

Chapter Four

Results and Discussion

This chapter presents the analysis of data and discusses the results of the analysis. The results obtained from the analysis of the data include four parts: first, the participants' performances on the "Discourse Structure" tests before and after the treatment; second, the participants' metacognitive awareness of the strategies they used in taking the DS test and their awareness of the difficulties they encountered in taking the DS test before and after the treatment; third, the participants' responses toward the instruction of text structure, toward the think-aloud modeling, as well as toward think-aloud practice; finally, the protocols of the four participants' think-alouds. All the results are presented and discussed both quantitatively and qualitatively to probe the effects of the three stages of treatment on these senior high school EFL students from the above aspects.

4.1 Results

4.1.1 Comparison of the pre-test and post-test scores

In this section, a comparison of the participants' pre-test and post-test scores is made in an attempt to present the effects of the integrated treatment, which consists of the instruction of text structure, think-aloud modeling and think-aloud practice. Specifically, the performances on the DS test for all the sixty-nine participants and for three groups of different English proficiencies, i.e. High, Mid, and Low are analyzed.

As shown in Table 4.1, the means of the pre-test and post-test scores for all participants are 12.80 and 15.52 respectively, which represent a gain of 2.72 on the DS test. And a t-test analysis indicates a significant difference between the pre-test and post-test scores performed by sixty-nine participants in this study ($t=-5.618$,

p<.01).

Significant differences are also observed between the pre-test and post-test scores by the three groups, i.e. High, Mid and Low, respectively. As shown in Table 4.1, the means of the pre-test and post-test scores for the High group are 15.68 and 18.55, which indicate a gain of 2.87 on the DS test. Moreover, a t-test analysis demonstrates a significant difference between the two scores for this group ($t=-4.769$, $p<.01$). Similar results can be seen in Table 4.1 for the other two groups. After a closer look at the mean scores, it is found that the greatest gain goes to the Mid group, and the slightest to the Low.

Table 4.1

Comparison of Means of Participants' Performance on DS Tests Before and After the Integrated treatment

	Pre-test	Post-test	T-value
H N=22	Mean=15.68 SD=2.77	Mean=18.55 SD=1.90	-4.769**
M N=24	Mean=12.58 SD=3.27	Mean=16.04 SD=2.60	-4.283**
L N=23	Mean=10.26 SD=3.21	Mean=12.52 SD=3.55	-2.664**
All N=69	Mean=12.80 SD=3.77	Mean=15.52 SD=3.79	-5.618**

**p<.01

4.1.2 Comparison of participants' metacognitive awareness in taking the DS test before and after the integrated treatment

This section presents the effects of the treatment, including the instruction of text structure, think-aloud modeling and think-aloud practice, on the participants' awareness of the strategies they used and the difficulties they encountered in taking

the DS test. In this study, the participants' metacognitive awareness in taking the DS test before and after the treatment has been investigated and compared by using questionnaires with the same statements to see if there is any change caused by the treatment.

The first part of the metacognitive awareness questionnaire (Statements 1 to 20) is to tap the participants' awareness of the strategies they used in taking the DS test. Table 4.2 shows the statistical results of the participants' responses toward the strategies they used in taking the DS test prior to and after the treatment.

By comparing the results of the two questionnaires, we clearly see that a change has arisen. First, a significant difference is found for six items between the pre-treatment and post-treatment questionnaires. These six items are Statement 1 "In taking the DS test, I will try to pronounce every word" ($t=-2.522$, $p<.01$), Statement 15 "I will try to pay attention to Unity and Coherence of the text" ($t=-3.126$, $p<.01$), Statement 16 "I will try to look for possible clues—pronouns" ($t=-5.758$, $p<.01$), Statement 17 "I will try to look for possible clues—demonstratives" ($t=-6.171$, $p<.01$), Statement 18 "I will try to look for possible clues—lexical ties" ($t=-4.070$, $p<.01$), and Statement 19 "I will try to look for possible clues—conjunctions" ($t=-2.935$, $p<.01$). Second, a decrease in the mean scores is found for two items, including Statement 5 "I will try to get the overall meaning of the text" ($-.11$) and Statement 20 "I will try to look for possible clues—paragraph themes" ($-.03$). Third, as shown in Table 4.2, the two strategies most frequently used among the participants in taking the DS test after the treatment are Statement 9 "I will try to make inference from contextual clues" ($M=4.57$) and Statement 10 "I will try to ignore what I don't understand and keep reading" ($M=4.51$), both of which happen to be the same two strategies most frequently used in taking the DS test before the treatment. In addition, the two strategies least frequently used in taking the DS test after the treatment are Statement

14 “I will try to judge the text type” (M=2.65), and Statement 1 “I will try to pronounce every word” (M=2.87), both of which happen to be the two least used strategies in taking the DS test before the treatment. However, as mentioned above, a significant difference is found for Statement 1 in comparing the results before and after the treatment.

Table 4.2

Comparison of Means of Participants’ Awareness of the Strategies They Used in Taking the DS Test Before and After the Integrated treatment

Items	Pre-treatment	Post-treatment	T-value
In taking the DS test, I will try to:			
1. Pronounce every word			
Mean:	2.55	2.87	-2.522**
SD:	.79	1.07	
2. Understand the meaning of each word			
Mean:	2.94	3.14	-1.242
SD:	1.01	.93	
3. Look for keywords and judge their meanings			
Mean:	4.30	4.33	-.314
SD:	.75	.63	
4. Analyze grammatical structure			
Mean:	3.46	3.62	-1.352
SD:	.90	.81	
5. Get the overall meaning of the text			
Mean:	4.33	4.22	1.210
SD:	.66	.80	
6. Understand the details of the content			
Mean:	3.36	3.41	-.426
SD:	.89	.81	
7. Distinguish the main idea from the supporting information of the text			
Mean:	3.82	3.90	-.779
SD:	.82	.77	

Table 4.2 (continued)

8. Get the author's point			
Mean:	3.80	3.93	-1.584
SD:	.81	.79	
9. Make inference from contextual clues			
Mean:	4.45	4.57	-1.526
SD:	.63	.53	
10. Ignore what I don't understand and keep reading			
Mean:	4.43	4.51	-.962
SD:	.63	.53	
11. Reread what I don't understand			
Mean:	3.57	3.61	-.382
SD:	.99	.88	
12. Make guesses from context for what I don't understand			
Mean:	4.36	4.45	-1.097
SD:	.59	.61	
13. Relate the text to what I already know about the topic			
Mean:	3.87	4.06	-1.300
SD:	.89	.76	
14. Judge the text type			
Mean:	2.62	2.65	-.293
SD:	.81	.82	
15. Pay attention to Unity and Coherence of the text			
Mean:	3.72	4.06	-3.126**
SD:	.84	.66	
16. Look for possible clues—pronouns			
Mean:	3.49	4.10	-5.758**
SD:	.88	.71	
17. Look for possible clues—demonstratives			
Mean:	3.39	4.13	-6.171**
SD:	.93	.70	
18. Look for possible clues—lexical ties			
Mean:	3.87	4.28	-4.070**
SD:	.91	.62	

Table 4.2 (continued)

19. Look for possible clues—conjunctions			
Mean:	4.23	4.45	-2.935**
SD:	.65	.58	
20. Look for possible clues—paragraph themes			
Mean:	3.55	3.52	.314
SD:	.78	.83	
N=69 **p<.01			

The second part of the metacognitive awareness questionnaire is to tap the participants' awareness of the difficulties they encountered in taking the DS test before and after the integrated treatment (Statements 21 to 32). Table 4.3 shows the statistical results obtained for this purpose.

As shown in Table 4.3, some changes have been found from the comparison of the results of the pre-treatment and post-treatment questionnaires. First, a t-test shows a significant difference for three items, including Statement 29 "In taking the DS test, the reason I have difficulties is that I am not familiar with text structure" ($t=2.532$, $p<.01$), Statement 31 "I am not equipped with effective strategies for taking DS tests" ($t=4.899$, $p<.01$), and Statement 32 "I can't make coherence out of the text" ($t=5.834$, $p<.01$). The positive t-value with losses of mean scores indicates that these difficulties are significantly less difficult after the treatment. Second, a gain is found for the mean scores on three items, which are Statement 22 "I can't figure out lexical cohesion" (+.15), Statement 24 "Sentence structures are complicated" (+.09) and Statement 26 "I can't figure out the main idea of the text" (+.19). Third, the acknowledged two greatest difficulties encountered in taking the DS test after the treatment are Statement 25 "There are idiomatic expressions I don't know" ($M=3.80$) and Statement 21 "There are too many words I don't know" ($M=3.78$), which represent the second and third greatest difficulties before the treatment. However, the greatest difficulty before the

treatment, Statement 32, has become only the eighth most difficult after the treatment. In addition, the two items causing least difficulty after the treatment are Statement 31 “I am not equipped with effective strategies for taking DS tests” (M=2.97) and Statement 23 “Sentences are too long” (M=2.99).

Table 4.3

Comparison of Means of Participants’ Awareness of the Difficulties They Encountered in Taking the DS test Before and After the Integrated treatment

Items	Pre-treatment	Post-treatment	T-value
In taking the DS test, the reasons I have difficulties are because:			
21. There are too many words			
I don’t know			
Mean:	3.84	3.78	.563
SD:	.80	.76	
22. I can’t figure out lexical cohesion			
Mean:	3.52	3.67	-1.487
SD:	.76	.89	
23. Sentences are too long			
Mean:	3.20	2.99	2.031
SD:	.93	.98	
24. Sentence structures are complicated			
Mean:	3.17	3.26	-.715
SD:	.89	.90	
25. There are idiomatic expressions I don’t know			
Mean:	3.91	3.80	1.210
SD:	.70	.68	
26. I can’t figure out the main idea of the text			
Mean:	3.06	3.25	-1.978
SD:	.95	1.02	

Table 4.3 (continued)

27. I can't see possible clues			
Mean:	3.48	3.43	.312
SD:	.88	1.01	
28. I am not familiar with text structure			
Mean:	3.54	3.20	2.532**
SD:	.83	.81	
29. I am not familiar with the topic			
Mean:	3.57	3.43	1.054
SD:	.87	.92	
30. I am not equipped with effective strategies for taking the DS test			
Mean:	3.58	2.97	4.899**
SD:	.86	.89	
31. I can't make coherence out of the text			
Mean:	3.94	3.20	5.834**
SD:	.84	.98	

N=69 **p<.01

4.1.3 Analysis of Four participants' think-aloud Protocols

In this section, the transcribed think-aloud protocols of four participants with different levels of English proficiency are analyzed for discussion in terms of occurrences and percentages of categories of cohesive ties used as clues for confirmation or exclusion of alternatives in taking the DS test (see Appendix H for transcribed protocols).

The comments made by the four participants in taking the DS test while reading aloud and thinking aloud were coded according to the categories of cohesive devices listed in Appendix B. A commentary that contained more than one cohesive tie were multiply coded. Tables 4.4 and 4.5 show the frequencies and percentages of the participants' using cohesive ties correctly as clues for confirmation and exclusion of

alternatives, respectively, in taking the DS test⁵. In the protocols, three categories have been identified, including (1) References, (2) Conjunctions, and (3) Lexical Ties.

Table 4.4 shows that among the three categories of cohesive ties, Lexical Ties has the highest percentage for all the four participants, with the percentages of 61.5%, 63%, 70%, 77.8% and 67% for the Highest, High, Mid, Low and Total respectively. These figures show that all the four participants depend most heavily on Lexical Ties than on the other two categories of cohesive ties identified in the protocols (i.e. References and Conjunctions) as clues to confirm answers in taking the DS test, and that the dependence on Lexical Ties as clues for confirmation of alternatives in taking the DS test increases as the English proficiency of the participants decreases. On the other hand, among the three types of cohesive ties, References has the lowest frequency for all the four participants, with the percentages of 15.4%, 7.4%, 5%, 0% and 7.7% for the Highest, High, Mid, Low and Total respectively. As with Lexical Ties, the percentages for References indicate a pattern as far as the participants' English proficiency is concerned, though the direction is the other way round: The higher the English proficiency is, the higher the frequency of using References as clues is.

As to the individual differences in terms of the frequencies of using cohesive ties as clues for confirmation, the Highest and High participants has the frequencies of more than 25, while the Mid and Low participants no more than 20.

⁵ As mentioned above, all the protocols were coded by the researcher and her sister Ms. Li-wen Chen, who is an instructor at the Department of Foreign Languages and Literatures of Chung Hsing University. The coding consistency was originally 89%, and with further discussion, all the inconsistently coded items were resolved and agreed upon.

Table 4.4

Frequencies and Percentages of Four Participants' Use of Cohesive Ties as Clues Correctly for Confirmation of Answers in Taking the DS Test

Categories of cohesive ties	Frequencies (Percentages)				
	Highest	High	Mid	Low	Total
References	4 (15.4%)	2 (7.4%)	1 (5%)	0 (0%)	7 (7.7%)
Conjunctions	6 (23.1%)	8 (29.6%)	5 (25%)	4 (22.2%)	23 (25.3%)
Lexical Ties	16 (61.5%)	17 (63%)	14 (70%)	14 (77.8%)	61 (67%)
Total	26 (100%)	27 (100%)	20 (100%)	18 (100%)	91 (100%)

Table 4.5 shows the frequencies and percentages of the four participants' using cohesive ties as clues correctly to exclude alternatives in taking the DS test identified in their think-aloud protocols. Besides the three categories of cohesive ties identified in Table 4.4, a category named Unspecified is added to refer to situations in which the participants apparently were aware of some cohesive ties and yet did not specify which ones that were on their mind.

Like what we have observed in Table 4.4, the category of cohesive ties that gets the highest total frequency of application is Lexical Ties, and the one that has the lowest frequency is References. However, while the above pattern applies to all the four participants in Table 4.4, here we observe only for the Mid and Low participants to have Lexical Ties as the highest frequency, and only one occurrence of References is found for all participants, which was used by the Highest participant.

As to the individual differences in terms of the frequencies of using cohesive ties as clues for exclusion of alternatives, we find quite surprisingly that while in Table 4.4 it is the High participant who gets the highest frequency, here the title falls on the Low participant (17). In addition, Table 4.5 indicates that for the Mid participant, the strategy of using cohesive ties as clues to exclude alternatives was not frequently used, for the total occurrence is only three, which belong to Lexical Ties exclusively.

Furthermore, while the Mid and Low participants depend most greatly on Lexical Ties to exclude unlikely alternatives, a largest percentage is Unspecified for both the Highest and High participants.

Table 4.5
Frequencies and Percentages of Four Participants' Use of Cohesive Ties as Clues Correctly to Exclude Alternatives in Taking the DS Test

Categories of cohesive ties	Frequencies (Percentages)				
	Highest	High	Mid	Low	Total
References	1 (7.6%)	0 (0%)	0 (0%)	0 (0%)	1 (2.4%)
Conjunctions	4 (30.8%)	1 (12.5%)	0 (0%)	3 (17.6%)	8 (19.5%)
Lexical Ties	3 (23.1%)	2 (25%)	3 (100%)	12 (70.6%)	20 (48.8%)
Unspecified	5 (38.5%)	5 (62.5%)	0 (0%)	2 (11.8%)	12 (29.3%)
Total	13 (100%)	8 (100%)	3 (100%)	17 (100%)	41 (100%)

In addition to the situations in which the cohesive ties were used correctly either to confirm answers or to exclude alternatives, there are situations when the participants misused cohesive ties as clues. For both the Highest and the High participants, one occurrence of misjudgment is found; however, both participants soon discovered their errors as they read along and encountered the challenge of “It doesn’t make sense this way,” and were able to correct the errors right away. For the Highest participant, the conjunction “but” was misinterpreted, while the High participant mismatched a reiterated lexical phrase. With regard to the Mid and Low participants, more misuse of cohesive ties as clues is found, and there are times when they were unable to correct their errors. The Mid participant misused cohesive ties three times, all of which belong to Lexical Ties, but only one was corrected. The total errors of using cohesive ties as clues for the Low participant are eight, with four of them corrected. One of these errors is the misuse of a pronoun, a subcategory of References, and is among those corrected.

4.1.4 Results of participants' response questionnaire

This section presents the participants' responses toward the integrated treatment. First, the participants' perception as to the effect of the instruction of text structure on their performance of the DS test and on other aspects of learning is investigated. Second, the value of think-aloud modeling in the participants' learning how text structure and cohesive devices work in text and in taking the DS test is explored. Third, the participants' responses toward think-aloud practice is probed. Finally, some questions concerning follow-up activities are also investigated.

As the response questionnaire includes two types of questions—open-ended questions and five-point scale statements, two approaches for analysis of the data were employed. For the five open-ended questions, the responses were collected and coded for analysis⁶. A response that contained more than one proposition was multiply coded⁷. As for the five five-point scale statements, the means and the SDs were computed for discussion.

First of all, in answer to the question of whether the instruction of text structure was helpful in learning the essence of text—unity and coherence, all the participants (100%) responded positively. Besides, sixty-eight participants (98.6%) were positive about the value of the instruction in helping them take the DS test. Only one stated that she had learned about the application of text structure and cohesive devices before the instruction, and therefore did not feel its effect. As for more specific benefits from the instruction, Table 4.6 presents the frequencies and percentages in terms of six categories: (A) Awareness of cohesive ties (47.9%), (B) A grasp of main

⁶ As mentioned above, the codings were done by the researcher and her sister Ms. Li-wen Chen, who is an instructor at the Department of Foreign Languages and Literatures of Chung Hsing University. The coding consistency was originally 92%; for the inconsistent items, a discussion was made between the two coders before the final conclusion was reached.

⁷ For example, when asked in what aspects of learning the instruction was beneficial, a participant might give a response that contained both "writing" and "reading;" in such cases, both "writing" and "reading" were counted in the categorization.

ideas of text (15.6%), (C) Confirmation of answers on DS tests (14.6%), (D) An increase in word-guessing ability (5.2%), (E) Awareness of text structure (5.2%), and (F) Others (11.5%). For Category (A), twenty-one of the forty-six responses mentioned specific cohesive ties that the participants learned most about: ten pronouns, five conjunctions, four synonyms/antonyms, one demonstrative and one tense. Also, Category (F) “Others” includes responses like what follows:

“I can keep calm because I know better what clues to look for.” (M24)⁸.

“I have become more analytic.” (H7)

“My speed in taking the DS test has become faster.” (H8; H11; L55)

“It is more likely that I guess the answer right.” (M23)

Table 4.6

Questionnaire Results of Participants’ Opinions on the Instruction of text structure
(N=69)

Category	Frequencies	Percentages
(A) Awareness of cohesive ties	46	47.9%
(B) A grasp of main ideas of text	15	15.6%
(C) Confirmation of answers on DS tests	14	14.6%
(D) An increase in word-guessing ability	5	5.2%
(E) Awareness of text structure	5	5.2%
(F) Others	11	11.5%
Total	96	100%

Table 4.7 shows the participants’ views on other aspects of learning in which the instruction of text structure were helpful. Thirty-four cases (47.2%) indicated that they benefited from the instruction in reading comprehension, among whom fourteen indicated that they were better able to get hold of the main ideas of text; nine commented that they read much faster; another nine mentioned that they would not be

⁸ The letter and number in each pair of parentheses represent an individual participant. M24, for example, refers to No. 24 participant, who belongs to the Mid group.

scared by unfamiliar words, and would make better use of the context and cohesive devices toward comprehension; and two said they could concentrate better.

Table 4.7 also shows that as many as twenty-three cases (31.9%) stated that the instruction helped them greatly in their writing, among whom, except that five expressed no other comments, thirteen indicated that the concept of “paragraph unity” helped them stick to the composition topic and avoid irrelevant statements in writing; and another five mentioned that they would pay more attention to the coherence of what they wrote.

Besides, fifteen cases (20.9%) mentioned that they benefited from the instruction in taking other test modes, such as cloze, matching, and choices for blank-filling.

Table 4.7

Questionnaire Results of Participants’ Views on Effect of Instruction of text structure on Other Aspects of Learning (N=69)

Aspects	Frequencies	Percentages
(A) Reading	34	47.2%
(B) Writing	23	31.9%
(C) Other test modes	15	20.9%
Total	72	100%

As for the effect of think-aloud modeling on the performance on taking the DS test, sixty participants (87%) responded positively, six of whom, however, were still concerned about the amount of time spent on think-aloud practice. Nine participants (13%) stated that they did not benefit from think-aloud modeling as far as taking the DS test was concerned. Table 4.8 shows four categories of the participants’ responses to think-aloud modeling. Forty-five cases (50.6%) mentioned that think-aloud modeling provided them with a concrete example of the thinking process. The following responses serve to exemplify how the participants felt about think-aloud

modeling:

“The modeling has helped me build up an effective thinking mode.” (H1)

“The modeling has enabled me to ‘see’ how to think.” (H6; M25)

“The modeling has provided a concrete guide for thinking.” (H2; M34; L47)

“The modeling has made me more flexible in thinking.” (H5; L48; L67)

“The modeling has presented a clear flow of the thinking process.” (H8; L51)

Twenty-five cases (28.1%) gave positive affect responses. Most of them found think-aloud modeling interesting, and one even claimed that taking the DS test was like playing a game. There were, however, twelve (13.5%) negative responses to think-aloud modeling. Eight of the participants felt it was kind of funny or stupid, and the others said they were not used to it. Category D (Others) included four responses that were concerned about the slow speed of the modeling, and three mentioned that modeling enabled them to learn about what think-aloud technique was.

Table 4.8

Questionnaire Results of Participants’ Responses to Think-aloud Modeling (N=69)

Category	Frequencies	Percentages
(A) Providing a concrete example of thinking process	45	50.6%
(B) Positive affect responses	25	28.1%
(C) Negative affect responses	12	13.5%
(D) Others	7	7.8%
Total	89	100%

With regard to the effect of the think-aloud modeling on their understanding and application of text structure and cohesive devices, fifty-eight of the participants (84%) stated that the think-aloud modeling helped them better understand the principles and application of text structure and cohesive devices. Eight participants (12%) said they

did not benefit from the think-aloud modeling as far as the understanding and application of text structure and cohesive devices were concerned, while the other three (4%) stayed neutral. The positive responses toward the effect of the think-aloud modeling on the understanding and application of unity and coherence were coded as shown in Table 4.9, in which twenty-nine cases (49.2%) indicated that they learned how cohesive ties really worked, and thirty cases (50.8%) stated that they learned from the think-aloud modeling how to apply the principles of “unity” and “coherence” to take the DS test.

Table 4.9
Questionnaire Results of Participants’ Views of Effect of Think-aloud Modeling on Their Understanding and Application of Text Structure and Cohesive Devices (N=69)

Category		Frequencies		Percentages	
Understanding	Learn how cohesive ties really work	29		49.2%	
Application	Be more flexible in thinking	14	30	23.7%	50.8%
	Confirm and exclude answers	12		20.3%	
	Learn to use “unity” as a clue	4		6.8%	
Total		59		100%	

Concerning the effect of the think-aloud technique, fifty (72.5%) of the participants were positive that thinking-aloud did help them with the DS test; twelve (17.4%) stated that they did not benefit from think-aloud practice in taking the DS test; seven (10.1%) stayed neutral. Table 4.10 summarizes the participants’ responses to the effect of think-aloud practice in taking the DS test. Twenty-five responses (24%) stated that think-aloud technique helped them concentrate and have clear thinking; fifteen cases (14.4%) indicated that thinking-aloud helped them find the main idea of text; thirteen instances (12.5%) indicated that thinking-aloud helped them confirm answers. Fourteen cases (13.5%) gave positive affect responses like “It’s interesting.”

and “It’s special.” The category “Others” included such comments as “It has increased my speed in taking the DS test,” and “It has helped me guess the meanings of words.” Besides, twenty-three cases (22.1%) gave negative comments, including “It wastes time,” “I was afraid to bother others,” “It slowed down my thinking,” “I would pay too much attention to the pronunciation to focus on the meaning,” and “It is funny.”

Table 4.10
Questionnaire Results of Participants’ Responses to the Effect of the Think-aloud Technique (N=69)

Category	Frequencies	Percentages
Help concentrate and have clear thinking	25	24%
Negative comments	23	22.1%
Help find the main idea	15	14.4%
Positive affect responses	14	13.5%
Help confirm answers	13	12.5%
Others	14	13.5%
Total	104	100%

In addition to the effect of the treatment, which includes the instruction of text structure, think-aloud modeling and think-aloud practice, the opinions of the participants are also tapped about future application of think-aloud modeling and think-aloud practice (see Table 4.11). Of all the statements, a majority of the participants (over 50%) responded positively; and of all the statements but one, less than 10% were on the negative side. The only exception comes from Statement 9 “I am willing to practice pair think-aloud with my classmate in taking the DS test,” for which as many as 7 (10.2%) of them expressed negative comments.

Table 4.11

Questionnaire Results of Participants' Responses to Future Application of Think-aloud Modeling and Think-aloud Practice (N=69)

Statement	Mean	SD
6. I will benefit in taking the DS test if I listen to more passages of think-aloud modeling.	3.86	.77
7. I will benefit in taking the DS test if I do more think-aloud practice.	3.80	.78
8. I will suggest that the teacher offer opportunities of taking the DS test with think-aloud practice in class.	3.58	.76
9. I am willing to practice pair think-aloud with my classmate in taking the DS test.	3.67	.83

Statement	Frequencies (Percentages)		
	Positive	Neutral	Negative
6	49 (71%)	17 (24.7%)	3 (4.3%)
7	48 (68.1%)	18 (26.1%)	4 (5.8%)
8	36 (52.2%)	30 (43.5%)	3 (4.3%)
9	43 (62.4%)	19 (27.5%)	7 (10.2%)

The mean for the statement “I feel more confident in taking the DS test after all the training.” is 3.99. As many as fifty-seven participants (82.6%) were on the positive side, sixteen of whom even marked “Strongly Agree.” Nine participants (13.1%) stayed neutral and three (4.3%) were negative.

Finally, the participants were asked to rank among them “1: The Most Effective”, “2: The Second Most Effective”, and “3: The Least Effective” to tap the degree of effectiveness of the three sessions of treatment, namely the instruction of text structure, think-aloud modeling, and think-aloud practice. The frequencies, percentages and means of the ranking are summarized in Table 4.12, which shows that the instruction of text structure received recognition of a majority (65.2%) as “The Most Effective,” followed by think-aloud modeling (24.6%) and think-aloud practice (13.1%). The means also show the same order of effectiveness with the instruction of

text structure listed at the top, followed by think-aloud modeling and think-aloud practice.

Table 4.12
Frequencies, Percentages and Means of the Ranking for the Effectiveness of the Three Stages of Treatment (N=69)

Types of treatment \ Rank	Rank			Mean
	1	2	3	
Instruction of text structure	45 (65.2%)	15 (21.7%)	9 (13.1%)	2.52
The think-aloud modeling	17 (24.6%)	26 (37.7%)	26 (37.7%)	1.87
Think-aloud practice	7 (10.2%)	28 (40.6%)	34 (49.3%)	1.70

4.2 Discussion

4.2.1 Discussion of participants' performances on the DS test between pre-tests and post-tests

The fact that there is a significant difference between the pre-test and post-test DS test scores for all the sixty-nine participants in this study shows that the integrated treatment as a whole, which consists of the instruction of text structure, think-aloud modeling and think-aloud practice, has been effective in enhancing Taiwanese senior high school students' performance on the DS test. This finding supports the results of Bereiter and Bird (1985) and Baumann, Seifert-Kessell and Jones (1992) that a treatment combining thinking-aloud strategy modeling and practice with instruction of the target strategies can achieve great effect. Bereiter and Bird (1985) assert that thinking aloud has value both for demonstrating strategies and for experiencing how and when to use the strategies. They also stress the importance of explicit instruction by stating, "Direct instruction appears to be important for getting students to attend to

what is relevant in cognitive modeling” (p.153). Baumann et al. (1992) reinforce Bereiter and Bird’s (1985) view by indicating that a combination of explicit instruction and think-aloud modeling is required for students to acquire strategy application as well as knowledge of strategies itself.

The findings that there are significant differences between the pre-test and post-test DS test scores for all the individual groups of different English proficiency levels, namely, High, Mid and Low, indicate that the integrated treatment as a whole has helped improve the performance of participants of any proficiency level on the DS test in this study. As for the degree of improvement, the Mid group gained the greatest mean score, 3.46, the High group the second greatest, 2.87, while the Low group had the lowest gain in the mean score, 2.26. These figures seem to suggest that the participants of mid-proficiency in this study have benefited most from the treatment as far as taking the DS test is concerned. Yet, the reason that the High group did not earn the greatest gain in the mean score might be due to the ceiling effect. The mean score of the post-test for the High group is as high as 18.55 when the total score is 20.

The fact that the Low group won the least gain in the mean score among the three groups indicates that the participants of low-proficiency in this study benefited least from the integrated treatment. This result seems to contradict with those of the previous research (Chern, 1993; Hsu, 2002) that low-proficiency readers benefited more from the think-aloud technique. It is found in Chern (1993) that the think-aloud technique facilitated lower EFL proficiency readers’ comprehension, and in Hsu (2002) that the pair think-aloud procedure had a more facilitative effect on the low-proficiency participants. As this present study conducted a treatment combining instruction with think-aloud modeling and practice, while Chern (1993) and Hsu (2002) did not include instruction, further research is required to decide if it is the

explicit instruction of text structure that has facilitated higher-proficiency readers' performance on the DS test, who generally have a better "sense" of the texture of the English language and might benefit more from the reinforcement of the instruction.

In short, this study found that the senior high school students' performance on the DS test was enhanced by a treatment that combined an instruction of text structure with think-aloud modeling and think-aloud practice. Also, it is found that higher-proficiency readers (High and Mid) benefited more than low-proficiency readers from the integrated treatment, though all the three groups displayed significant improvement after the treatment.

4.2.2 Discussion of participants' metacognitive awareness in taking the DS test before and after the integrated treatment

In this section, the discussion focuses on the results presented in Section 4.1.2, which show the effects of the integrated treatment on the participants' self-perception of the strategies used and the difficulties encountered in taking the DS test. In this study, the participants' metacognitive awareness in taking the DS test before and after the treatment is investigated and compared by using questionnaires with the same statements to see if there is any change caused by the treatment.

According to the self-perception of the participants' awareness of the strategies they used in taking the DS test before and after the treatment, as shown in Table 4.2, significant differences are found for six items. This means that, after the treatment, the participants' use of the strategies listed in the six items increased significantly, including the general ideas of pronouncing every word and paying attention to unity and coherence of the text, and specific strategies like looking for pronouns, demonstratives and lexical ties as clues.

The significant difference between pre-treatment and post-treatment for the general idea of paying attention to unity and coherence of the text (Statement 15)

demonstrates that the treatment as a whole was successful in making the participants more aware of textual organization when taking the DS test. Such awareness, as many participants stated in their response questionnaire, helped them to be more meaning-based in reading and to better and more easily get the gist of a text. This meaning-based approach, according to Block (1992), is a characteristic of proficient ESL readers, which suggests that the treatment has enabled the participants to become potential proficient readers. Besides, the treatment seems to have upgraded the participants' reading strategies by successfully orienting their attention toward textual organization, which belongs to "global" reading strategies in Carrell's (1989) category of reading strategies.

The success of the treatment in increasing the participants' awareness of such cohesive ties as pronouns, demonstratives, lexical ties and conjunctions while taking the DS test (Statements 16-19) also echoes the claim that since coherence is an abstract concept, its concrete manifestations—cohesive devices—should be taught explicitly and comprehensively to facilitate reading comprehension (Johns, 1986; Nunan, 1993; Rogers, 1974; Staddord, 1991). One can note, especially, that the participants' recognition of pronouns and demonstratives (both under the category of References) has been much more greatly promoted after the treatment than that of the other items listed in the questionnaire. As one can clearly see in Table 4.2, these two cohesive ties (represented by Statements 16 and 17, respectively), while ranking as the fourth and sixth lowest-frequency ties among the twenty items before the treatment, are in fact the two that have the greatest gains between the pre- the post-treatment questionnaires. The above fact has revealed that the participants' awareness of the usefulness of pronouns and demonstratives in taking the DS test has been more greatly enhanced than the other types of cohesive devices. This might be due to the differences in textual organization and cohesion conventions between

languages, which several researchers have warned against when teaching English to EFL learners (Chen, 2001; Johns, 1990; Ostler, 1987; Scollon and Scollon, 1995). As Chen (2001) has found out, there is discrepancy in the manifestation of referential cohesion such as pronouns and demonstratives between English and Mandarin Chinese. Likewise, the misuse of pronouns and demonstratives has been found common by several studies on Taiwanese students' English compositions (Chang, 1997; Liang, 1997). In the present study, several participants also pointed out in the response questionnaire that it had never occurred to them that pronouns and demonstratives should play important roles in the comprehension of text, and quite a few others mentioned pronouns or demonstratives as what they had learned most about among all types of cohesive ties during the treatment. These results further prove that it is necessary not only to teach EFL learners the exact usage and application of cohesive devices in English but also to bring to their attention the differences in textual organization and cohesion conventions between English and their mother tongue.

Nevertheless, it should be noted that, though there is a significant difference for the strategy of pronouncing every word (Statement 1), its mean scores rank the lowest before the treatment and the second lowest after the treatment. In other words, trying to pronounce every word is one of the two strategies that the participants least frequently used when taking the DS test. According to Carrell (1989), strategies having to do with sound-letter correspondences are classified as "local" reading strategies. In the response questionnaire, two participants (High 21, Mid 45) even pointed out the distracting nature of reading every word out loud as one of the reasons why they rejected think-aloud practice. The gain in the mean score of this statement after the treatment might suggest that the think-aloud modeling and technique did cause some participants to be more conscious of the pronunciation of individual

words, especially, according to one participant (Mid 43), when reading the words out loud helped them remember or associate with the meaning of the words.

Table 4.2 also shows a slight decrease in the mean scores and drop of ranking for Statement 5 “I will try to get the overall meaning of the text” and Statement 20 “I will try to look for possible clues—paragraph themes.” For Statement 5, the loss of the mean score for Statement 5 (from 4.33 to 4.22) and drop of ranking (from four to seven), though slight, is worth discussion. Despite the fact that most participants have tended to be more meaning-based in taking the DS test after the treatment, there are others mentioning in the response questionnaire that the clues of cohesive devices sometimes enabled them to decide on the answers even without having to understand what the whole text was about. Does this result imply that too much dependence on cohesive devices would lead the readers astray from understanding the text? Or does it suggest that the designing of the DS test require more advanced technique to avoid such a situation? Or is it an indication that the recognition or even prediction of appropriate cohesive devices is critical in taking the DS test? Further studies are needed to answer these questions. As to the decrease in the mean score and drop of ranking for Statement 20, the reason could be similar to that for Statement 5.

Table 4.2 also suggests that in general, the participants in this study were initially more “global” than “local” in their use of reading strategies, and the treatment did not seem to have a negative effect on it, but rather has reinforced this phenomenon in some way. For example, two “global” strategies, according to Carrell (1989), Statement 9 “I will try to make inference based on contextual clues” and Statement 10 “I will try to ignore what I don’t understand and keep reading,” happen to be the two strategies most frequently used before and after the treatment, and gains arise in the mean scores for both items. On the other hand, two “local” strategies, Statement 1 “I will try to pronounce every word” and Statement 2 “Understand the meaning of each

word,” are among the three strategies least frequently used in taking the DS test for both before and after the treatment,.

The second part of the metacognitive awareness questionnaire, as shown in Table 4.3, is to tap the participants’ awareness of the difficulties they encountered in taking the DS test before and after the treatment (Statements 21 to 32). According to Table 4.3, significant differences are found for three items, all concerning the general idea of text structure or the use of strategies, including Statement 29 “In taking the DS test, the reason I have difficulties is because I am not familiar with text structure,” Statement 31 “I am not equipped with effective strategies for taking DS tests,” and Statement 32 “I can’t make coherence out of the text.” The positive t-value with loss of mean scores indicates that these difficulties have become significantly less difficult for the participants in taking the DS test after the treatment. In other words, the treatment as a whole was effective in helping the participants to be more familiar with text structure, to be equipped with effective strategies, and to be able to make coherence out of the text in taking the DS test, thus contributing to the improved performance on the DS test. Among them, Statement 32, originally causing the greatest difficulty before the treatment, ranked the fourth least difficult afterwards, and Statement 31, initially the fourth most difficult, has become the least difficult after the treatment. This result demonstrates the effectiveness of the treatment, and is further echoed in the response questionnaire.

Besides, Table 4.3 shows a gain for the mean scores on three items, which are Statement 22 “I can’t figure out lexical cohesion,” Statement 24 “Sentence structures are complicated” and Statement 26 “I can’t figure out the main idea of the text.” The gains in the mean scores of the three items suggest that the participants have found these three aspects even more difficult in taking the DS test after the treatment. For the participants to feel it even more difficult to figure out lexical cohesion after the

treatment is understandable. For one thing, as suggested in Chen (1991) that lexical cohesion is especially difficult for Taiwanese students to perceive, a lack of vocabulary is always counted by EFL students as a great barrier toward reading comprehension, which seems unlikely to be overcome easily. The consistent rankings of Statement 21 “There are too many words I don’t know” and Statement 25 “There are idiomatic expressions I don’t know”, before and after the treatment, have just reinforced this point: Both having a slight loss in the mean score, Statements 21 and 25 rank as the third and second most difficult items, respectively, before the treatment and the second and first most difficult, respectively, afterwards. The participants’ difficulty in vocabulary and idiomatic expressions seem to remain in spite of the treatment. Apparently, a lack of vocabulary and idiomatic expressions constitute so great a barrier to EFL reading comprehension that it is not likely to be easily overcome with a short-term treatment such as that administered in this study.

Another reason for the difficulty added to the aspect concerning lexical cohesion might be the participants’ activated awareness of their weakness in vocabulary. The treatment, either the instruction of text structure or think-aloud modeling, lays quite a lot of emphasis on looking for the relationship between lexical items. Such conscious concentration on vocabulary would lead the participants, especially the low-proficiency ones, to be even more aware of their lack of vocabulary. This is probably why they were troubled by lexical cohesion. This finding may be an inspiration to EFL teachers: When they teach vocabulary, related words such as derivatives, synonyms, antonyms, superordinates, and general words should be included in the instruction and taught in context, and different types of lexical cohesion should be highlighted in the reading class.

As for the reason why, after the treatment, more participants claimed that sentence structures were complicated and that they couldn’t figure out the main idea

of the text, one explanation might be that the treatment had oriented them to be more meaning-based on the one hand, but on the other hand, their low proficiency prevented them from achieving that intention, therefore making them regard sentence structure as more complicated and the main idea harder to grasp. Except for these three items, the other nine items are found to be less difficult for the participants in taking the DS test after the treatment. This result demonstrates an overall success of the treatment in helping the participants learn some effective strategies and overcome quite a few difficulties in taking the DS test.

4.2.3 Discussion of the protocols of four participants' think-alouds

Based on the previous results in Section 4.1.3, several phenomena are observed. First, among the three types of cohesive devices identified in the think-aloud protocols, all the four participants relied most heavily on the lexical cohesion for confirming answers in taking the DS test. Also, among the four subcategories of lexical cohesion identified in the protocols: derivatives, synonyms/antonyms, superordinates and repetition, repetition was the cohesive device most frequently used by all the four participants. This phenomenon can be easily explained with Morgan and Sellner's (1980) "content coherence" that the source of coherence lies in the content, which inherently contributes to repeated occurrences of certain words and occurrences of related vocabulary or expressions. From this, a pedagogical implication could be drawn: In teaching reading comprehension, it would be helpful if the teacher could put emphasis on the identification of lexical relations.

Second, it is found that the percentage of dependence on lexical cohesion for confirming answers in taking the DS test increased as the English proficiency decreased; in other words, readers of lower proficiency tended to depend more on lexical devices, especially repetition, for confirmation of answers in taking the DS test. Similar observation is also made for excluding alternatives and for the misuse of

cohesive ties as clues. Of the three types of cohesive ties used by the participants to exclude alternatives, the Low participant used lexical ties, all of them repetition, most frequently, and Mid used only repetition. As to the misuse of cohesive devices, the three misuses committed by Mid were all repetition, and seven out of the eight misuses by Low were repetition. As Morgan and Sellner (1980) state that coherent content inevitably contains repeated occurrences of certain words, lower proficiency readers, who are not proficient enough to recognize other types of cohesive ties or to judge the exact function of repeated words in the coherence of the text, may have no choice but to be misled or confused by a string of repeated words. This result suggests that poor readers probably do not focus on the meaning of the text as they read and therefore may fail to discover the misjudgment of cohesive devices, or vice versa, that they may turn to seemingly apparent cohesion, especially repetition, because they cannot figure out what the text is about.

Third, while the low-proficiency readers were more likely to depend on lexical ties for coherence, the proficient readers tended to be more well-rounded and sophisticated in recognizing critical cohesive ties. It is found that the types of cohesive devices identified by Highest and High show greater variety than those by Mid and Low. This result confirms Kavale and Schreitner's (1979) finding that above-average readers are able to use alternative reasoning strategies more effectively than average readers. In this present study, this difference is most obvious with References. For confirming answers, Highest identified three types of References, High two, Mid one, and none for Low. The frequencies of References identified by individual participants decreased as the proficiency level decreased; that is, the more proficient a reader is, the more likely references are recognized as significant cohesion. This finding further echoes Chen's (2001) claim that the different manifestation of References in English and Mandarin Chinese could result in

Taiwanese students' inability to detect references as significant cohesion in reading comprehension. Also, the result that Highest and High identified more subtypes of conjunctions as well as greater numbers of conjunctions than Mid and Low could be explained by the results of some studies showing that conjunctions, which usually mark logical relationship in text, are the most difficult type of cohesion (Bridge and Winograd, 1982; Nunan, 1993). These results have suggested, as McCarthy (1991) points out, that references and conjunctions require special attention in ESL classrooms.

Fourth, the number of cohesive ties recognized as clues to confirm answers roughly corresponded to the proficiency level of the participants, but the same situation did not apply to the exclusion of alternatives, in which case there was a greatest number for Low. One explanation for this discrepancy is that proficient readers are more confident in their discovery of relevant cohesive devices and the answers they decide on. Therefore, there is less need to turn to the technique of exclusion. This redundancy nature of exclusion is also reflected in the fact that both Highest and High were coded five Unspecified items of cohesive devices, as they claimed those to be obvious. Also, the reason why Mid pointed out only three cohesive ties as clues to exclude alternatives might be, as she stated in the response questionnaire, that she had been so used to "thinking-aloud" that redundant information could be unconsciously omitted in her think-alouds.

Finally, it is found that each of the participants made at least one error by misjudging a cohesive device, and that there is a great difference in dealing with the errors between proficient readers and less proficient ones as well as in the number of errors they made. The number of errors made is found to be in negative proportion with proficiency level. Each of Highest and High made only one error, and they soon corrected the errors by discovering the incoherence as they read along, namely, when

they found out “It doesn’t make sense with that alternative here.” However, Mid made three such errors and had one corrected; Low made eight errors and corrected only four. This result echoes Kavale and Schreitner’s (1979) finding that lower-proficiency readers are more likely than above-average ones to produce decoding errors that violate passage meaning and fail to correct them. In this study, both Mid and Low failed to correct some errors because their awareness of cohesive devices was not sophisticated enough to detect other potential, and even crucial cohesive devices. The inability of the lower-proficiency readers to discover their misjudgment of cohesion prevented them from figuring out the coherence of the text, i.e. making sense out of the text, which resulted in their poorer performance on the DS test. This result has demonstrated that precise detection of cohesive ties can play an important role in good performance on the DS test. As a result, it is highly recommended that students be taught cohesive devices explicitly to perform well on the DS test, as many researchers have suggested that cohesion mechanism be taught to students, especially poor and ESL readers, to enhance their reading comprehension (Johns, 1986; Nunan, 1993; Staddord, 1991; Wang, 1998).

4.2.4 Discussion of the results of participants’ response questionnaire

Based on the results obtained from students’ response questionnaire, several conclusions can be drawn. First, the instruction of text structure has been found to be effective in enhancing the participants’ awareness of text structure and in helping them perform well on the DS test. All the participants in this study were positive about the effect of the instruction of text structure, and all but one responded positively about the value of the instruction in helping them perform well on the DS test. The participants’ responses also show that some useful reading strategies such as getting the main idea and guessing word meanings from the context have actually been reinforced by the instruction. The reinforcement of the strategy of getting the

main idea can be attributed to the emphasis of the concept of “paragraph unity” in the instruction, and the increase of word-guessing ability can be due to more awareness of lexical devices. The same result is also reflected in the questionnaire of metacognitive awareness showing that the participants’ general reading strategies have been enhanced. In addition, some participants mentioned specific cohesive devices that they learned most about during the treatment. Among them, pronouns, a subcategory of references, have received the greatest attention. Two participants (Low 56, Low 59) even stated that before the instruction, they used to ignore the presence of pronouns in reading because they had no idea that pronouns could play an important role in the cohesion of text. As shown in Chen (2001), the common use of zero forms for a previously mentioned referent in Mandarin Chinese, which is never the case in English, can result in difficulty for Taiwanese students in reading and writing in English. Therefore, emphasis of the role that references, especially pronouns, play in English cohesion should be included in English classes in Taiwan.

Second, the instruction of text structure and cohesive ties is found to be helpful not only in promoting the participants’ reading comprehension but also in writing and in taking reading tests of different modes. Almost half of the participants stated that they benefited from the instruction in reading comprehension because they learned effective reading strategies. One-third of the participants expressed that they benefited from the instruction in their writing in English by becoming more aware of the concept of unity and coherence. Also, about one-fifth of the participants were positive that they learned to do better on reading tests of different modes after the instruction. This result indicates that the instruction of text structure can have far-reaching effect on high school students’ learning of English, and should be included in the curriculum. The result also demonstrates that reading and writing are closely related like two sides of a coin, and teaching material intended for reading can be useful in the writing class

as well.

Third, think-aloud modeling has been found to be effective in enhancing most of the participants' performance on the DS test and in helping them learn the manifestation of text structure and cohesive devices. Unlike the instruction, which received unanimous recognition, think-aloud modeling got twelve negative responses. Despite this, a majority of the participants (45 out of 69) stated that think-aloud modeling provided them with a concrete example of the thinking process, which is regarded as crucial by many researchers in enhancing reading comprehension and as especially meaningful to poor readers (Bereiter and Bird, 1985; Block, 1986; Davey, 1983; Duffy et al., 1988; Hsu, 2002). Among them, Davey (1983) maintains that teachers should provide a model of strategic reading for poor readers by verbalizing their own thoughts through think-alouds. Block (1986) suggests, "Teachers themselves might model the behavior of a competent reader, so that learners could extend their resources" (p.488). Duffy, Roehler and Herrmann (1988) also claim that teachers should make explicit the invisible mental activity in reading through think-aloud modeling so that poor readers can "see" the cognitive processes crucial for successful reading. By verbalizing how they make sense out of text, especially how they solve comprehension difficulties, teachers set an example of effective reading. In response to the effect of think-aloud modeling on their understanding and application of text structure and cohesive devices, twenty-nine participants commented that the modeling enabled them to learn how cohesive devices really worked in text, and another thirty said they learned how to apply what they learned from the instruction to taking the DS test. The results of the present study show clearly that not only poor readers have learned from the modeling what strategic reading is like but proficient readers also have learned to be more flexible in utilizing reading strategies and more sophisticated with the cohesion mechanisms in English. A

high-proficiency participant (H18) even commented that the instruction of text structure alone helped her gain 80% understanding of the manifestation of text structure and cohesive devices, and that think-aloud modeling added the other 20%. That is, the combination of explicit instruction and think-aloud modeling has made her fully understand the manifestation of text structure and cohesive devices. Two other participants (L62, L67) also exhibited a similar opinion that without the modeling, they would not readily capture the manifestation of text structure and cohesive devices from the instruction alone. These participants' remarks lend further support to Bereiter and Bird's (1985) and Baumann et al.'s (1992) results that an explicit instruction combined with teacher think-aloud modeling would achieve greater effect than instruction or modeling alone in enhancing students' comprehension monitoring abilities. As to the twelve responses that displayed negative opinions, these participants rejected think-aloud modeling either because they felt it funny or because they were not used to it. This negative reaction also accounts for a portion of rejection to the think-aloud technique. One explanation for this negative feeling towards think-alouds is that students have their personal way of learning things. Some might reject verbalizing everything in their minds while reading, as Ericsson and Simon (1993) caution that the think-aloud technique involves problem-solving skills and may not suit everyone because what involves the thinking process is very personal.

Fourth, the think-aloud technique is also considered effective by a majority of the participants in helping them perform well on the DS test. Fifty participants (72.5%) took a positive attitude toward this technique. Most of them felt think-aloud novel and interesting, and stated that in taking the DS test, thinking-aloud helped them concentrate better and thus have a clear thinking to figure out the main idea of text, confirm answers, and guess the meanings of words. This result is in agreement with

that of previous studies indicating that think-alouds can enhance readers' metacognitive awareness of the strategies they are using and thus consolidate their current strategy use as well as achieve better comprehension (Block, 1986; Hsu, 2002; Irwin, 1991; Wilhelm, 2001). Wilhelm (2001) asserts that readers help themselves by saying aloud potential steps they can take and gradually approach the goal of comprehension. Block (1985) also recommends think-aloud as a learning tool because it is learner-centered and can increase concentration, especially on what needs to be made clear. Besides, based on the participants' responses, thinking-aloud also allowed them to be more aware of the problems they had toward comprehension and then able to struggle for a potentially effective strategy, especially as an attempt to apply what they newly learned from the instruction session. This is an indication that the think-aloud technique that accompanies strategy instruction would provide learners with opportunities of experiencing how and when to use a certain strategy now that they have learned what effective strategies are from the instruction. As Davey (1983) points out, poor readers don't always monitor how well they are comprehending as they read along, and even when they know what effective reading strategies are, they are not always aware of how and when to use them. The think-aloud technique offers the readers hands-on experiences to try out using strategies in comprehending. Also, Bereiter and Bird (1985) hold that thinking-aloud is especially helpful in bringing the comprehension obstacle to the conscious level when automatic flow of reading breaks down, so that the brain can actively tackle the problem by consciously exploring better strategies.

Though considered effective by most participants, the think-aloud technique was not accepted as a learning tool by as many as twelve participants (17.4%) in this study. As has often been thought of as a drawback of think-alouds (Bereiter & Bird, 1985; Hayes & Flower, 1983; Hsu, 2002), the disruptive nature of think-aloud was also

mentioned by several of the participants as a reason for rejecting this technique. They commented that reading aloud and then saying what they were thinking about actually was a waste of time and their comprehension was slowed down because the flow of thinking was constantly interrupted by their own verbalization. Also, these participants stated that they would pay too much attention to the pronunciation of every single word to focus on the meaning of the text, and that they were always conscious of the concern that they might bother someone with their thinking-aloud. These negative comments are found to be contradictory to some positive ones like “Think-aloud helped me concentrate better,” “Think-aloud increased my speed in taking the DS test,” and “Think-aloud helped me guess the meaning of words.” This conflict of the participants’ reactions to the think-aloud technique has reflected the fact that think-aloud involves problem-solving skills, which can be very personal. That’s why the acceptance of think-aloud varies greatly. This individual difference in thinking has in fact been cautioned by Ericsson and Simon (1993) when implementing think-alouds. Therefore, teachers should be reminded to take into account the individual difference in the problem-solving approach among their students when they implement think-alouds in their classrooms.

Finally, further exploration of the effect and application of the integrated treatment reveals the following results. First, fifty-seven participants (82.6%) have had more confidence in taking the DS test after all the training. Even before think-aloud practice session ended, two participants (H22, L60) showed their gratitude to the researcher in person, saying that the treatment was very helpful to them in taking the DS test, and that they were not afraid of such a test anymore. It is another proof of the success of a combination of instruction of text structure, think-aloud modeling and think-aloud practice in improving performance on the DS test and therefore in enhancing overall self-assurance in taking such a test.

Nevertheless, three participants (H14, H21, M35) still did not think they gained more confidence in taking the DS test after the training. When their pre-test and post-test scores are compared, it is found that they improved by 4, 2, and 4 respectively. It could be that the two High participants were already good at taking the DS test since their pre-test scores (14,15) were higher than the average (12.8); as a result, the treatment did not seem to have effect on the amount of confidence they already had in taking the DS test. As for M35, she stated that she still did not capture the manifestation of cohesive ties and suggested that she listen to more think-aloud modeling of different texts. This indicates that think-aloud modeling is significant for non-proficient readers, and that the amount of modeling needed may vary among readers of different proficiency levels. Second, according to the ranking the participants gave to each of the individual sessions of treatment, it is found that the instruction of text structure has received the most recognition as the most effective among the three training sessions (65.2%), followed by think-aloud modeling (24.6%) and then think-aloud practice (13.1%). The means also show the same result, which corresponds to the results of the participants' responses toward these three sessions of training and can be viewed as evidence that an explicit instruction of strategies is essential for target strategy acquisition and reading comprehension. This finding seems to echo Bereiter and Bird's (1985) study that a treatment combining think-aloud modeling and practice with instruction of target strategies achieved much greater advantages than think-aloud modeling alone. As Bereiter and Bird (1985) state, "Direct instruction appears to be important for getting students to attend to what is relevant in cognitive modeling" (p.153). Learners need direct, explicit instruction to be able to benefit more from either think-aloud modeling or the think-aloud technique. It is therefore suggested that, though think-aloud modeling and the think-aloud technique are facilitative to reading comprehension (Block, 1986; Chern, 1993; Duffy

et al., 1988; Hsu, 2002), language teachers should teach strategies explicitly before think-aloud modeling and the think-aloud technique are implemented to achieve the best effect. Third, a majority of the participants (71%) were confident that they would benefit in taking the DS test if they listened to more passages of think-aloud modeling. This demonstrates the participants' positive attitude toward the value of think-aloud modeling in helping them acquire effective strategies for taking the DS test. As the protocols of four participants' think-alouds show, a text would not include all categories of cohesion. Therefore, it is suggested that passages of different text types be modeled with think-alouds to ensure most strategies to be covered in the modeling. Fourth, as for the follow-up think-aloud activity, not as many participants, though still more than half, showed interest. Forty-eight participants (68.1%) were convinced that more practice of think-aloud technique would improve their performance on the DS test. Forty-three (62.3%) expressed willingness to practice think-aloud with their classmates, and only thirty-six (52.2%) would like to include think-aloud activity in their English class. These results seem to reflect the drawbacks of think-alouds such as being disruptive and time-consuming, and the nature of the think-aloud technique, that, as Ericsson and Simon (1993) states, has a lot to do with problem solving and can be very personal.