

CHAPTER 4

RESULTS AND DISCUSSION

The analysis and discussion of the research study are presented in this chapter. Results of research question are listed in order: First, the data for learners' spelling on multi-syllable words is computed and interpreted. And then learners' attitude change before and after the instruction is analyzed and explained in the second part.

To measure the effects of two different instructions (syllable-awareness based phonics and phonics only), independent-samples t-test was used to illustrate if there is any significant difference between groups in the scores of multi-syllable word spelling pre- and posttests, and their questionnaires. Furthermore, some questions in the post-instruction questionnaire toward instructions were addressed by the percentage of agreement. Presented and analyzed, finally, were the results of the interview.

Spelling Multi-syllable Words

In response to the first research question --- "For 7th graders, is the syllable-awareness based phonics instruction more effective than the phonics only instruction on spelling multi-syllable words?", the spelling scores¹ of both groups before and after the instruction are investigated. The next section displays the findings of the between-group comparisons, followed with the researcher's analysis.

¹ Subjects' multi-syllable word spelling scores in the pretest and posttest are shown in Appendix J.

Comparisons between the Two Groups

To evaluate subjects' initial levels, both groups took a multi-syllable word spelling test before the instruction and the results were calculated by independent-samples t-test. As is evident from Table 3.6 in Chapter 3 (p.30), there was no statistically significant difference between the two groups with regard to the scores of spelling multi-syllable words ($t = .238, p > .05$). That is, as for spelling multi-syllable words, both groups were homogeneous before the instruction.

After 11-week instruction, independent-samples t-test was also used to compare the posttest performance between groups (see Table 4.1).

Table 4.1 The Result of the Multi-syllable Spelling Posttest between Groups

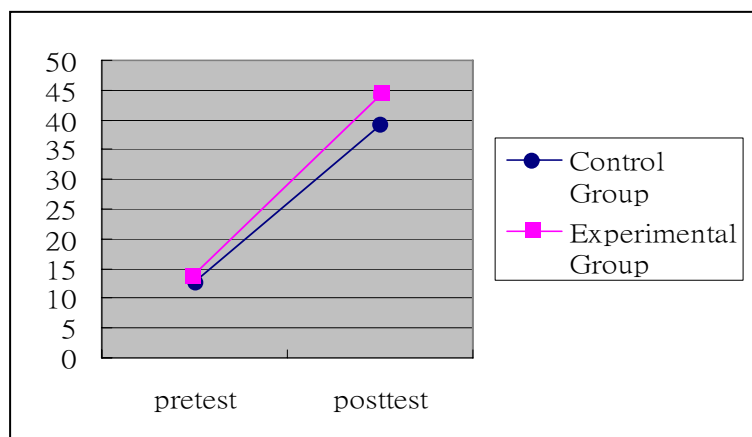
Group (N = 22/ group)	Mean	SD	t	Sig.(2-tailed)
Control	39.22	25.39	0.588	0.559
Experimental	44.18	30.24		

Note. 1. Total scores= 117

2. * $p < .05$

The result showed that there was no significant differences between groups ($t = .588, p > .05$). Figure 4.1 below shows the developmental curves of the two groups in spelling multi-syllable words between pretest and posttest.

Figure 4.1 Developmental Curves of the Two Groups' Multi-syllable Word Spelling Test



Obviously, both the experimental and the control group reflected a sharp curve of progress after the 11-week instruction, even though the experimental group gained slightly sharper rising than the control group. One possible explanation is that both instructions are effective for subjects. Thus, the significant difference of the progress can not be observed between groups, but only evident within groups. This finding seems to confirm the claim made by Blevins (1998), who indicated that phonics is regarded as one of the most powerful tools in improving spelling. Furthermore, letter-sound correspondence emphasized in phonics also effectively benefits learners' spelling (Adams, 1990; Chall, 1996; Frith, 1980; Graham, 1983). Another possible reason for the indistinctive performance of the two groups is that the concept of syllables may not be so easy for L2 learners to acquire. The instruction in the study consisted of only 8 minutes in each period. In fact, syllable counting was the only activity introducing the concept of syllables². All the above reasons may

² I am grateful to Prof. Yin for pointing out another possibility. Since the 22 subjects received the syllable awareness instruction among other 11 non-subjects, it may be questionable that some subjects were able to master the syllable counting concept on their own. They may be merely following other classmates' responses and never really learned how to count syllables from the instruction (Yin, p.c.).

attribute to the “not so significant” progress in the experimental group. Our findings seem to echo to the studies of Hung (1998) and Wu (2004) that EFL students in Taiwan, with a non-alphabetic native language, often lack the concept of syllables even in junior high school. Our study is also in accord with Liow and Lau’s (2006) investigation proving that Chinese-speaking learners are at disadvantage in acquiring syllables.

Pre- and Post- Instruction Questionnaire

In order to answer the second research question --- “After the instruction, are there differences between the two groups in learning attitudes and perceived difficulties?”, the researcher conducted pre- and post- instruction questionnaires on learning on the subjects. The discussion of the questionnaires consists of two parts. In the first part, the same two questions are discussed, namely Questions 5, 6 in the pre-instruction questionnaire and Questions 9, 10 in the post- instruction questionnaire, about memorizing vocabulary and learning English. The between-group and within-group results are compared and analyzed by independent-samples t-test and paired sample t-test. In the second part, the post-instruction questionnaire toward different instructions, teacher’s teaching method, and difficulties will be analyzed to further explore students’ learning attitude.

Attitude toward Memorizing Vocabulary³

Subjects were asked to answer the same question about their attitude toward

³ The data of subjects’ individual attitude on memorizing vocabulary and learning English is shown in Appendix K.

memorizing vocabulary through Question 5 in the pre-instruction questionnaire and Question 9 in the post-instruction questionnaire. --- “Memorizing English vocabulary is ___ for you?” Six descriptive options were included. --- “easy”, “interesting”, “challenging”, “difficult”, “boring”, “complicated.” The first three options were associated with subjects’ positive attitude and the other three with subjects’ negative attitude. The subjects would indicate their degree of consent by selecting one of the four choices--- “strongly agree”, “agree”, “disagree”, and “strongly disagree”, each to be assigned 4, 3, 2, and 1 point respectively. As for the negative descriptions, the scores would be the reverse. For instant, if a subject “strongly agrees” that memorizing vocabulary is easy (a positive attitude), he/ she can get 4 points. On the other hand, if a subject “strongly agrees” that memorizing vocabulary is difficult (a negative attitude), he/ she will only get 1 point. Based on the pre- and post-instruction questionnaire, the scores were computed for the attitude changes between groups and within groups.

First, we shall compare the findings of the two groups. According to the calculation of the pre- and post-instruction questionnaire on learning, independent-samples t-test of attitude on memorizing vocabulary indicated that there was no significant difference between groups before instruction ($t = 0.622, p > 0.05$). The statistic result is demonstrated in Table 4.4.

Table 4.4 The Between-group Result of the Pre-instruction Questionnaire on Learning Toward Memorizing Vocabulary

Group (N = 22/ group)	Mean	SD	t	Sig.(2-tailed)
Control	14.22	3.27	0.622	0.538
Experimental	15.00	4.82		

Note. 1. Total scores= 24

2. * $p < .05$

Then, after the 11-week instruction, the scores of the same question were calculated to evaluate subjects' learning attitude changes. The mean score of the control group's post-instruction attitude toward memorizing vocabulary is 15.68 and the experimental group is 18.31. The result, by using independent-samples t-test, showed that there existed a significant difference between the two groups ($t = 2.284$, $p < 0.05$). Table 4.5 presents the statistic result.

Table 4.5 The Between-group Result of the Post-instruction Questionnaire on Learning Toward Memorizing Vocabulary

Group (N = 22/ group)	Mean	SD	t	Sig.(2-tailed)
Control	15.68	3.85	2.284	0.027*
Experimental	18.31	3.79		

Note. 1. Total scores= 24

2. * $p < .05$

To further examine subjects' attitude, the researcher compared the mean scores of post-instruction questionnaire on learning within each group. As a result, subjects showed more positive attitude after the instruction of syllable-awareness based phonics. The mean scores increased from 15.00 to 18.31. Calculated with paired-samples t-test, it even reached significant progress ($t = -3.599$, $p < .01$). Table 4.6 displayed the within-group comparisons of the experimental group's attitude toward memorizing vocabulary.

Table 4.6 The Result of the Experimental Group's Attitude toward Memorizing Vocabulary

<i>(N = 22/ group)</i>	Mean	SD	t	Sig.(2-tailed)
Pretest	15.00	4.82	- 3.599	0.002**
Posttest	18.31	3.79		
Gains(Post - Pretest)	3.31			

Note. 1. Total scores= 24

2. *p<.05 **p<.01

As for the control group, the mean scores of the group's pre- and post-instruction questionnaires about memorizing vocabulary were also compared. Table 4.7 showed the statistic result. The mean scores within the control group only increased slightly, from 14.27 to 15.68. Although the control group's attitude change was not as much as the experimental group's, the subjects in the control group also significantly showed positive attitude on memorizing vocabulary by the paired-sample t-test ($t = -2.416, p < .05$).

Table 4.7 The Result of the Control Group's Attitude toward Memorizing Vocabulary

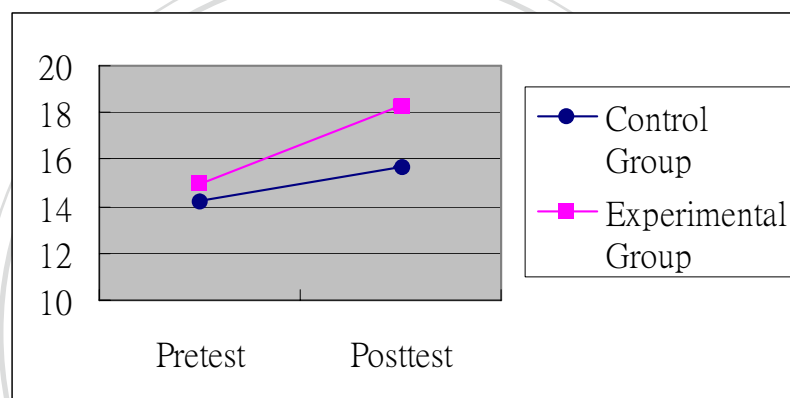
<i>(N = 22/ group)</i>	Mean	SD	t	Sig.(2-tailed)
Pretest	14.22	3.27	- 2.416	0.025*
Posttest	15.68	3.85		
Gains(Post - Pretest)	1.46			

Note. 1. Total scores= 24

2. *p<.05

As is shown in Figure 4.2, the developmental curve of the experimental group raises more sharply than the control group. These changes pointed out the significant gains from the syllable-awareness based phonics instruction. In short, the result supports the claim of Wang's report that syllable awareness can ease the fear of spelling multi-syllable words (Wang, 2003).

Figure 4.2 Developmental Curves of the two Groups' Attitude toward Memorizing Vocabulary



Attitude toward Learning English

The other question investigated before and after the instruction is about subjects' attitude toward learning English --- "Learning English is _____ for you?" The same scoring system is used for degrees of consent on the positive or negative descriptive options. The result was also compared both between groups and within a group.

In examining the results of the two groups, we found no significant difference between the two groups' scores before the instruction ($t = .655, p > .05$). Table 4.8 documents the statistic numbers.

Table 4.8 The Between-group Result of the Pre-instruction Questionnaire on Learning Toward Learning English

Group (N = 22/ group)	Mean	SD	t	Sig.(2-tailed)
Control	13.90	3.37	0.655	0.516
Experimental	14.72	4.78		

Note. 1. Total scores= 24

2. *p<.05

The scores after the 11-week instruction were also calculated again by the independent-samples t-test. Table 4.9 displays the finding. Statistically, the experimental group significantly changes their learning attitude after receiving the instruction ($t = 2.376, p < .05$). That is, the experimental group largely boosts their motivation toward learning English than the control group.

Table 4.9 The Between-group Result of the Post-instruction Questionnaire on Learning Toward Learning English

Group (N = 22/ group)	Mean	SD	t	Sig.(2-tailed)
Control	15.18	3.78	2.376	0.022*
Experimental	18.22	4.66		

Note. 1. Total scores= 24

2. *p<.05

For closer analysis, the result within each group is also discussed. Within the Experimental group, subjects' attitude showed an increase from 14.72 to 18.22 (see Table 4.10). It reached a significant change on statistical calculation ($t = -4.50, p < .001$).

Table 4.10 The Result of the Experimental Group's Attitude toward Learning English

<i>(N = 22/ group)</i>	Mean	SD	t	Sig.(2-tailed)
Pretest	14.72	4.78	- 4.50	0.000***
Posttest	18.22	4.66		
Gains(Post - Pretest)	3.5			

Note. 1. Total scores= 24

2. *p<.05 ** p<.01 *** p<.001

As for the control group, the scores of attitude on learning English, on the contrary, did not show a significant difference after the instruction (see Table 4.11). In other words, subjects in the control group did not feel easier than the experimental group on learning English after the 11-week instruction.

Table 4.11 The Result of the Control Group's Attitude toward Learning English

<i>(N = 22/ group)</i>	Mean	SD	t	Sig.(2-tailed)
Pretest	13.90	3.37	- 1.86	0.076
Posttest	15.18	3.78		
Gains(Post - Pretest)	1.28			

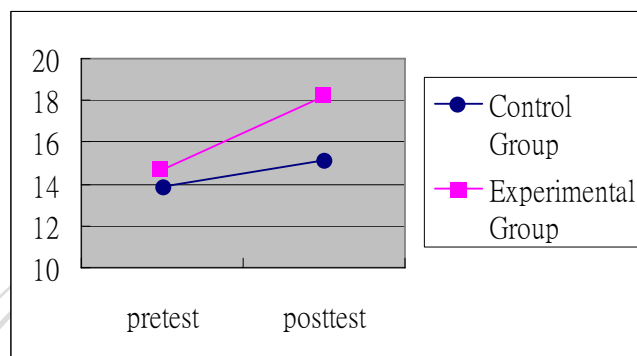
Note. 1. Total scores= 24

2. *p<.05

Figure 4.3 below graphed the developmental patterns of the two groups' attitude change on learning English. The experimental group made sharper curve with greater change whereas the control group's curve was smoother. In conclusion, after the 11-week instruction, the experimental group showed more positive attitude than the control group. Apparently, syllable awareness training significantly enhanced

the attitude scores of the experimental group. This is consistent with earlier findings suggesting that phonic instruction is more valuable after learners have developed syllable awareness (Blevins, 1998; Carney, 1994; Lloyd, 1995).

Figure 4.3 Developmental Curves of the two Groups' Attitude toward Learning English



Post-instruction Questionnaire

We now turn to the questions in the post-instruction questionnaire on learning that are different from the pre-instruction questionnaire. It includes three parts which the pre-instruction questionnaire can not explore --- the attitude toward different instructions, the attitude toward teacher's teaching method, and the difficulties.

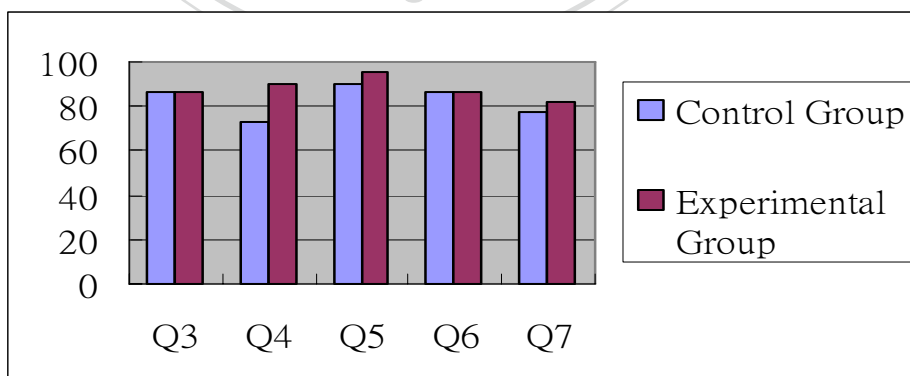
Attitude toward Different Instructions

Different groups' attitudes toward the two different instructions on spelling or memorizing vocabulary are listed in Table 4.12 and graphed on Figure 4.4. Questions 3-7 (Q3-7) on the post-instruction questionnaire are documented by showing percentage of agreement (stronger agreement and agreement) between groups.

Table 4.12 The Differences on the Attitude toward the Instruction in Different Groups
(N = 22/ Group)

Group	Experimental Group	Control Group	Difference between Two Groups
Questions			
Q3. The instruction (syllable-awareness based phonics/ phonics) can help me <u>spell vocabulary</u> .	86.4%	86.3%	0.1%
Q4. The instruction (syllable-awareness based phonics/ phonics) can help me <u>memorize the spelling of new vocabulary</u> .	90.0%	72.7%	18.2%
Q5. After the instruction, <u>I feel more familiar with the letter-sound correspondence</u> .	95.5%	90.0%	4.6%
Q6. After the instruction, <u>I feel improved on spelling</u> .	86.4%	86.3%	0.1%
Q7. After the instruction, <u>I am more willing to try to spell longer words</u> .	81.8%	77.2%	4.6%

Figure 4.4 The Pillar Chart of the Two Groups' Comparisons on Q3-7



Overall, the experimental group showed more positive attitude than the control group in each question (Q3-7). In detail, both groups got high percentage of the agreement on Q3 and Q6 (above 80%) with only slight difference between them. It means that subjects in both groups all felt considerably improved in spelling words. According to Q5 and Q7, although both groups highly agreed with the gains from the instruction (above 90% on Q5 and above 75% on Q7), subjects in the experimental group felt more familiar with the letter-sound correspondence and more willing to try to spell longer words than the control group. The biggest difference between the attitudes of the two groups is on Q4, which investigated the benefit from the instruction to memorize the spelling of new vocabulary. Ninety percent of the experimental group, much more than the 72.7 % of the control group, agreed with it. In short, these results can be explained by assuming that the syllable awareness training can help increase learners' memory for the correct spelling of syllables in words they have studied (Hutchinson, 1962).

Attitude toward Teacher's Teaching Method

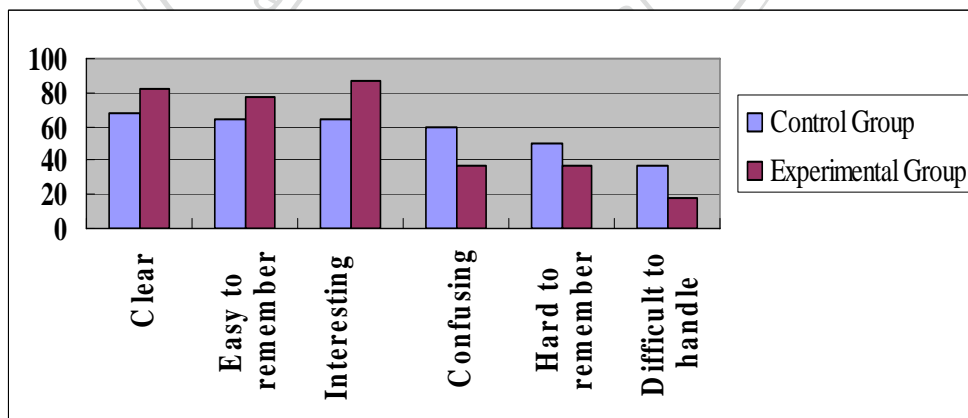
Question 8 in the post-instruction questionnaire on learning asked subjects' attitude toward teacher's teaching on different spelling instructions. --- "Syllable-awareness based phonics instruction/ Phonics instruction which the teacher taught is _____ for me." The choices for Q 8 included six descriptions ---"clear", "easy to remember", "interesting", "confusing", "hard to remember", "difficult to handle". The first three options were associated with subjects' positive attitude and the other three with subjects' negative attitude. All choices were answered by the degrees ---"strongly agree", "agree", "disagree", and "strongly disagree." Q8 on the

post-instruction questionnaire was also recorded by showing percentage of agreement (stronger agreement and agreement) between groups. The agreement on the description of teacher's instruction is presented in Table 4.13 and graphed in Figure 4.5 from Q 8 of the post-instruction questionnaire.

Table 4.13 The Percentage on the Attitude toward the Teacher's Instruction (N = 22/ group)

Questions		Group	Experimental Group	Control Group	Difference between Two Groups
Positive Attitude	Clear		81.8%	68.2%	13.6%
	Easy to remember		77.3%	63.7%	13.6%
	Interesting		86.4%	63.7%	22.7%
Negative Attitude	Confusing		36.4%	59.1%	22.7%
	Hard to remember		36.4%	50%	13.6%
	Difficult to handle		18.2%	36.4%	18.2%

Figure 4.5 The Pillar Chart of the Two Groups' Attitude on Teacher's Instruction



As a result, the experimental group thought the teacher's instruction was clearer, easier to remember, more interesting. They also felt the instruction was less

confused, less difficult to remember, and less difficult to handle. The overall result claims that the experimental group accepted the instruction more easily. It may be explained by considering that syllable awareness can help learners utilize phonics instruction on spelling more easily. The finding is also consistent with Hu's journal (Hu, 1999) --- phonics should be built on phonological awareness (including syllable awareness).

Difficulties

As for Q11, an open-ended question, on the difficulty of utilizing the instruction, the researcher summarized the answers and categorized them for both groups. In the control group, difficulties are classified into 7 problems (see Table 4.14).

Table 4.14 Difficulties in the Control Group (N =22/ Group)

No	Problems	Person	Percentage
1	No	5	22.7%
2.	It's complicated to generalize letter-sound correspondence.	6	27.3%
3.	It is not easy to hear phonemes in a word clearly.	3	13.6%
4.	There are many exceptions.	3	13.6%
5.	I can't read words, so I can't spell them.	2	9.1%
6.	It is hard to spell a long word.	2	9.1%
7.	It is hard to distinguish vowels (a vs. /æ/; e vs. /ε/).	1	4.6%
Total		22	100%

As revealed in Table 4.14, five out of the 22 students (22.7%) did not detect difficulties after the instruction. Six students (27.3%) had trouble on generalizing letter-sound correspondence. Three (13.6%) thought it was hard to hear phonemes

in a word and three (13.6%) felt confused with exceptions. Two (9.1%) admitted that they could not spell words because they could not read and two (9.1%) had the same problem because, in their opinions, the words were too long; only one felt hard to distinguish vowels.

In the experimental group, eight problems were reported (see Table 4.15). Eight students (36.3%) did not have any difficulties in utilizing the instruction. Four (18.1%) felt easy to confuse with vowels (such as a/æ/, e/ε/) and consonants (/k/, /g/). Three (31.7%) could not hear phonemes clearly. Two (9.1%) could not generalize rules of letter-sound correspondence. Instead of spelling problems, two subjects (9.1%) in the experimental group worried about making a sentence. One (4.6%) could not count syllables and one (4.6%) could not spell a long word. Still one (4.6%) said he did not know his problem.

Table 4.15 Difficulties in the Experimental Group (N 22/ Group)

No	Problems	Person	Percentage
1.	No.	8	36.3%
2.	It is hard to distinguish vowels (a vs. /æ/; e vs. /ε/) and consonants (/k/ vs. /g/).	4	18.1%
3.	It is not easy to hear phonemes in a word clearly.	3	13.6%
4.	It is complicated to generalize rules of letter-sound correspondence.	2	9.1%
5.	It is hard to make a sentence.	2	9.1%
6.	It is hard to figure out syllables.	1	4.6%
7.	It is hard to spell a long word	1	4.6%
8.	I don't know.	1	4.6%
Total		22	100%

Compared both tables, the result indicated that both groups had the same difficulties in generalizing letter-sound correspondence, spelling long words, distinguishing vowels or phonemes (see the control group's problems 2, 3, 6, 7 and the experimental group's problems 4, 3, 7, 2). However, there were more people who felt no difficulty in the experimental group than those in the control group (8:5). Subjects in the experimental group seemed to have less difficulties in generalizing rules of letter-sound correspondence than the other group (2:6), but had more problems on individual phonemes (consonants and vowels) (4:1) or syllables (1:0). Interestingly, two students in the experimental group even cared about another advanced problem, such as making sentences. All in all, subjects in the experimental group seemed to provide more advanced responses after the instruction. It might be regarded as the benefit from the training of phonological awareness (syllable awareness).

Interviews⁴

The interview focuses on the subjects who showed regress on the performance but with positive attitude after the instruction or who presented progress on the performance but with less positive attitude after the instruction. The purpose of the interview tried to detect subjects' difficulty in depth. Five subjects were selected from each group. The sample interviews are shown in Appendix L. According to the transcriptions, Table 4.16 portrays the learning situation of the five subjects in the experimental group.

⁴ Two sample interviews are shown in Appendix L.

Table 4.16 The Interview of Five Subjects in the Experimental Group

Subjects	Difficulty in Syllable Counting	Difficulty in Letter-sound Correspondence	Difficulty in Syllabification	Difficulty in distinguishing vowels
S1			V	
S2		V		
S3	V	V	V	
S4				V
S5			V	

Note: “V” means they have the difficulty.

Although syllable training was taught during the instruction, S3 still confused with counting syllables. S2 and S3 felt unfamiliar with the rules of letter-sound correspondence. S4 had trouble on distinguishing vowels. Furthermore, S1, S3 and S5 reflected they did not try to use syllabification to memorize words. Two of them confessed that they preferred to use their own way to spell words rather than syllabification.

As for the control group, Table 4.17 presents five subjects’ learning.

Table 4.17 The Interview of Five Subjects in the Control Group

Subjects	Difficulty in Spelling Long Words	Difficulty in Letter-sound Correspondence	Low Motivation	Difficulty in distinguishing phonemes
S1	V			
S2	V	V		
S3			V	
S4		V	V	
S5				V

Note: “V” means they have the difficulty.

S1 and S2 felt difficult in spelling long words. Both S3 and S4 had the problem of low motivation and S4 had another problem in using letter-sound correspondence. Furthermore, S5 was hard to distinguish phonemes.

The interview appears to outline the difficulty of generalizing rules of letter-sound correspondence. The lack of the letter-sound correspondence on the part of the learners may lead to less confidence of utilizing syllabification. Furthermore, despite syllable awareness taught in the experimental group, there still existed some difficulty in utilizing syllabification. It responds to Liow & Lau's finding (2006) --- Syllable counting is not easy for Chinese learners. Otherwise, Chinese learners prefer to use other methods rather than syllabification on spelling.

This chapter details the results and discussion of spelling multi-syllable words, subjects' attitude changes, and the difficulties on the instructions. In the next chapter, we will summarize the conclusion of the research, pedagogical implications, limitations of the study and suggestions for the future research.