə/ | <ea(r)> | rear[rɪə]                          |

The phoneme /r/ is one of the difficult sounds for Japanese learners as well as /l/. Japanese language has the sounds of <ra, ri, ru, re, ro> and the initial consonant of them is transcribed in flapped [ɾ] in the narrow transcriptions. So, it is different from the phoneme /l/ and /r/ in English. However, we tend to replace English /l/ and /r/ with Japanese <ra, ri, ru, re, ro>. This causes the difficulty of communication with native English speakers.

Moreover, the distinction between /r/ and /l/ is fairly hard for Japanese learners. If we do not distinguish the differences between them, it affects the meaning as seen in word pairs such as *lice* and *rice*. In order to avoid such mistakes, we need to acquire both sounds properly, and it is important to articulate

to make the differences clear.

### 2.4.3 Palatal Glide: /j/

The phoneme /j/ occurs in the initial position and it is spelled <y>, but /j/ never occurs in the final position.

In the PVM, a single initial /j/, as in *you*, is considered as a consonant; on the other hand, /ju/, as in *use* and *mule*, is considered as a vowel from the spelling <u>. In underlying level, we recognize /j/ as the same phoneme without regard to the single /j/ or /ju/. However, in the spelling level, they are apparently different. That is, <y> is a consonant and <u> is a vowel. These differences in the spelling are important factors to distinguishing them in the PVM.

The following table indicates the words which begin with /j/. There are no words which begin with \*<yoo->, \*<yu-> and are pronounced /ju/. However, the sound /ju/ are heard in *eureka* and *Uranus*, so we list these words in the table.

(65) Initial /j/

| C'+  | V   | spelling |                                    |
|------|-----|----------|------------------------------------|
| /j/+ | /i/ | <ee>     | ---                                |
|      |     | <ea>     | yeast[jɪst]                        |
|      |     | <-e>     | ---                                |
|      |     | <ie>     | yield[jɪld]                        |
|      | /ɪ/ | <i>      | Yiddish['jɪdɪʃ]                    |
|      |     | <y>      | ---                                |
|      | /ɛ/ | <e>      | yes[jɛs], yet[jɛt], yellow['jɛləʊ] |
|      |     | <ea>     | ---                                |
|      | /æ/ | <a>      | yam[jæm]                           |
|      | /ʌ/ | <u>      | yummy['jʌmi]                       |
|      |     | <ou>     | young[jʌŋ]                         |
|      | /u/ | <oo>     | ---                                |

|  |      |         |                                       |
|--|------|---------|---------------------------------------|
|  |      | <ou>    | youth[juθ], you[ju]                   |
|  | /u/  | <oo>    | ---                                   |
|  |      | <u>     | --- eureka[jo'rikə], Uranus['jʊrənəs] |
|  | /ɔ/  | <aw>    | yawn[jɔn]                             |
|  |      | <au>    | ---                                   |
|  |      | <a(ɪ)>  | ---                                   |
|  | /a/  | <o>     | yocht[jat], yonder['jandə]            |
|  | /ɜ/  | <ur>    | ---                                   |
|  |      | <er>    | ----                                  |
|  |      | <ir>    | ---                                   |
|  |      | <or>    | ---                                   |
|  |      | <ear>   | yearn[jɜn]                            |
|  | /eɪ/ | <a-e>   | ---                                   |
|  |      | <ay>    | ---                                   |
|  |      | <ai>    | ---                                   |
|  |      | <ea>    | yea[jeɪ]                              |
|  | /aɪ/ | <i-e>   | ---                                   |
|  |      | <-y>    | ---                                   |
|  |      | <igh>   | ---                                   |
|  | /aʊ/ | <ow>    | yowl[jaʊt]                            |
|  |      | <ou>    | ---                                   |
|  | /oʊ/ | <o-e>   | yoke[joʊk]                            |
|  |      | <oa>    | ---                                   |
|  |      | <ow>    | ---                                   |
|  |      | <-o>    | ---                                   |
|  |      | <o>     | yo-yo['joʊjoʊ], yoghurt['joʊgɜt]      |
|  | /ɔɪ/ | <oy>    | ---                                   |
|  |      | <oi>    | ---                                   |
|  | /ɑɜ/ | <a(r)>  | yard[jɑɜd], yarn[jɑɜn]                |
|  | /ɔɜ/ | <o(r)>  | ---                                   |
|  |      | <ou(r)> | your[jɔɜ]                             |
|  | /ʊɜ/ | <ou(r)> | your[jʊɜ]                             |
|  | /ɛɜ/ |         | ---                                   |
|  | /ɪɜ/ | <ea(r)> | year[jɪɜ]                             |

#### 2.4.4 Special consonants: <qu-> and <-x>

Since we have already discussed these two special consonants, <qu-> and <-x>, in the previous chapter, there is no need to go into further details again here.

## 2.5 Conclusion of this chapter

In this chapter we examined initial consonants and the possible combinations of consonants and vowels in the



beginnings of words. Also, we discussed the pronunciation of consonants and the main and secondary spellings for their sound.

The relation between sounds and spellings is fairly complicated, because one sound is not always represented by one spelling; most sounds have several spelling patterns. However, we have seen that we do not need to teach all spellings for a sound because some spellings are less frequent and less familiar for beginners. From what we have seen in this chapter it is clear that the listing of secondary spellings in the charts of PVM is highly reliable.

The important thing for teachers is that teachers need to acquire knowledge of the phonological rules and spelling rules we have discussed in this chapter. In order to teach sounds and spellings by using the PVM we must pronounce a sound correctly and we must choose appropriate words to teach the consonants.

## Chapter 3

### Application of the Phonovisual Method to Japanese learners

We have discussed the system of the Chart of the PVM and the relationships between sounds and spellings for each consonant in the previous two chapters.

In this chapter we will discuss how we can adapt the PVM to Japanese learners, especially young children. The PVM assumes an assertion that all learners at any level, will reap the benefits of their learning from the PVM. However, the method is not entirely applicable to Japanese learners. For example, some of the key words on the Consonant Chart, which represent each sound, are not familiar to non-native speakers (henceforth, NNS). The words like “saw” and “swing” should be changed to other words like “sun” and “ring”, which are more familiar to NNS. We will examine the points which are applicable or not applicable to Japanese learners on the PVM.

#### 3.1 When do we start to teach the PVM?

First, the PVM was developed for teaching young children who are native speakers (henceforth, NS) of English. It will

take longer for Japanese learners to acquire the systems of spelling and sound since the environment of English exposure is fundamentally different from those of NS. The English vocabularies of NNS are obviously fewer than NS. Also, some of the words of the Chart might be new to Japanese learners. It is difficult especially for young learners to learn several new things at the same time. Therefore, it is proper to introduce this system after several months have passed since they started learning English. Several months imply here the period during which they learn the English alphabets.

The knowledge of the names of the letters in the alphabet is required at least before they begin to learn how to use this system, otherwise we cannot expect that the absolute beginner who does not even know the alphabet can acquire it without any difficulties. During several months when they learn the alphabet letters, they have many chances to be exposed to common English words from textbooks or cards, etc. Over time, they can prepare to learn the system of PVM. From the writer's experience in teaching English to Japanese elementary school children, it is assumed that it takes more than six months to master the letters of the alphabet perfectly although there are differences among individuals caused by age and motivation. Moreover, the acquiring of the English alphabet depends on how often they are exposed to English. For the reasons mentioned above, we should start to use the

PVM after learners have mastered the alphabet.

### 3.1.2 Learning period

Secondly, we will discuss the learning period for PVM. The PVM suggests that about thirty minutes a day are needed to teach kindergarteners or primary graders. At present, regarding English teaching in Japanese elementary schools, it is impossible for most public schools to teach English for thirty minutes a day, although the number of schools which offer special English programs is increasing. Moreover, even if they have enough time to teach English, we cannot spend the whole lesson teaching spellings and sounds, because English lessons tend to focus on communicative activity. However, this does not mean that we cannot use the PVM in Japan. We can adjust the teaching time to the school programs or learners. Although it will take considerably longer for NNS to cover all sounds than for NS, it is possible to teach sounds and spellings by gradually using the PVM.

### 3.1.3 The procedure

Thirdly, we consider the procedure of teaching the sounds of the Chart. In the PVM, the order of teaching sounds is provided clearly and we have to follow the order without any changes when we use the method. The procedure of teaching is as follows:

(1) The procedure of teaching in PVM

a. The Consonant Chart:

1st step: voiceless consonants

2nd step: voiced consonants

3rd step: nasals

4th step: the rest of the consonants

b. The Vowel Chart

5th step: <ee>

6th step: <-a->, <-e->, <-i->, <-o->, <-u->

7th step: <a-e>, <i-e>, <o-e>, <u-e>

8th step: the rest of the vowels

This sequence of consonants is unfamiliar for Japanese because we have practiced the sounds by making pairs of voiceless and voiced consonants like /p/ and /b/. However, to teach by using sound pairs is not always appropriate for all learners. There is a risk of confusing their sounds because, for instance, /p/ and /b/ are similar in the shape of letters; besides they might take them the wrong way as /p/ is pronounced [b] and /b/ is [p]. Therefore, in order to avoid these misunderstanding, it seems reasonable to teach voiceless consonants first.

On vowels, most of us would accept that the spelling <ee> is taught first since there is no other possible pronunciation for <ee> besides [i]. Also, there will be no disagreement in

the point that the diphthongs should be taught after the monophthongs. Accordingly, the procedure of teaching the sounds would be accepted by most people.

Each vertical column in the chart of PVM is taught in order from the top to the bottom, whereas the voiceless consonants, /hw/, /f/, and /θ/, which Japanese do not have, are taught relatively early. Logically, the sounds which do not appear in Japanese should be taught later on. However, since each column of the Consonant Chart is arranged by the place of articulation, it is not proper to change the order of teaching consonants. The sounds which are produced in the front part of mouth are easy to pronounce for learners because it is easy to copy the shape of teacher's mouth. Therefore, we can be fairly certain that the procedure of teaching the sounds by using these charts is applicable.

### 3.2 Cases in Japan

We have hypothesized that the PVM would be applicable for Japanese so far. We now look at some research results based on using the PVM in Japan. Michael Higgins writes that the PVM is applicable for JL as follows:

- (2) ...Yukiko Shima studied this system [the PVM] in the US and brought it back to Japan to use directly with young children. She introduced the method to this

author [Higgins], and we both used it at the preschool level with excellent results. But the method was not found to be entirely applicable to training Japanese students, especially for higher grade levels. Some of the vocabulary base was changed to be more familiar or appealing to international youth (whereas *pig*, *top*, *saw*, or *monkey* may be attractive and familiar to native speaking children,) they were replaced by *pen*, *ten*, *sun*, and *map*, which are more familiar to non-native speakers. Exercises that had been designed for pre-school or elementary children were revised to be appealing to upper-level youth. Michael Higgins began to experiment with adaptations of it for university level classes, while Marilyn Higgins tested adaptations of it with high school students. (Higgins, 2000: 5-6)

The passage above makes it clear is that Higgins tried the PVM for Japanese young children and it brought good results. In order to practice more effectively, they changed the key words which are familiar to NNS, as we presumed in the beginning of this chapter. Moreover, he applied this method not only for young children but also for upper levels like university students, by revising the exercises. His article tells us that the PVM is applicable to Japanese learners by changing the parts of the method according to learner's ability.

We have taken young children as an object of teaching the PVM in this thesis. However, from the Higgins' article we know that the method can also be applied to junior high school students.

Most Japanese begin to study English systematically and some of them have difficulty in reading. Since Japanese students learn Roman alphabets in elementary school, they try to adapt English words to Roman alphabets which consist of a consonant and a vowel. The way in which we add a vowel sound after a consonant like Japanese language, sometimes causes us difficulty in communication. NS might not understand what we say because English is a CVC language where a final vowel does not occur in most of English words.

So, in order to avoid the mistakes of pronunciation and to make the reading easy, the use of PVM will be very useful in the first several lessons in junior high schools.

It follows from what has been said that the PVM is effective in teaching Japanese learners. We cannot say that it is appropriate to use the method as it is. However, it is clear that we can use the PVM by adjusting it so as to fit the needs of the learners.



## Conclusion

A teaching method that we recognize a sound from a spelling is not adapted in almost all Japanese schools. To learn the relations between sounds and spellings, the phonetic symbols have been already introduced to junior high school students in Japan. On the other hand, although the phonetic symbols are not used to learn readings and writings, the phonics which teaches sounds on the basis of spellings is used in American schools. When phonetic symbols are introduced to Japanese junior high school students, they must learn three different alphabets, which are Roman letters, English alphabets, and phonetic alphabets. It is apparent that learning three different alphabets causes confusion. We have met many junior high school students who cannot read English. Their lack of ability to read causes lack of understanding, and also moreover, lack of motivation. Spellings include many clues of how we read and pronounce a word. In order to help the students read more easily, we need to adapt a teaching method which teaches sounds on the basis of spellings. It appears that the PVM is a method which can be successfully used to learn spelling rules and their sounds.

In Chapter one, we examined the Consonant Chart and the

Vowel Chart in detail. We turned out that the charts are faithfully organized on the basis of English phonemes and they are of great value phonetically. Using the charts is one of the most effective aspects of the method. To use the charts every lesson helps learners to avoid confusing. In another word, repeatedly showing the same charts will be the key to read words even when learners encounter new words.

Another question we discussed in Chapter one is why the initial consonant sounds are taught first. One reason is that since most words begin with a consonant, it is easier to recognize the initial consonant than to recognize consonants in other positions. Another reason is that consonants are more consistent than vowels in pronunciation. Consonants also have high regularity between spellings and sounds. Therefore initial consonants should be taught first in the PVM, and in this respect, the PVM is entirely valid.

In Chapter two we discussed the characteristics of each consonant. In order to emphasize that we must pronounce English sounds correctly, we illustrated some phonological rules. Also, we demonstrated the validity of the main and secondary spellings for a sound by showing the word tables which begin with consonants and showing some spelling rules. We also discussed the reason why the secondary spellings are chosen from other possible spellings. From what we have discussed, we could see that the main and secondary spellings are

faithfully listed by their frequency and familiarity.

In Chapter three we discussed the application of the PVM to Japanese learners. Since the PVM is made for young native English learners, there are some difficulties to use the method for Japanese learners. So, we suggested that we should use it by adjusting a way of teaching so that Japanese learners can understand easily. Also, it turned out that the method is useful not only for young learners, but also for all aged learners, and the method is actually used in Japan.

It should be concluded, from what has been said above, that the PVM is a valuable method to teach sounds and spellings. Since Japanese learners tend to memorize the pronunciations and spellings of words, the PVM which correlate spellings with sounds is also quite useful for them. Lastly, in order to reduce the number of students who have difficulty with reading English, we expect that the method will be used in various teaching situations.

## Bibliography

- Fromkin, Victoria A, ed. (2000) *Linguistics: An Introduction to Linguistic Theory*. Oxford: Blackwell.
- Gimson, A.C. (1970) *An Introduction to the Pronunciation of English*. 2nd ed. London: Edward Arnold.
- Goya, Suzan. (1992) Teaching Phonics to Japanese Students. *The Language Teacher*. 16.2, 33-34
- Higgins, Michael, et al. (1995) Basic Training in Pronunciation and Phonics: A Sound Approach. *The Language Teacher*. 19.4, 4-8
- Horiuchi, Syunichi, ed. (1989) *Gendai Eigo Onseigaku (Modern English Phonetics)*. Tokyo: Eichosha.
- Kobayashi, Yasuhide, et al. (2000) *Eigogaku no Michishirube (An Introduction to English Linguistics)*. Tokyo: Eichosha
- Kobayashi, Yasuhide. (2004) Eigo R no Hatsuon to Hatsuon Kigo (Pronunciation and Phonetic Symbols of English R). *Hiroshima Jogakuin Digaku Daigakuin Gengo Bunka Ronsou (The Graduate School of Language and Culture Hiroshima Jogakuin University Journal of Language and Culture)*. 7, 1-27.
- Konishi, Tomoshichi. (1994) *Genius Eiwa Jiten (Taishukan's Genius English-Japanese Dictionary)*. 2nd ed. Tokyo: Taishukan.
- Konishi, Tomoshichi and Kosei Minamide. (2001) *Genius Eiwa*

- Daijiten (Taishukan's Unabridged Genius English-Japanese Dictionary)*. Tokyo: Taishukan.
- Kurath, Hans. (1967) *A Phonology and Prosody of Modern English*. Ann Arbor: The University of Michigan.
- Makino, Tsutomu. (1977) *Eigo no Hatsuon: Shido to Gakusyu (English Pronunciation: Teaching and Learning)*. Tosho TM Ser. Tokyo: Tokyo Shoseki.
- Misono, Kazuo. (1995) *Eigo Onseigaku Kenkyu: Riron to Ouyou (A Study of English Phonetics: Theory and Application)*. Tokyo: Kazuhiro Shuppan.
- Matsuda, Tokuichiro, ed. (1984) *Reader's Eiwa Jiten (Kenkyusha's English-Japanese Dictionary for the General Reader.)* Tokyo: Kenkyusha.
- Nakashima, Fumio and Yoshio Terasawa. (1970) *Eigo Gogen Shojiten (Kenkyusha's Little Dictionary of English Etymology)*. Tokyo: Kenkyusha.
- O'Grady, Willian and Michael Dobrovolsky (1995) *Contemporary Linguistic Analysis I : An Introduction*. Tokyo: Shohakusha
- \_\_\_\_\_. (1998) *Contemporary Linguistic Analysis II : An Introduction*. Tokyo: Shohakusha
- Oguri, Keizo. (1968) *Eigo Onseigaku Gairon (English Phonetics)*. 6th ed. Tokyo: Shinozaki Shorin
- Payne, Jonathan. (1995) *Collins Cobuild English Guides 8: Spelling*. London: Harper Collins Publishers.
- Schoolfield, Lucille D. and Josephine B. Timberlake. (1986) *The*

- Phonovisual Method*. Trans. Yukiko Shima. Tokyo: Shin Nihon Kyoiku Tosho.
- Sera, Yoko. (1997) *Sera Yoko no Eigo Shinan: YES no Eigo no Shido no Tebiki (Sera Yoko's English Teaching: Introduction of English Teaching in YES [Yamaguchi English School])*. Tokyo: Shin Nihon Kyoiku Tosho.
- Smith, Edna Burrows. (1978) *Textbook for Teachers*. Germantown: Phonovisual Products.
- Stern, Karen and Ruth Urban. (2000) *Longman Advanced American Dictionary*. Harlow: Pearson Education.
- Takebayashi, Shigeru. (1996) *Eigo Onseigaku (English Phonetics)*. Tokyo: Kenkyusha.
- Torii, Tsuguyoshi and Naomichi Kaneko. (1982) *Eigo no Hatsuon: Kenkyu to Shido (English Pronunciation: Research and Teaching)*. Tokyo: Taishukan.