

## **CHAPTER 4**

### **RESULTS AND DISCUSSION**

In this chapter, this researcher reveals the participants' personal profiles collected from the background questionnaire before initiating this experiment. Meanwhile, the in-depth statistical data analyses based on the feedback questionnaire are discussed. Accompanying the discussion are the results of the pre- and post-tests.

The first part deals with the results of the feedback questionnaire, which includes the learner responses toward the Web-based reading tasks—their interests, levels of difficulty, and usefulness of the provided materials. All of these are presented with 5-scale analyses and response to the open-ended questions. It also includes the results of the open-ended questions.

The second part reports the degree of change in the participants' motivation and their attitudes toward their student-teacher relationship, peer relationships, cooperative learning, and the Web-learning program.

The third part shows how the participants improved before and after these reading tasks. Based on the results of data analyses by *t*-test Repeated Measures, this researcher examined the test results of the different proficiency levels of the participants' performance.

Results from all the statistical analyses and their pedagogical implications together with their correspondence to the research questions are discussed in the final chapter.

#### **4.1 Participants' Response toward the Web-Based Reading Tasks**

A questionnaire (See Appendix G), which contained fixed questions using a five-point scale and some additional open-ended questions, was given at the end of the experiment to collect the participants' responses toward this Web-based special reading program. For the purpose of truly reflecting what the participants felt about the entire program, this researcher

tabulated in the following tables their interests in each category, their first preference in each category, the level of difficulty of each category, and the usefulness of each category. In addition, to get detailed information, a five-scale strategy was used. Detailed information was elicited through the average of the five scales to two decimal places.

Students could rate their response to each survey question on a scale of one to five. One represents absolutely no interest, extremely difficult, or of completely no use. Two represents no interest, difficult, or of no use. Three is average or normal. Four represents interested, easy, or helpful. Five represents very interested, very easy, or extremely helpful.

The additional open-ended questions also helped elicit the students' attitudes toward this Web-learning program.

#### **4.1.1 Participants' Response toward the Web-Based Reading Tasks**

According to the questionnaire, the average of 3.94 on the 5-point scale of the participants showed a strong preference towards Web-based learning over traditional teaching (See Appendix G). This means that almost all of the participants found Web-based learning interesting.

3.74 on the 5-point scale again showed that the participants preferred Web-based learning to traditional teaching. A closer look at the results of the 5-point scale of student preference for Web-based reading tasks can reveal minute but significant differences among these four tasks.

Table 4-1 shows that the participants were interested in the four Web-based tasks because all their responses were between 3 and 4, meaning that there is a tendency toward preference. The most popular of these four tasks was online children's reading tasks, which was rated at 3.79 by the students. Maybe the participants were quite familiar and interested in animated pictures and an easier reading workload (See Appendix B-1 & B-2). Instructional Web conferencing was ranked second. Perhaps the participants were quite familiar with MSN,

and the instructional Web conferencing was just like it. The only difference was that English was used in the instructional Web conferencing.

**Table 4-1**  
**Preference for Web-Based Reading Tasks**

Tasks	Scales Formal Study
* 3. Online Children's Reading Tasks	3.79
* 4. Online English-Chinese Dictionary	3.57
Online English-English Dictionary	3.14
* 5. WebQuest	3.36
* 6. Instructional Web Conferencing	3.64

\* Every item number corresponds to that of the questionnaire (See Appendix G).  
Note: 1 stands for "hate"; 2 for "dislike"; 3 for "neutral"; 4 for "interested"; 5 for "very interested."

Trailing last on Table 4-1 was the English-English dictionary. The English level of the participants in the experiment was ranked much lower compared with the rest of the vocational high school students in the Taipei area. Their lack of English proficiency made it difficult for the respondents to understand expressions online in the English-English dictionary. However, they knew that the English-English dictionary was still helpful to them. Even one low-achiever chose 5 on the 5-point scale. This may explain why the average scale was still above "neutral" at 3.14. All in all, students in the experiment were interested in the four online tasks.

However, in terms of level of learning difficulty of the Web-based reading tasks, scales obtained demonstrated some difference from those of preference for the Web-based reading

tasks. As shown in Table 4-2, the results of the responses were not as high as those in Table 4-1. That Table 4-2 was about the learning difficulty of the four Web materials may explain this difference. As far as their learning difficulty was concerned, the participants' frustration surfaced in these data.

The online English-Chinese dictionary was rather easy for the participants to find words they didn't understand. Generally speaking, dictionaries are easy to use. However, to low-achievers, such as the participants in this experiment, the online English-Chinese dictionary greatly improved their reading speed. They found that the online dictionary was easier to use than a traditional paper dictionary. No wonder this result was the highest among the four Web-based tasks.

**Table 4-2**  
**Level of Difficulty of Web-Based Reading Tasks**

Tasks	Scales	
	Pilot Study	Formal Study
*7. Online Children's Reading Materials	3.42	3.42
*8. Online English-Chinese Dictionary	3.94	3.57
Online English-English Dictionary	2.47	2.57
*9. WebQuest	2.93	3.07
*10. Instructional Web Conferencing	3.29	3.29

\*Every item number corresponds to that of the questionnaire (See Appendix G).

Note: 1 stands for "very difficult"; 2 for "difficult"; 3 for "neutral"; 4 for "easy"; and 5 for "very easy."

Still, the online children's reading materials was listed the second highest. The

participants' level was still on a junior-high-school level or even lower. They felt comfortable reading children's reading materials, especially low-achievers. Half of them expressed on the open-ended question that children's reading materials were a sure way for them to improve their reading ability.

In addition, Web conferencing was easier than the WebQuest task because the participants were more familiar with MSN-like Web conferencing than the totally new task of the WebQuest. On the other hand, the participants actively participated in the conference. The researcher's occasional encouragement while holding the conference made them motivated enough to follow the instructions in high spirits (See Appendix E-2); they thus found that Web conferencing was easier to learn. One low-achiever chose 5 on 5-point scale on instructional Web conferencing because he was good at surfing and typing skills online. This is food for thought: a weak and dull student in a traditional classroom may be an active student in a computer lab.

In addition to the above-mentioned preference and difficulty level of the four tasks, the helpfulness of the tasks plays a more important role in this study. Figures in Table 4-3 shows what the participants thought about the four Web-based reading tasks: all of them were useful. In terms of the online English-English dictionary, its value was 3.5, which meant the participants could find words that couldn't be found in the paper dictionary or other online English-Chinese dictionaries because this website <http://www.onelook.com> had many connections with other online dictionaries. It was helpful to them in finding new words.

Interestingly enough, the participants thought the WebQuest task was more useful than the online children's reading materials though the latter were easier. From this point of view, they seemed to appreciate that the communicative functions and skills they were leaning through using WebQuest were both plentiful and meaningful.

Instructional Web conferencing was also high on the list, perhaps because students were aware of its training their various skills and knowledge, including reading, writing, typing,

and vocabulary.

**Table 4-3**  
**Usefulness of Web-Based Reading Tasks**

Tasks	Scales Formal Study
* 11. Online Children's Reading Materials	3.50
* 12. Online English-Chinese Dictionary	3.86
Online English-English Dictionary	3.50
* 13. WebQuest	3.71
* 14. Instructional Web Conferencing	3.93

\* Every item number corresponds to that of the questionnaire (See Appendix G).

Note: 1 stands for "very useless"; 2 for "useless"; 3 for "neutral"; 4 for "useful"; 5 for "very useful."

From the open-ended questions, 10 out of 17 (58%) or most of the participants found that instructional Web conferencing helped them most. It gave them a sense of achievement and helped them gain confidence in learning English while happily "listening" and "talking" in the conference room (See Appendix E-2, 3, 4, 5). In this conferencing, the participants incorporated what they had learned on the Internet, including the use of online dictionary skills, vocabulary, and Web-based materials. Further, the Yahoo English-Chinese dictionary and online children's reading tasks had two supporters each. The other three voted for the WebQuest task as their favorite task.

#### 4.1.2 Other Noticeably Improved Skills

**Table 4-4**  
**Other Noticeably-Improved Skills**

Skills	N
Reading Comprehension Skills	6
Reading Speed	3
Dictionary-checking Speed	3
Vocabulary Range	10
Translation Skills	3
Grammatical knowledge	6
Question-answering Skills	4
Colloquial Usage	2
Research Skills	1
Note-taking Skills	2
Typing Speed	13
Web Browsing Skills	2

In addition to the improvements made by use of the four reading tasks above, some other skills were learned at the same time while doing the experiment. Table 4-4 shows these noticeably-improved skills.

Table 4-4 shows that the participants listed twelve skills that they thought were

noticeably improved throughout this experiment. Among them, typing speed is on the top of the list. This is an interesting finding. Thirteen out of 17 participants thought their typing skills, especially typing speed, improved. Listed number two on the list is vocabulary range. Browsing various websites made the participants exposed to new words from different fields, which means their vocabulary range expanded during the experiment. Next came reading comprehension skills. Reading comprehension skills are the main focus of this research. It is clear that more than one-third of the participants thought that they improved their reading skills.

#### **4.1.3 Advantages and Disadvantages of the Web-Based Reading Tasks**

Every Web-based reading task has its advantages and disadvantages. Based on open-ended questions of the participants' feedback questionnaire, their different opinions were stated as follows.

- **Advantages and Disadvantages of Online Children's Reading Materials**

Based on the participants' open-ended questionnaire, there were some advantages to using online children's reading materials. 35% of the participants thought they could learn new words in a more comfortable way. 29% of them expressed that their learning online was slow but steady, which was a marvelous experience, especially since they could learn at an individual pace. Besides, 35% of them felt that Web-based reading materials were fun and could be learned later at home independently. Though they thought they could learn by themselves, there was uncertainty about whether they would really do so. 18% of them, mostly low proficiency students, felt happy while learning with animated pictures. Only 12% of the participants clearly stated, however, that their reading ability showed great improvement. They mentioned that they understood more of the articles posted at <http://www.englishbaby.com> and <http://www.thecase.com>.



On the other hand, there are some disadvantages to using online children's reading materials. 29% of the participants thought that children's reading materials were a little easy for them, and 24% of them expressed the hope that in the future sentences in the Web-based reading should be a little longer. Only nine participants could think of any disadvantages to using these materials. That is, almost half of the participants (8 participants) with lower proficiency level thought these materials were OK for them.

- **Advantages and Disadvantages of Online Dictionaries**

Online dictionaries are tools for learning. They are very helpful in training reading. The only disadvantage the participants mentioned was the English-English dictionary with English definitions. When the English-English dictionary was used, they had to look up the new words in the definition by using the online English-Chinese dictionary.

- **Advantages and Disadvantages of the WebQuest**

Based on the participants' open-ended questionnaire, there were some advantages to using the WebQuest task. 24% of the participants preferred the special and fun WebQuest task. 18% of them were happy with the use of PowerPoint in presenting the results of their tasks. Besides, the same number of participants felt that the cooperation with group members could make tasks easier and faster, and they cherished this rare chance of cooperation. 12% of them were excited to find so many sources on the Web and the rare experience of brainstorming with their group members. With the WebQuest task, they had many chances for self-study and self-improvement. They also revealed that they tried to use a sense of humor while making a presentation. All of these were positive experiences for them.

Of course, there were some disadvantages to doing the WebQuest task, too. 53% of the participants thought this task was time consuming, a fact which was also pointed out by Felix (2002). These 53% of the participants were evenly spread throughout H, M, and L levels. 12%

of them complained about the laziness and procrastination of their group members. Among all the participants, only two of them found the task was not interesting, even a little bit dull. They belonged to low-achievers. Originally, they didn't like English. One of them only knew 26 letters when he first came to this vocational high school.

#### • **Advantages and Disadvantages of Instructional Web Conferencing**

On the basis of the participants' open-ended questionnaire, there were some advantages to using instructional Web conferencing. Almost all of them expressed their great satisfaction with the improvement in their typing speed. 18% of them felt that different topics concerning current issues could be learned in instructional Web conferencing. They also felt that instructional Web conferencing was easy, convenient, and helpful and could be done at home. 12% of them found that they learned some grammar concepts, and interaction between peers was considered extremely helpful. Their speed of checking online dictionaries grew faster. Moreover, they felt relaxed and refreshed in the absence of time limitations.

On the other hand, 18% of the participants thought the Achilles' heel of Web conferencing was the amount of time required to complete the task. Only one out of the 17 participants expressed that he could be idle for a while during instructional Web conferencing.

#### **4.1.4 General Opinions on Web-Based Reading Tasks**

The following are the participants' general opinions on the Reading Program. The general opinions can be categorized into four parts: vocabulary, flexibility, freedom from pressure, and new experiences. The number behind each expression is the number of participants who voiced their opinions.

##### • **Vocabulary:**

- a. My vocabulary range has broadened greatly under pressure-free learning. (16)
- b. Learning a lot of vocabulary from instructional Web conferencing is a fabulous

experience. Again, the amount of vocabulary gained is tremendous. (3)

- c. Checking new words improves my long-term memory about the word checked. (2)

- **Flexibility:**

- a. Compared with boring traditional classroom learning, Web-based learning is more active and flexible. I can adjust my learning speed based on my ability. (5)
- b. The instant dictionary checking improves my reading speed. (4)
- c. Web conferencing is unique and exciting. Waiting for the coming of the conference time is so exciting. Though the conference time is only one hour at a time—not long enough—many new words are learned. (8)

- **Freedom from pressure:**

Web-based homework can be done at home without too much time pressure. (4)

- **New Experience:**

- a. I had a good excuse to use the computer and the Internet freely at home. (5)
- b. Computer-assisted English learning opened up my horizons. (5)
- c. Instructional Web conferencing helped me learn holistically. (5)

#### 4.1.5 Suggestions for Web-Based Learning

The following are suggestions for Web-based learning offered by the participants.

- The number of students in the Web-based learning class should be limited to a certain small number; otherwise, it is hard for the instructor to supervise every student. (1)
- Learning on the Web should be part of classroom teaching because it provides me information difficult to find in the textbook. (1)
- In instructional Web conferencing, the instructor's typing speed should be slowed down for me to take notes. (3)
- Grammar too complicated and words that are too hard should be avoided. (1)

- I hope I can have access to more websites for learning English in the future with the teacher's guidance. (1)
- Though reading Web-based materials with miscellaneous icons and colorful animated pictures is fun enough, the reading speed for Web materials is slower than for reading of printed materials. (3)
- Reading words and sentences on the screen makes my eyes sore. It will be better if we can take a break every 30 minutes to give us time to review the new words we have just learned. (2)
- The computer classroom should have room to take notes and have a clear view of the computer screen, the teacher, and the board. (1)

## **4.2 The Change of Motivation and Attitude toward Web-Based Learning**

The change of learning motivation and attitude can be found in the participants' description from the background and feedback questionnaires.

### **4.2.1 Learning Motivation Before and After**

The participants' motivation was enhanced through the Web-based reading program, which can be found from their own descriptions on the questionnaires. Some participants described their different feelings before and after participating in Web-based learning (See Appendix H & I).

Before:

「不想學吧！！希望高中能打破現狀」

(I don't want to learn! I hope things can improve in senior high school.)

After:

「網路學習吸引我，鼓勵我去靈活的學英文」

(Web-based learning is attractive to me and it encourages me to learn English actively.)

Before:

「以前我很不喜歡 English，因為他是拼音文字。」

(I didn't like English before because it uses an alphabet.)

After:

「對於網路學習我覺得讓我不會的單字去查獻上字典，比較記得起來，因為你有自己親自去察看過，不是問別人的，誤了別人一下子就忘記了。」

(In Web-based learning, checking new words online improves my long-term memory about the word checked. On the contrary, I will forget the words in no time when others tell me the spelling of a word.)

Before:

「高中以前對英文的感想：很難，文法一點都不會，老師講的又聽不懂。」

(I thought English was hard to learn before senior high because I knew nothing about grammar and I didn't understand teachers' lectures.)

After:

「和國中比起來，現在感覺學應無很過癮。」

(Compared with junior high school, English learning is so cool now.)

Other information also shows that the participants enhanced their motivation through good teacher-student and peer relationships, and even through cooperative learning (See Appendix H).

Table 4-5 shows the good rapport that developed between teacher and students as well as among peers by the high values recorded in student responses. These results indicate that Web-based learning is a means to create a conducive atmosphere between learners and instructor and among learners themselves. On the other hand, cooperative learning didn't create as close a relationship as that between peers and student-teacher. Possibly, they had not experienced cooperative learning before.

**Table 4-5**

**Teacher-Student and Peer Relationships**

* 15. Teacher-Student Relationship	3.93
* 16. Peer Relationship	3.93
* 17. Cooperative Learning	3.57

\* Every item number corresponds to that of the questionnaire (See Appendix G).  
 Note: 1 stands for “very useless”; 2 for “useless”; 3 for “neutral”; 4 for “useful”; 5 for “very useful.”

Another interesting finding was that the participants who thought Web-based learning was not helpful to language learning belittled the good relationship attained among peers and between students and instructor afforded by Web-based learning.

From Table 4-5, the relationships for both teacher-student and peers were scored high. This high relationship may offer a conducive atmosphere and thus may motivate students to learn.

#### **4.2.2 Learning Attitude Before and After**

The learning attitude before and after implementation of Web-based learning changed. Though the change was not so dramatic (See Table 4-6), the support for incorporation into a regular course was quite high, meaning students favored Web-based learning.

**Table 4-6****Studying Attitude and Support for Incorporation into Regular Courses**

* 18. Pre-studying Preference for English	3.21
* 19. Post-studying Preference for English	3.78
* 20. Support for Incorporation into regular course	4.23

\* Every item number corresponds to that of the questionnaire (See Appendix G).

Table 4-6 shows that after the experiment the participants increased their preference for learning English, from 3.21 to 3.78. Among the participants, ten stayed at the same scale. Seven of them increased their preference, with six of these increasing by one scale. However, there was one low-achiever who jumped from one point to three because his computer skills were much better than others. He didn't like to listen to lectures in class, but he felt Web-based learning in the computer lab gave him more freedom to learn at his own pace. This indicated that his motivation for learning English increased in the computer lab as compared to regular class.

In addition to the 5-point scale, a comparison between background and feedback questionnaires provides a more detailed description of the participants' learning attitudes before and after the computer-assisted English learning.

While still in junior high school, before computer-assisted English learning, around 71 % (12) of the participants didn't like English; some even hated learning it. They thought English was hard and boring, and the ways of teaching it were too rigid without much everyday language involved. In addition, too much explanation of grammar made learning even worse. Most participants hoped this researcher would adopt more lively ways of teaching, including speaking training.

After computer-assisted English learning, most participants thought it was totally

different from traditional classroom teaching; traditional English teaching, in their view, is ineffective. Web-based learning enhanced their motivation and was also seen by the participants as relaxing and relatively free from pressure. Besides, the supplementary Web-based reading materials used in different reading tasks broadened their horizons. The attraction of Web-based learning encouraged some participants to learn more actively. Besides, learning English step by step, though it was slow, at least empowered them to learn English.

At the very beginning of the computer class, some couldn't catch up with this researcher's teaching speed (See Appendix I). Gradually, they knew how to survive in their Web-learning course by enlarging their vocabulary range.

One of the participants mentioned that he had given up learning English since elementary school. Now Web-based learning and this researcher's devotion encouraged him to gain confidence and start learning English again.

Also viewed from Table 4-6, most participants favored Web-based reading tasks incorporated into regular courses. Its value of 4.23 was the highest of all the results. Nine participants selected 5 on the scale, three participants chose 4, and five participants selected 3. This means all the participants highly supported incorporation of Web-based reading tasks into regular courses. The average of low-achievers was 4.4 on the scale while it was 3.8 for high-achievers and 3.4 for middle-achievers. These results show that low-achievers found learning on the Web to be more comfortable.

### **4.3 Results of Statistical Analyses (TVHSGEPT)**

This study lasted nearly four months and was conducted according to the procedures stated in Chapter Three. By comparing the participants' performance on the TVHSGEPT pre-test and post-test, this researcher found this experiment not so successful as had been expected.



### 4.3.1 Comparison of Participants' Performance on TVHSGEPT Pre-test and Post-test

To examine whether there was any improvement shown in the TVHSGEPT among all the participants at different proficiency levels, both a pre-test and post-test were used. Table 4-7 and 4-8, the *t*-test results, present the differences between the TVHSGEPT pre-test and post-test.

As shown in Table 4-7, the high achievers made the most progress as can be seen from their TVHSGEPT pre-test mean (60.17) and their post-test mean (78.83); their gains were 18.66. Ranking second were the middle achievers because their TVHSGEPT pre-test mean (34.67) and post-test mean (46.00) showed a gain of 11.33. Trailing last were the low achievers because their TVHSGEPT post-test mean (23.20) was slightly higher than the pre-test mean (17.00); their gains were only 6.20.

**Table 4-7**

#### **Paired Sample *t*-tests for High, Middle, and Low Achievers' Performance**

Group	GEPT	N	Mean	Std. Deviation	Gains
High Achievers	Pre-test	6	60.17	16.95	18.66
	Post-test		78.83	14.84	
Middle Achievers	Pre-test	6	34.67	17.50	11.33
	Post-test		46.00	19.70	
Low Achievers	Pre-test	5	17.00	6.63	6.20
	Post-test		23.20	7.98	

Table 4-7 shows that the high-achievers benefited most from the reading program because this group showed the most distinct improvement.

**Table 4-8**

**Paired Sample *t*-tests for Overall Participants' Performance**

Group	GEPT	N	Mean	Std. Deviation	Gains
Overall	Pre-test	17	38.47	22.86	12.41
	Post-test		50.88	27.34	

As shown in Table 4-8, the overall mean for all the participants in the pre-test was 38.47, and the mean in the post-test was 50.88. This demonstrates that all the participants made some improvement after the nearly four-month reading program. Results obtained from the summary of *t*-tests of paired differences also shows that there was a difference between pre-test and post-test for all the participants. Based on the descriptive analysis, these participants actually made some progress. However, through the statistical analysis, the *t*-test didn't reveal any significant difference.

None of the participants had ever studied in cram schools or any language schools at the time of doing the experiment, nor had most of them studied hard at home. Thus, all the statistical figures mentioned above proved that their improvement in English was because of their four-hour regular English teaching and one-hour computer class teaching. Clearly, the task design of the reading program was suitable for these participants in improving their reading comprehension. However, based on *t*-test, there was no significant improvement between the pre-test and post-test (See Chart 4-1).

### Chart 4-1

#### Correlations of the Participants' Pre-test and Post-test Correlations

	VAR00001	VAR00002
Pearson Correlation	1	.899(**)
VAR00001 Sig. (2-tailed)	.	.000
N	17	17
Pearson Correlation	.899(**)	1
VAR00002 Sig. (2-tailed)	.000	.
N	17	17

\*\* Correlation is significant at the 0.01 level (2-tailed).

#### 4.3.2 Results of the Vocabulary Test

The average of ten post-experiment vocabulary test questions (See Appendix F) was 47. High proficiency students scored 68, middle achievers 45, and lower-achievers 27. From these figures and the test questions, we can deduce that the test questions might not be easy for them because there were many new words. The purpose of this test was to elicit their contextual guessing skills. It seems that higher achievers had better guessing skills.

#### 4.4 Summary of Chapter Four

Chapter Four gave a detailed description of the results and discussion of this experiment. The results of the background questionnaire were provided. The results of the feedback questionnaire were also presented. Finally, the results of Taipei Vocational High School GEPT were given.

The conclusion, including summary of findings, pedagogical implications, limitations, and suggestions for further research will be presented in Chapter Five.