

Chapter Four

Results

This chapter consists of two aspects: first, the comparison of listening tests between the two groups, i.e. one treated with bottom-up pre-listening activities and the other with interactive pre-listening activities respectively, and second, the results of the questionnaire administered for the interactive group.

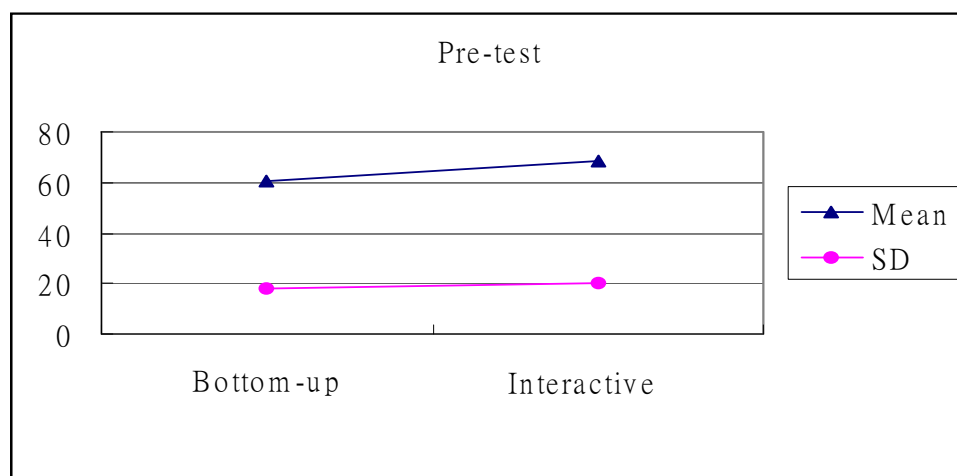
For the comparison of results from listening tests between the two groups, descriptive statistics was firstly used to illustrate the performance of the two groups. Mean scores and standard deviations of two groups in pre-test, teacher-developed listening quizzes, and post-test were calculated and illustrated. Then, *t*-tests were conducted in: (1) pre-test, (2) post-test, (3) difference between pre- and post-test, namely, the progress of the participants, in order to determine whether there is a significant difference between the two groups in the mean scores. The numbers used in *t*-tests were calculated with Microsoft Excel.

For the results of the questionnaire administered after the listening post-test for the interactive group, frequency description was used and discussed based on the four categories, namely bottom-up processing features, top-down processing features, the effect of interactive pre-listening activities and listening difficulty.

Means and Standard Deviations of the Two Groups

As shown in Figure 4.1, in pre-test, the mean and standard deviation of the interactive group (Mean = 68.21; SD = 20.42) were both higher than those of the bottom-up group (Mean = 60.44; SD = 18.23). The means and standard deviations in pre-test indicate that, on one hand, the interactive group performed better in the mean score than the bottom-up group; the deviation, or the extent of each score deviating from its mean, on the other hand, varied greater than that of the bottom-up group.

Figure 4.1 Means and Standard Deviations of the Two Groups, Pre-test



In post-test, as shown in Figure 4.2, the mean of the interactive group (Mean = 72.38) was higher than that of the bottom-up group (Mean = 63.97), and the standard deviation (SD = 15.43) was lower than that of the bottom-up group (SD = 17.35). These numbers indicate that, in post-test, the interactive group performed better than the bottom-up group in mean scores; in addition, the deviation, or the extent of each

score deviating from its mean, showed less variation than that of the bottom-up group.

Table 4.1 shows the numbers of the means and standard deviations of the two groups

in both pre- and post-test.

Figure 4.2 Means and Standard Deviations of the Two Groups, Post-test

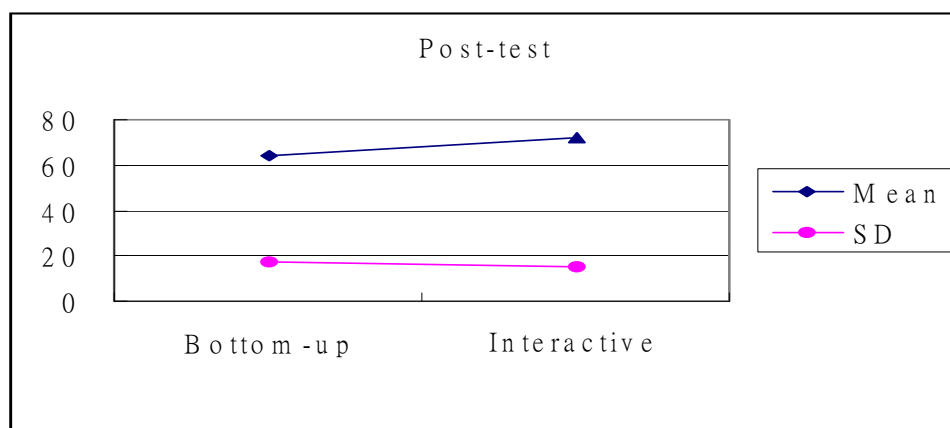


Table 4.1 Means and Standard Deviations of Pre-test and Post-test

	Pre-test		Post-test	
	Mean	Standard Deviation	Mean	Standard Deviation
Bottom-up	60.44117647	18.23116076	63.97058824	17.35456502
Interactive	68.21428571	20.41703702	72.38095238	15.43033500

As for the fifteen listening quizzes which were administered at the end of each session during the fifteen weeks, 15 means of the interactive group were mostly higher than those of the bottom-up group (see Figure 4.3 and Table 4.2), and 15

standard deviations of the interactive group were mostly lower than those of the bottom-up group (see Figure 4.4 and Table 4.3). Although the interactive group did not performed better than the bottom-up group in Quiz 2 and Quiz 5 in terms of means and standard deviations, the performance of the interactive group in the other thirteen quizzes was better than that of the bottom-up group, and these two quizzes were rather minor when compared with the total of fifteen quizzes. This implies that in the 15 listening quizzes, the interactive group generally performed better than the bottom-up group with a lower extent of each score deviating from its mean.

Figure 4.3 Means of the 15 Listening Quizzes

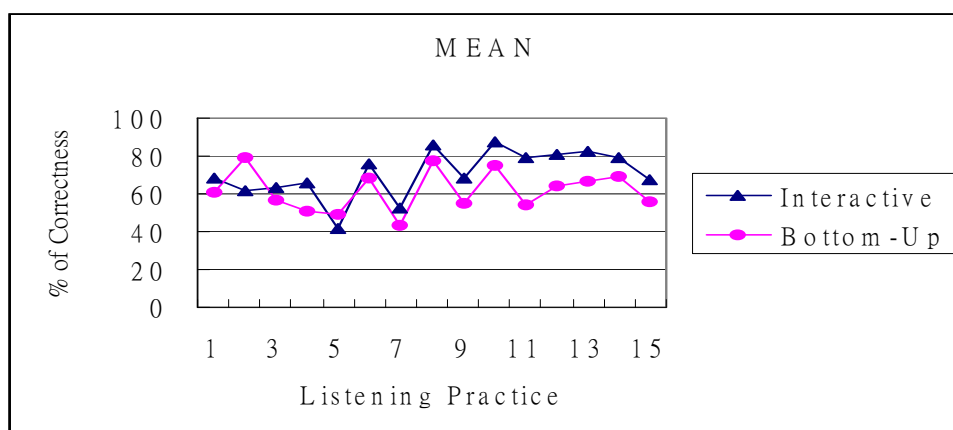


Figure 4.4 Standard Deviations of the 15 Listening Quizzes

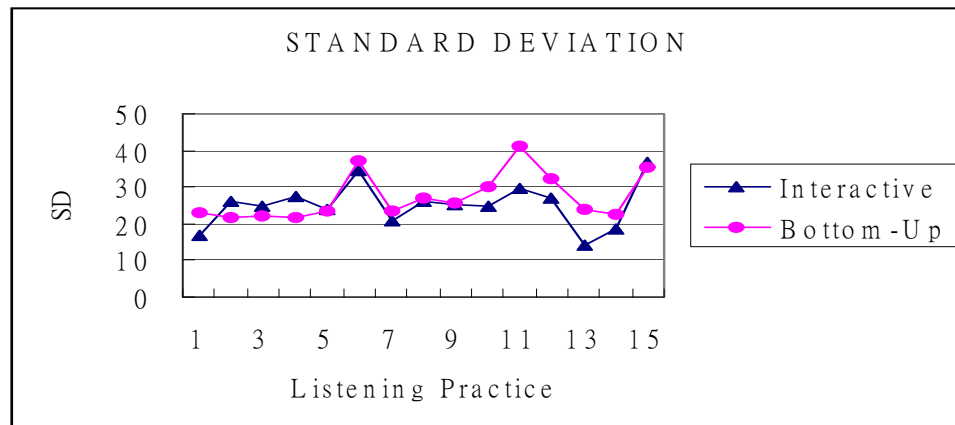


Table 4.2 Means of the 15 Listening Quizzes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bottom-up	61.2	79.4	56.4	50.6	49.1	68.5	43.0	77.6	55.3	75.3	54.5	64.1	66.7	69.4	56.3
Interactive	68.6	61.4	63.3	66.2	41.9	75.7	52.4	85.7	68.6	87.6	79.5	81.0	82.4	79.5	67.5

Table 4.3 Deviations of the 15 Listening Quizzes

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Bottom-up	22.9	21.7	22.1	21.6	23.5	37.1	23.5	26.8	25.6	30.0	41.0	32.2	23.8	22.7	35.6
Interactive	16.6	25.9	24.6	27.4	23.7	34.7	20.7	26.2	25.0	24.6	29.5	26.9	14.1	18.5	36.8

t-Test of the Means of the Two Groups

This section illustrates the results of *t*-test of the means in the following aspects:

a) pre-test, that is the proficiency level of the two groups before the listening

instruction; b) post-test, that is the proficiency level of the two groups after the

listening instruction; as described in Chapter 3, the listening test in Cambridge Young Learners English Test (Starters level) was adopted for both pre- and post-test; c) improvement within the same group, that is the difference of pre- and post-test within the interactive group and the bottom-up group respectively; d) improvement between the two groups, that is the extent of improvement difference between the two groups.

In pre-test, the difference of means between the two groups was not significant based on the *t*-test under 95% confidence level, which implies that the proficiency level of the two groups in pre-test was equal in terms of statistic inference. As the calculation shown in Table 4.4, the *p*-value 0.0877 is higher than the level of significance 0.05, meaning that there was no significant difference between the proficiency levels of the two groups.

Table 4.4 *t*-Test of Means of the Two Groups in Pre-test

	N	MEAN	SD	CI	VAR	POOLED VAR	DF
Bottom-up	34	60.44117647	18.23116076	95%	332.3752228	379.1818079	74
Inter-active	42	68.21428571	20.41703702		416.8554007		
		<i>t</i> STATISTIC	<i>t</i> CRITICAL		<i>p</i> -VALUE		
		-1.730327589	-1.992543466		0.087740277*		

**p* < .05

In post-test, the difference of means between the two groups was significant

based on the t-test under 95% confidence level, which implies that the proficiency level between the two groups was significantly different, and the proficiency level of the interactive group was higher than that of the bottom-up group. As the calculation shown in Table 4.5, the p -value 0.01 is lower than the level of significance 0.05, meaning that the proficiency level of the interactive group was higher than that of the bottom-up group.

Table 4.5 t -Test of Means of the Two Groups in Post-test

	N	MEAN	SD	CI	VAR	POOLED VAR	DF
Bottom-up	34	63.97058824	17.35456502	95%	301.180927	266.228045	74
Inter-active	42	72.38095238	15.430335		238.095238	3	
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		t STATISTIC	t CRITICAL		p -VALUE		
		-2.23431914	-1.665706893		0.014241045*		

* $p < .05$

As for the improvement within the same group, both groups showed significant improvement after the listening instruction. There was sufficient evidence for this conclusion. For the bottom-up group, as the calculation shown in Table 4.6, the p -value 0.04 is lower than the level of significance 0.05, which implies that the improvement of the bottom-up group was statistically significant.

Table 4.6 *t*-Test of the Means of the Pre- and Post-test, Bottom-up Group

	N	MEAN	SD	CI	SE MEAN	VAR	DF
Bottom-up	34	3.529411765	11.51608965	95%	1.974993082	132.6203209	33
		<i>t</i> STATISTIC	<i>t</i> CRITICAL		<i>p</i> -VALUE		
		1.787050192	1.692360258		0.041559262*		

**p* < .05

For the interactive group, as the calculation shown in Table 4.7, the *p*-value 0.02 is lower than the level of significance 0.05, which implies that the improvement of the interactive group was also statistically significant.

Table 4.7 *t*-Test of the Means of the Pre- and Post-test, Interactive Group

	N	MEAN	SD	CI	SE MEAN	VAR	DF
Inter-active	42	4.166666667	13.20184146	95%	2.037088363	174.2886179	41
		<i>t</i> STATISTIC	<i>t</i> CRITICAL		<i>p</i> -VALUE		
		2.045403009	1.682878003		0.023633977*		

**p* < .05

As for the extent of the improvement between the two groups, there was no sufficient evidence for the difference between the improvement percentages of the two groups based on the *t*-test under 95% confidence level, which means that the interactive group did not improve more than the bottom-up group. As the calculation shown in Table 4.8, the *p*-value 0.41 is higher than the level of significance 0.05.

Table 4.8 *t*-Test of the Means of the Improvement of the Two Groups

	N	MEAN	SD	CI	VAR	POOLED VAR	DF
Bottom-up	34	3.529411765	11.51608965	95%	132.6203209	155.7068098	74
Inter-active	42	4.166666667	13.20184146		174.2886179		
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		<i>t</i> STATISTIC	<i>t</i> CRITICAL		<i>p</i> -VALUE		
		-0.221368942	-1.665706893		0.412707445*		

**p* < .05

In conclusion, there was no significant difference in the proficiency levels of the two groups in pre-test, meaning that the proficiency levels were equal in terms of statistic inference before listening instruction. There was significant difference in the proficiency levels of the two groups in post-test after the listening instruction. As for improvement within the same group, both of the two groups showed significant improvement, meaning that the listening instruction was effective; however, there was no significant difference between the extent of improvements of the two groups, namely interactive and bottom-up group, after the listening instruction, which means that the interactive group did not improve more than the bottom-up group, and the bottom-up group did not improve more than the interactive group, either.

Frequency Description for the Questionnaire

The results of the questionnaire administered after the listening post-test for the interactive group were described and discussed based on frequency description, which

fell into four categories, namely bottom-up processing features, top-down processing features, the effect of interactive pre-listening activities and listening difficulty.

Frequency description for bottom-up processing features.

Some items described in the questionnaire were classified as features for bottom-up processing, including “translating word by word into Chinese when listening text is difficult” (item 01), “translating key words when listening” (item 09), “translating every word when listening” (item 12), and “viewing it as the key to listening comprehension to know the meaning of every word” (item 18). As shown in Table 4.9, there were nearly 79.76% of all the responses ($134 \div 168 \times 100\%$) indicating that listeners resorted to bottom-up processing when listening. These four bottom-up-featured items were discussed from the highest percentage to the lowest percentage. First, the highest percentage, approximately 92.86%, fell in “I think that knowing the meaning of each word was important to listening comprehension” (item 18), which may indicate that most respondents regarded it essential for listening comprehension to know the meaning of every word in listening text. Second, the percentage of 85.71% in “When I am listening, I translate key words into Chinese” (item 09) indicated that many listeners frequently translated key words into Chinese when they were listening. Third, 80.95% for “I translate what I hear word by word into Chinese when I find the listening text difficult” (item 01) indicated that listeners

usually employed word-by-word processing when they found listening text difficult.

Finally, the percentage of approximately 59.52% for “I translate every word into

Chinese when I am listening” (item 12) indicated that over half of the respondents

tended to translate what they hear word by word when they are listening.

Table 4.9 Frequency Description for Bottom-up Processing Features

Frequency and Percentage Item Description	Low*		High*		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
01. I translate what I hear word by word into Chinese when I find the listening text difficult.	8	19.05%	34	80.95%	42	100%
09. When I am listening, I translate key words into Chinese.	6	14.29%	36	85.71%	42	100%
12. I translate every word into Chinese when I am listening.	17	40.48%	25	59.52%	42	100%
18. I think that knowing the meaning of every word is the key to listening comprehension.	3	7.14%	39	92.86%	42	100%
Total	34	20.24%	134	79.76%	168	100%

* The scale of this questionnaire ranged from 1 to 6. Scale 1 to scale 3 were classified as “low frequency” while scale 4 to 6 as “high frequency.”

Frequency description for top-down processing features.

Some items described in the questionnaire were classified as features for top-down processing, including “guessing the meaning of new words based on words that have been learned” (item 02), “comprehending listening with provided pictures” (item 03), “comparing listening content with knowledge related to the listening topic” (item 04), “comprehending listening with personal experience and existed knowledge” (item 05), “reminding of previous similar content when discussing listening-related pictures” (item 07), “guessing the meaning of new words with the main idea of the listening text” (item 09), “associating listening content with discussed pictures” (item 10), “guessing the meaning of words with provided pictures” (item 11), “comprehending listening with the assistance of pictures” (item 14), and “answering listening comprehension questions with the assistance of pictures” (item 15).

As shown in Table 4.10, there were 82.14% of all the responses ($345 \div 420 \times 100\%$) indicating that most respondents usually employed top-down processing when listening. However, there was no significant improvement in the post-test over the bottom-up group based on the results of the *t*-test shown in the previous sections. Some possible reasons for such results will be discussed in the next chapter. These top-down-featured items were discussed from the highest percentage to the lowest.

First, the highest percentage, approximately 92.86%, fell in “I comprehend the listening text with the use of my experience and knowledge” (item 05), indicating that listeners in this study would mostly resort to their prior experience and knowledge when listening. Second, nearly 85.71% fell in both “the discussion of pictures reminds me of similar contents I heard before” (item 07) and “I associate pictures with the content of listening” (item 10), which may imply that pictures in this study provided notable assistance in activating listeners’ prior knowledge and helping them associate with the listening text. Third, 83.33% fell in both “I guess the meaning of new words with the words I have learned” (item 02) and “I compare the listening content with topic-related knowledge that I had when I am listening” (item 04), indicating that listeners may widely employ what they had known, namely their prior knowledge when they were guessing the meaning of new words or listening to the text. Fourth, nearly 80.95% fell in both “I comprehend the listening text with the use of pictures provided previously” (item 03) and “I guess the meaning of new words with pictures provided before listening” (item 11), which may imply that pictures provided before listening were also useful in the process of guessing new words and listening text, but may not be as effective as listeners’ prior knowledge (83.33% in item 02 and 04).

Fifth, approximately 78.57% fell in both “I guess the meaning of new words with the main idea of the listening text” (item 08) and “I think that showing pictures helps me

more in answering listening comprehension questions than learning new words” (item 15), which may imply that listeners often guessed the meaning of new words by inferring main idea and answered listening comprehension questions with the assistance of pictures. Finally, 71.43% fell in “I think that showing pictures helps me more in comprehending listening text than learning new words” (item 14), indicating that over 70% of listeners agreed upon the usefulness of showing pictures (top-down pre-listening activity) over learning new words (bottom-up pre-listening activity).

Table 4.10 Frequency Description for Top-down Processing Features

Frequency and Percentage Item Description	Low*		High*		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
02. I guess the meaning of new words with the words I have learned.	7	16.67%	35	83.33%	42	100%
03. I comprehend the listening text with the use of pictures provided previously.	8	19.05%	34	80.95%	42	100%
04. I compare the listening content with topic-related knowledge that I had when I am listening.	7	16.67%	35	83.33%	42	100%

05. I comprehend the listening text with the use of my experience and knowledge.	3	7.14%	39	92.86%	42	100%
07. The discussion of pictures reminds me of similar contents I heard before.	6	14.29%	36	85.71%	42	100%
08. I guess the meaning of new words with the main idea of the listening text.	9	21.43%	33	78.57%	42	100%
10. I associate pictures with the content of listening.	6	14.29%	36	85.71%	42	100%
11. I guess the meaning of new words with pictures provided before listening.	8	19.05%	34	80.95%	42	100%
14. I think that showing pictures helps me more in comprehending listening text than learning new words.	12	28.57%	30	71.43%	42	100%
15. I think that showing pictures helps	9	21.43%	33	78.57%	42	100%

me more in answering listening comprehension questions than learning new words.						
Total	75	17.86%	345	82.14%	420	100%

* The scale of this questionnaire ranged from 1 to 6. Scale 1 to scale 3 were classified as “low frequency” while scale 4 to 6 as “high frequency.”

Frequency description for the effect of interactive pre-listening activities.

Some items described in the questionnaire were classified as the effect of interactive pre-listening activities. In this category, respondents compared “the effectiveness of discussing pictures and learning new words (interactive pre-listening activity) with that of learning new words only (bottom-up pre-listening activity)” (item 06). In addition, they reported how “frequently they thought of previous discussion about the pictures” (item 16), and how “frequently they thought of new words being taught” (item 17) during listening, implying the effect of interactive pre-listening activity (discussing pictures and learning new words) when these two items were considered simultaneously.

As Table 4.11 shows, the percentage of 69.84% of all the responses ($88 \div 126 \times 100\%$) indicated that the interactive pre-listening activities were effective to a certain extent in listening. Among these three items, the highest percentage, 78.57%

fell in “When I am listening, I frequently think of the new words being taught just now” (item 17); following was the percentage of 71.43% in “When I am listening, I frequently think of the pictures and what we have discussed about them” (item 16). These two percentages, 78.57% and 71.43%, indicated that the students in this study did employ interactive processing (pictures and new words) even though there was a minor difference between these two. Finally, the percentage of 59.52% fell in “I think that discussing the pictures and learning new words helps me more in listening comprehension than merely learning new words” (item 06), which may imply that over half of the respondents regarded it more helpful to discuss pictures and learn new words (interactive pre-listening activity) than just to learn new words (bottom-up pre-listening activity).

Table 4.11 Frequency Description for the Effect of Interactive Pre-listening Activities

Item description	Low*		High*		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
06. I think that discussing the pictures and learning new words helps me more in listening comprehension than merely learning new words.	17	40.48%	25	59.52%	42	100%
16. When I am listening, I frequently	12	28.57%	30	71.43%	42	100%

think of the pictures and what we have discussed about them.						
17. When I am listening, I frequently think of the new words being taught just now.	9	21.43%	33	78.57%	42	100%
Total	38	30.16%	88	69.84%	126	100%

* The scale of this questionnaire ranged from 1 to 6. Scale 1 to scale 3 were classified as “low frequency” while scale 4 to 6 as “high frequency.”

Frequency description for listening difficulty.

There was one item concerning participants’ listening difficulty in the questionnaire, which referred to “the hindering of new words appeared in the processing of listening” (item 13). As shown in Table 4.12, only 23.81% (10 participants out of 42) reported that the appearance of new words hindered their progress of listening, which may imply that most participants chose to ignore the new words and continued listening to incoming data which might be useful for their listening comprehension.

Table 4.12 Frequency Description for Listening Difficulty

Item description	Low*		High*		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
13. I keep trying to figure out the meaning of new words and stop listening for the incoming text when some new words appeared during my listening.	32	76.19%	10	23.81%	42	100%
Total	32	76.19%	10	23.81%	42	100%

* The scale of this questionnaire ranged from 1 to 6. Scale 1 to scale 3 were classified as “low frequency” while scale 4 to 6 as “high frequency.”

Summary of frequency description for the questionnaire.

Participants in this study reported a higher frequency of employing top-down processing (82.14%) than bottom-up processing (79.76%) in their listening while they viewed the understanding of each word (bottom-up processing) as essential to listening comprehension. The difference between the two percentages (79.76% and 82.14%) was rather minor though the result of this aspect may not be consistent with those of Long’s (1990) and Shohamy and Inbar’s (1991) studies which proposed that EFL/ ESL learners tend to widely employ bottom-up processing rather than top-down processing when listening. This could probably imply that participants need plenty of

contextual support to compensate for their lack of word-by-word linguistic decoding skill (Wallace 1992). Furthermore, effectiveness of interactive pre-listening activities was reported in the questionnaire (69.84%), but such effect was enough to facilitate significant improvement over the bottom-up group. As for listening difficulty being identified, there were few participants (23.81%) being hindered by the appearance of new words in their process of listening. Other types of listening difficulty may exist which need to be further investigated.

Table 4.13 Frequency Description for the Questionnaire

Frequency and Percentage Category	Low*		High*		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Bottom-up processing features	34	20.24%	134	79.76%	168	100%
Top-down processing features	75	17.86%	345	82.14%	420	100%
Effect of interactive pre-listening activities	38	30.16%	88	69.84%	126	100%
Listening difficulty	32	76.19%	10	23.81%	42	100%

* The scale of this questionnaire ranged from 1 to 6. Scale 1 to scale 3 were classified as “low frequency” while scale 4 to 6 as “high frequency.”