Effects of Text-based QQ Communication on Medical College Students English Writing

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Abstract—**In this study, the author integrated QQ into the study of non-English majors in a medical university. The purposes of this study are to find out learner attitudes towards the design of the English writing program in QQ, to examine student performance in terms of linguistic accuracy and complexity, and to explore affordance of QQ as a platform for English writing. The guided theoretical framework for the design of the study is constructivist learning theory. Task based learning approach is applied to control the learning procedure and guide the participants. The research methodology includes a combination of quantity and quality methods, descriptive analysis, and content analysis. Results indicate that the participants all hold positive attitudes towards the design of the English writing in this platform. Learner performance in terms of linguistic accuracy has been enhanced as evidenced by: the decreased number of grammatical errors and decreased percentage of grammatical errors to total number of sentences. Learner performance in terms of linguistic complexity is significantly improved according to the following aspects: the relatively increased length of the essay within the given time; the decrease of various errors; and the increase of the compound sentences and the complex sentences, etc. Findings showthat task-based English writing in QQ is effective in scaffolding English language learning. Participants preferred the writing in QQ, including either the real-time interactions and communications or non-real-time ones, which proved to be a promising language learning environment and should be considered and further studied by educators.**

Index Terms—**QQ, English learner, college English writing, attitude, performance**

I. INTRODUCTION

As a constituent of motivation, attitude takes an important role. Understanding of learner attitude is essential in supporting their achievements and interests in their study. When examining the relationship between attitude and motivation, Gardner and Lambar (1979) suggested that a second language learner needs to be psychologically prepared to acquire a second or a foreign language. And, many researches on attitude suggested that successful learners have positive beliefs and attitudes toward learning, and approaches to invest aspects of attitudes should be considered as a goal that is as central to the mission of education systems (Jakobsson, 2002; Pintrich & Schunk, 1996; Smith, 2001).

QQ, as a network platform, has many characteristics as proposed by Dörnyei and Csizér (1998), along with its emoticons and games that may arouse learners' interest very much. In this task-based study, English learners who could communicate with their friends in English, even with native speakers, showed a great interest in QQ English writing. This study may help encourage learners to familiarize with the English culture, enhance their English writing level, and gain confidence through the interaction with native speakers. As learners are clear about what should be prepared and completed in each week's learning tasks, they may make a personalized learning process. In this sense, this study of text-based QQ communication encloses all the elements as recommended above by Dörnyei and Csizér (1998).

A. Background of the Study

Education today is focusing on thinking about how educators should be using technology in instruction (U.S. Dept. of Edu, 2004). Teachers are struggling with visions and techniques to alter and create educational settings that may prepare students for today's society (Seitz, 2007). Under such circumstance, learning English in computer-mediated communication (CMC) may develop rapidly. Typical forms of CMC include e-mail, video, audio or text chat, blog, bulletin boards. Studies showed that CMC may create opportunities for people to construct knowledge together, thus linking rethinking and interaction. This manifested that CMC may be an effective pedagogical tool (Warschauer, 1997). With the popularity of CMC and the development of high-tech, as a chatting platform, QQ has been studied by many scholars. The aim of the studies is to find out an ideal and comprehensive environment through internet for learners to learn the target language more effectively.

Popular communication software may include Windows Live Messenger (previously MSN Messenger), Skype, Yahoo! Messenger, Facebook, and QQ. Among these, QQ may be regarded as the most popular tool for online chatting, if measured by the simultaneous number of users, exceeding 100 million. Having QQ is part of the Chinese modern lifestyle and despising them would just cut someone off the modern society. QQ goes beyond a simple IM, it is a very complete information platform, having many community services.

Studies indicated that QQ provides a unique and flexible educational environment for both educators and learners. And the major attraction of educational use of QQ is its potential to interact and communicate anytime, anywhere. QQ

writing can overcome the limitation of large size of classes and the limited opportunities of communication for Chinese English learners in traditional classrooms.

B.   Research Questions

This study is designed to learn the effects of text-based QQ communication on medical college students' English writing and to understand learner attitude toward the educational use of a tool of Instant Messaging, QQ, in the field of English learning. The application of QQ gives learners a platform to interact and communicate with English native speakers or with people whoever can speak English. The relevant research questions are:

1. What is the attitude participants hold toward the interaction between learner and QQ platform, among learners, and that between learners and teachers in the process of English writing in QQ?

2. What is the attitude participants hold toward the design of English writing in QQ?

3. How about learners' language performance before and after the study in terms of accuracy and linguistic complexity in QQ?

II.   Literature Review

Having a well-grounded theoretical perspective is essential when designing instruction in new and complex situations (Harmon, 2008). This study is implemented under the direction of theories of constructivism and task-based language teaching and learning approach. The following is a thorough elaboration on the two theories.

Constructivism represents a paradigm shift from education based on behaviorism to education based on cognitive theory. Cognitive constructivism and social constructivism are two major branches of constructivism. Represented by Piaget, cognitive constructivism emphasizes that learning is affected by the beliefs and attitudes of the learner and the context in which learners are supported to assimilate and accommodate new knowledge. Represented by Vygotsky, social constructivism emphasizes the importance of the social and cultural context for learning and the collaboration between people.

This study combines the ideas of social constructivism and cognitive constructivism as its theoretical framework. Constructivism goes beyond the study of how the brain stores and retrieves information to examine the ways in which learners make meaning from experience. Rather than the transmission of knowledge, learning is an internal process of interpretation. Learners do not transfer knowledge from the external world into their memories; rather, they create interpretations of the world based upon their past experiences and their interactions in the world.

Task-based Language Teaching and Learning (TBLT) as a cutting edge language teaching approach offers participants material they have to actively engage in the process in order to achieve a goal. In other words, being provided with tasks, learners use language to solve the tasks. The role of TBLT is to stimulate a natural desire in learners to improve their language competence by challenging them to complete meaningful tasks (Nunan, 1999).

From this point of view, this study designed some writing activities that focus on specific topics. These topics are sent to QQ Zone before each online communication. To complete the task, learners have to express their ideas towards the given topic and write an essay; and the communication between participants and their partners are identical to what occurs in real world, except the environment; when completing required tasks, participants are allowed and encouraged to expand the communication.

Chinese scholar (Chen, 2008) explored the role of QQ Group chatting in online peer feedback. The study revealed that QQ platform-based online peer feedback can solve some problems existing in face-to-face peer feedback such as how to group the students; students' anxiety and student's focusing only on form, etc. Her findings also revealed that this method could stimulate students' interest in writing and better students' writing ability. In addition, Chinese scholar Lai Yuneng (2007) studied the network Chinese writing pattern based on QQ platform. Chinese scholars Lv Zhen and Zhang Jianian made use of the QQ Group as a complementary tool to teach Information Technology and they believed QQ software is a very common chatting and communication tool, and we can build a virtual web-based learning community by setting up a QQ Group.

Several Chinese scholars have studied QQ as an effective tool for English writing. Chen Suqin's study revealed that QQ platform-based online peer feedback can solve some problems existing in face-to-face peer feedback Her findings also revealed that this method could stimulate students' interest in writing and better students' writing ability.

However, among these QQ studies, no scholars in China or abroad focus on effects of text-based QQ communication on medical college students' English writing and there are rare studies focusing on learners' attitude and their language performance. This study may fill one of the gaps in the related area. Several Chinese scholars have studied QQ as an effective tool for English writing and Chinese writing.

III.   Research Design

The purpose of this study is to discover effects of text-based QQ communication on college English writing and learner attitude and his/her corresponding language performance in terms of complexity and accuracy. Questionnaires, interviews, and tests are used in the course of the study. In order to describe the interviews conducted in the study and analyze the data collected from the questionnaires and the essays, the researcher has adopted both qualitative and

quantitative analysis in the study.

A. Participants

This study was conducted in the first semester of the second-year students in a medical university in East China. There are 99 students in these two classes altogether, 61 and 38 respectively. Of the participants (n= 30), 60% are females and 40% males. Their age ranges from 20 to 21 years old. Their comprehensive evaluation scores in the second semester of the first academic year are used to be the foundation.

TABLE 3.1
TEST SCORE RANGE OF PARTICIPANTS

Score Range (Max =100)	Students (N = 99)		Participants (n = 30)	
	Number of students	Score Average	Number of participants	Score Average
90-100	3	91.9	2	92.5
80-89	38	83.97	12	86.28
70-79	42	76.36	10	75.71
60-69	12	65.45	5	65.6
Under 60*	4	57.9	1	59

Note. * Any score under 60 is regarded as a failure for the evaluation.

B. Tasks and Activities

The entire study lasts over three months. The main study structure includes interviews, weekly online group discussion, sending essays to QQ mailbox, peer-assessment, teacher comments, and essay correction. In addition, a reporting concerning how the activities are arranged and what is their point of view towards the design is also required as an offline task to be completed by the participants after the weekly task. The task-based study is 12 weeks all together.

During each week's study, participants are briefly informed of what they should do in the present week. This information is posted in QQ bulletin and is issued in QQ groups. The online participants will see it immediately, while others who are offline can also get it when they log in QQ. In this study, there are two QQ groups. In each group, an English native speaker is involved in order that Chinese participants know the right sentence pattern, learn the western culture, and cut down Chinglish forms. They have done a very good job by encouraging students to "talk" all the time and avoiding frustrating them. During online discussion, participants communicate with their partners and express their own opinions. After each online communication, participants are required to post a weekly reporting on their experiences in the QQ Group zone.

Three sets of semi-structured interviews are implemented at the beginning of, in the middle of, and at the end of the study. Among each set, both individual interviews and group interview are conducted. Individual interviews are aimed to grasp participant's personal experience and group interviews to have an overall understanding. In the interviews, participants are asked to respond to such questions: "Please tell me about your experiences using QQ. Are there any funny or boring experiences in QQ?" During the study, 30 participants and two English native speakers, who are foreign teachers in this medical university, are available in the entire process. Table 3.2 shows the scheduled tasks and activities of the study.

TABLE 3.2
THE SCHEDULE OF TASKS AND ACTIVITIES

Activity	Date	Content	Note
Activity 1	Sept.20 - 30	Pre Study Test & Questionnaire	On English writing
Activity 2	Oct. 1 - 8	*QQ Groups* Setting Up	Two *QQ* Groups
Activity 3	Oct. 9 -10	*QQ* writing training	On the functions and navigations of *QQ*
Activity 4	Oct. 11 - 16	Group Discussion & peer-assessment	On Limiting the Use of Disposable Plastic Bag
Activity 5	Oct. 17	Group Interview	On participants' online experience
Activity 6	Oct. 18 - 24	Group Discussion & inter-correction	On The Benefit of Technology on Learning and write a short report
Activity 7	Oct. 25 - 31	Group Discussion & peer-assessment	On What We Should Do at University to Prepare for Job Hunting
Activity 8	Nov. 1 - 6	Group Discussion & peer-assessment	On Studying Abroad
Activity 9	Nov. 7	One-to-one Interviews	On students attitude towards the topics and their experience
Activity 10	Nov. 8 -14	Group Discussion & peer-assessment	On Credit Cards
Activity 11	Nov. 15 - 20	Group Discussion & peer-assessment	On whether Network Classroom will Replace Traditional Classroom
Activity 12	Nov. 21	Group Interview	On participants' online experience
Activity 13	Nov. 22 - 28	Group Discussion & peer-assessment	On "Should Talent Shows on TV be kept?"
Activity 14	Nov. 29 – Dec.5	Group Discussion & peer-assessment	On festival sales
Activity 15	Dec.6– Dec.11	Post Study Test & Questionnaire;	On online English writing and
Activity 16	Dec.12	Group interview	On the organization of all the activities

C. Pilot Study

The pilot study was implemented in the first semester of the second academic year. The participants are 30 full time non-English-majored undergraduate students from a Chinese medical university. They are all the second-year students. The pilot study lasted two days, one and a half hour each day.

The results of pre and post study questionnaires and post study interviews are very valuable and can be used as a reference for revising the items of the questionnaires adopted in the formal study and the activities designed in this study.

D. Validity and Reliability

This study applies a combination of qualitative and quantitative analysis methods. Data collection methods include pre and post study questionnaires, four interviews, and essay analysis. The pre study questionnaire focuses on the personal information of the participants, their computer technology readiness, and attitudes for using QQ as an English writing platform, while the post study questionnaire on further information concerning their computer technology and attitudes toward the design of the activities as well as the English writing program implemented in QQ.

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. Exploratory factor analysis is one method of checking dimensionality. Technically speaking, Cronbach's alpha is not a statistical test - it is a coefficient of reliability (or consistency). Cronbach's alpha can be written as a function of the number of test items and the average inter-correlation among the items. Below, for conceptual purposes, we show the formula for the standardized Cronbach's alpha:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$$

Here N is equal to the number of items, c-bar is the average inter-item covariance among the items and v-bar equals the average variance.

One can see from this formula that if you increase the number of items, you increase Cronbach's alpha. Additionally, if the average inter-item correlation is low, alpha will be low. As the average inter-item correlation increases, Cronbach's alpha increases as well (holding the number of items constant).

Let's compute Cronbach's alpha using SPSS and check the dimensionality of the scale using factor analysis. For pre-study questionnaire, we will use a dataset that contains 25 test items from q1to q25. To compute Cronbach's alpha for all 25 items, use the reliability command:

Reliability/Variables=q1 q2 q3 …q25.

Here is the resulting output:

Case processing summary

	Number	Percent
Cases Valid	34	100.0%
Excluded	0	.0%
Total	34	100.0%

Reliability statistics

Cronbach's alpha	N of items
.844	25

The alpha coefficient for the four items is .844, suggesting that the items have relatively high internal consistency. (Note that a reliability coefficient of .70or higher is considered "acceptable" in most social science research situations.)

In addition to computing the alpha coefficient of reliability, we might also want to investigate the dimensionality of the scale. We can use the factor command to do this:

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.427	29.709	29.709	7.427	29.709	29.709
2	2.406	9.625	39.334	2.406	9.625	39.334
3	2.076	8.303	47.638	2.076	8.303	47.638
4	1.928	7.711	55.348	1.928	7.711	55.348
5	1.534	6.137	61.485	1.534	6.137	61.485
6	1.381	5.524	67.009	1.381	5.524	67.009
7	1.257	5.028	72.037	1.257	5.028	72.037
8	1.078	4.310	76.348	1.078	4.310	76.348
9	.970	3.881	80.229			
10	.728	2.910	83.139			
11	.667	2.668	85.806			
12	.571	2.283	88.089			
13	.557	2.230	90.319			
14	.492	1.968	92.287			
15	.379	1.517	93.804			
16	.345	1.382	95.186			
17	.315	1.260	96.446			
18	.240	.959	97.406			
19	.180	.720	98.125			
20	.171	.683	98.808			
21	.110	.439	99.248			
22	9.730E-02	.389	99.637			
23	3.977E-02	.159	99.796			
24	2.799E-02	.112	99.908			
25	2.302E-02	9.210E-02	100.000			

Extraction Method: Principal Component Analysis.

Looking at the table labeled Total Variance Explained, we see that the eigen value for the first factor is quite a bit larger than the eigen value for the next factor (7.4 vs. 2.4). Additionally, the first 8 factors accounts for 76.3% of the total variance. This suggests that the scale items are unidimensional.

E. Data Collection and Analysis

The formal study was implemented in the first semester of the their second academic year in a college university in the east of china.. Data was collected according to the following procedures:

1. Call for participants;

2. Send the pre study questionnaire into QQ mailbox, the participants are supposed to completing answering it before pre study test, and sending it back to QQ mailbox;

3. Release pre study test in QQ Groups;

4. Interview the participants in the middle of and at the end of study;

5. Revise participants' essays and give them the feedback;

6. Save data using proper data analysis techniques;

7. Launch post study test in QQ Groups;

8. Send the post study questionnaire into QQ mailbox, the participants are supposed to completing answering it after post study test, and sending it back to QQ mailbox;

9. Analysis and report the data and the results according to APA style. The following describes the detailed process.

Data Collecting Tools

1. Writer's Workbench 8.4

Writer's Workbench—English writing software that analyzes writers' compositions through instructional computer feedback. Writer's Workbench provides 25 Analyses that guide writers as they write and revise from within Microsoft Word. These analyses, which address increasingly more specific issues within an essay, are arranged into six categories: Content, Characteristics, Verbs, Clarity, Words, and Punctuation. Writer's Workbench provides immediate, accurate, instructional feedback directly to writers as they write and revise in Microsoft Word.

You will find Writer's Workbench an indispensable assistant as you work 1) to heighten students' knowledge of language and their skill in writing, 2) to motivate students to revise and to edit their writing assignments, 3) to provide evidence of your accountability in meeting the goals of your curriculum.

2. QQ zone Postings

In the study, Chinese participants are asked to post comments based on their online learning experiences in QQ zone. They are required to do this every week. The content of the postings are archived and saved as word documents for analyzing.

3. Questionnaires and Interviews

In this study, data are collected from both pre and post study questionnaires as measured by five-point Likert Scales and the interviews. These data are used to examine whether English writing conducted in QQ may heighten the participants writing skills. These data also help the researcher to further analyze participants' attitude toward their learning experience in the study and examine their views on how interaction with native speakers in QQ may enhance their English writing.

Across the study, there are 270 essays with an average of 126.18 words per essay. There are 34 and 30 respondents in pre and post study surveys respectively. There are 23 interviews conducted and recorded as .wav format, including three focus group interviews and 20 one-on-one interviews. The average length of the one-on-one interviews is about 8 minutes and the average length of the group interviews is a little over 30 minutes.

IV. RESULTS AND FINDINGS

The researcher analyzed the data and categorized them into two main components. First, data are coded to see whether participants' attitude toward the design and interaction of English learning in QQ is positive or negative. Second, data are analyzed to see whether participants' language performance in terms of accuracy and linguistic complexity improves via proper data analysis methods. In this chapter, results are reported and findings are discussed.

A. Results

In this section, the results of the study are reported according to the research questions. Since questionnaires, interviews, and reports posted in QQ zone are designed to detect the attitudes of participants toward research questions 1 and 2, as the results both quantitative data and descriptive data are reported. The results for research question 3 are given out by writer's workbench 8.4 and SPSS 11.0 for Widows XP.

1 Results for Research Question 1

Research question 1 focuses on finding out participants' attitude toward the design in terms of language activities and discussion topics regarding English learning in QQ. The results of post study survey are presented in Table 4.1. Since many comments made in the interviews are identical with the postings in the QQ Group zone, only typical comments on the interaction are reported in Table 4.2.

TABLE 4.1
POST STUDY SURVEY RESULTS REGARDING PARTICIPANTS' COMMENTS ON THE INTERACTION (N = 30)

	N	Minimum	Maximum	Mean	Std. Deviation
Item1	30	5.00	5.00	5.0000	.00000
Item2	30	3.00	5.00	4.1333	.57315
Item3	30	3.00	5.00	4.4667	.62881
Item4	30	4.00	5.00	4.7000	.46609
Item5	30	3.00	5.00	4.4333	.72793
Item6	30	3.00	5.00	4.6000	.62146
Item7	30	3.00	5.00	4.6667	.62606
Item8	30	3.00	5.00	4.5333	.68145
Item9	30	3.00	5.00	4.5000	.57235
Item10	30	4.00	5.00	4.6667	.47946

2 Results for Research Question 2

Research question 2 focuses on finding out participants' attitude toward the design of the study. The results of post study survey regarding the design of the study are presented in Table 4.3. Since many comments made in the interviews are identical with the postings in the QQ Group Zone, hybrid comments on the design of the study are reported in Table 4.4. Meanwhile, the comments reported in Table 4.4 are the typical comments made by the participants, but not all of their comments.

TABLE 4.3
POST STUDY SURVEY RESULTS REGARDING THE DESIGN OF THE STUDY

	N	Minimum	Maximum	Mean	Std. Deviation
Item11	30	3.00	5.00	3.9667	.76489
Item12	30	3.000	5.000	4.4000	.62146
Item13	30	3.00	5.00	4.5000	.57235
Item14	30	3.00	5.00	4.4333	.56832
Item15	30	3.00	5.00	4.5667	.67891
Item16	30	2.00	5.00	4.2333	.81720
Item17	30	3.00	5.00	4.1333	.62881
Item18	30	3.00	5.00	4.4000	.67466
Item19	30	3.00	5.00	4.0333	.76489
Item20	30	4.00	5.00	4.4667	.50742
Item21	30	3.00	5.00	4.4667	.68145
Item22	30	4.00	5.00	4.6000	.49827

3 Results for Research Question 3

Research question 3 focuses on finding out whether learner performance improves after the 12 weeks' writing program in QQ in terms of linguistic accuracy and linguistic complexity. The descriptive statistics showing number of words, average word length, number of sentences, average sentence length (words), and diversity of content vocabulary are presented in Table 4.5.The results of number of simple or compound sentences, number of compound or complex sentences are reported in Table 4.6. The results of grammatical errors, spelling errors, and punctuation errors are reported in Table 4.7. All these data are produced by SPSS 11.0 for windows and Writer's Workbench 8.4.

Descriptive Statistics in Pre and Post Study Tests:

TABLE 4.5

	N	Minimum	Maximum	Mean	Std. Deviation
PreDoCV	30	.50	.85	.7190	.07581
PostDoCV	30	.36	.79	.6503	.10277
PreNoW	30	93.00	217.00	154.00	34.09419
PostNoW	30	106	245	176.36	32.08769
PreAWL	30	3.95	5.08	4.5240	.26932
PostAWL	30	4.19	5.60	4.8750	.37541
PreNoS	30	6.00	19.00	10.733	3.25823
PostNoS	30	6.00	20.00	12.500	3.32960
PreASL	30	9.4	27.1	15.031	3.99770
PostASL	30	10.40	32.00	14.890	4.44573

Note: PreDoCV represents diversity of content vocabulary in pre study test;
PostDoCV represents diversity of content vocabulary in post study test;
PreNoW represents number of words in pre study test;
PostNoW represents number of words in post study test;
PreAWL represents average word length in pre study test;
PostAWL represents average word length in post study test;
PreNoS represents number of sentences in pre study test;
PostNoS represents number of sentences in post study test;
PreASL represents average sentence length in pre study test;
PostASL represents average sentence length in post study test.

TABLE 4.6

	N	Minimum	Maximum	Mean	Std. Deviation
PreNoSoC	30	2.00	18.00	7.8667	2.84948
PostNoSoC	30	2.00	15.00	8.2333	2.87298
PreNoCoC	30	1.00	7.00	2.8667	1.75643
PostNoCoC	30	1.00	8.00	4.2667	1.98152

Note. PreNoSoC represents number of simple or compound sentences in pre study test;
PostNoSoC represents number of simple or compound sentences in post study test;
PreNoCoC represents number of compound or complex sentences in pre study test;
PostNoCoC represents number of compound or complex sentences in post study test.

TABLE 4.7

	N	Minimum	Maximum	Mean	Std. Deviation
PreNoGE	30	4.00	11.00	7.4333	1.63335
PostNoGE	30	1.00	5.00	3.0333	1.09807
PreNoSE	30	1.00	6.00	2.9333	1.22990
PostNoSE	30	.00	3.00	1.4333	.77385
PreNoPE	30	.00	5.00	3.2667	1.04826
PostNoPE	30	.00	2.00	.8333	.74664

B. *Discussion of the Major Findings*

Based on the results of the study, it can be determined that participants hold a very positive attitude toward learning

in QQ. In participants' view, QQ is a powerful and wonderful platform. It has enabled them to communicate with their classmates online, which is a new way for them to exchange their views and practice their English writing. Although they might encounter some problems during their study, they still apply many positive words to describe their learning experience in QQ, e.g., encouraging, fantastic, interesting, helpful and so on.

Learner performance has improved in terms of linguistic complexity and linguistic accuracy.

Linguistic complexity is deemed to be enhanced from the following items.

From table 4.5, it can be seen;

a) the minimum, the maximum, and the mean of diversity of content vocabulary in pre study test are .50, .85, and .7190 respectively, but .36, .79, and .6503 respectively in post study test;

b) the minimum, the maximum, and the mean of number of words in pre study test are 93.00, 217.00, and 154.0000 respectively, but 106, 245, and 176.3667 respectively in post study test;

c) the minimum, the maximum, and the mean of average word length in pre study test are 3.95, 5.08, and 4.5240 respectively, but 4.19, 5.60, and 4.8750 respectively in post study test.

d) the minimum, the maximum, and the mean of number of sentences in pre study test are 6.00, 19.00, and 10.7333 respectively, but 6.00, 20.00, and 12.5000 respectively.

e) the minimum, the maximum, and the mean of average sentence length in pre study test are 9.4, 27.1, and 15.0310 respectively, but 10.40, 32.00, and 14.8907in post study test.

From table 4.6, it can be seen:

f) the minimum, the maximum, and the mean of number of simple or compound sentences in pre study are 2.00, 18.00, and 7.8667, but 2.00, 15.00, and 8.2333 in post study test.

g) the minimum, the maximum, and the mean of number of compound or complex sentences in pre study are 1.00, 7.00, and 2.8667, but 1.00,8.00, and 4.2667 in post study test. Comparing the data from the post study test with that from the pre study test, participants' linguistic complexity is improved.

Please look at table 4.7, linguistic accuracy is counted as enhanced from the following aspects:

a) the mean number of grammatical errors in pre study test is 7.4333, but the mean number of grammatical errors in post study test is 3.0333;

b) the mean number of spelling errors in pre study test is 2.9333, but the mean number of spelling errors in post study test is 1.4333;

c) the mean number of punctuation errors in pre study test is 3.2667, but the mean number of punctuation errors in post study test is .8333. The data demonstrate that participants produce fewer errors in post study test. In this sense, participants' linguistic accuracy is improved.

1 Discussion of Findings for Research Question 1

In Table 4.1, the results indicate that most participants agree to item (2) "I know how to use the function of screen shot in QQ." This shows that QQ is easy to operate. When asked in the interviews on whether they have encountered any technical problems in their learning process or if they need helpers to train them about how to use QQ to conduct this writing program, all of the participants replied that there is no need to do that and they can complete the assignment smoothly. Evidently, participants are very familiar with QQ environment. They preferred the virtual environment than the real world. "I think it's more interesting less stressful than in classrooms." The participants also commented that they enjoy their taking with their partners, especially with those who have encouraged them and appraised them.

The results from the questionnaires and interviews indicate that QQ is a good tool to English online writing, which could be used and explored for educational purposes. Participants believe that chatting with native speakers in QQ is helpful for their writing. Some examples provide evidence that participants are likely to continue the talk and discuss with their partners, e.g., "I prefer to use QQ because my character is quite and a little bit shy and I don't want to talk with others face to face." and "I feel less nervous talking with my classmates and my teacher in English in QQ." These have confirmed some intrinsic motivation principles, as they are in need of approval and peer relationship (Reiss, 2000).

2 Discussion of Findings for Research Question 2

Participants' attitudes toward the design of the learning program in terms of language activities and tasks implemented in QQ are very positive. They comment that writing in English using QQ is interesting and helpful to enhance the English writing.

According to the results of the post study survey, among the items concerning participants attitudes towards the study, item (13) "The tool chosen by the researcher is suitable for English writing" has received the high mark with a mean of 4.5000 and a standard deviation of 0.57235 and item (15)"The online discussion is helpful to broaden my view." has also got a high mark with a mean of 4.5667 and a standard deviation of 0.67891. Since a small standard deviation indicates that the results are clustered closely around the mean, this suggests that most participants shared a similar fondness for the design of the English writing program in QQ.

All means are above 4.00, except item (11) "The writing topics are interesting and practical." with the mean of 3.9667, still indicating that most of the participants hold positive attitude toward the writing topics. In addition, comments made in the post study survey also indicate their positive attitudes, e.g., "The topics are those that are happening around us and the online discussion is helpful to English writing." and "I have learned a lot from this discussion and I am also look forward to more discussions like this in the future."

3 Discussion of Findings for Research Question 3

Research question 3 focuses on learner performance in QQ. Results as presented in Table 4.7 show that learners' language performance in terms of accuracy has improved. The average grammatical errors identified in posttest have significantly decreased. The minimum number of errors is down to 1, and the maximum number of errors is down to 5. However, in pretest, the corresponding numbers are 4.00 and 11.00 respectively. The means also demonstrate that average grammatical errors in posttest are 3.0333, but nearly 8 in pretest.

From the results of Table 4.5, it is seen clearly that:

a) The diversity of content vocabulary in post study test has decreased a lot. The minimum of diversity of content vocabulary in pre study test is 0.50, the maximum is 0.85, and the mean is 0.7190. But in post study test, the corresponding numbers are 0.36, 0.79, and 0.6503.

It is seen that the mean of diversity ratio is 65%, still above 59%. According to Writer's Workbench 8.4's suggestions, if the Diversity ratio is above 59%, the content of the composition does not seem to center on a subject that is adequately developed with clearly identified topics. Therefore, the writer whose diversity ratio is above 59% needs to be certain that he or she has the subject and topics clearly in mind and that the words that identify the subject and topics occur frequently enough to keep the reader aware of those points.

b) the minimum, the maximum, and the mean of number of words in pre study test are 93.00, 217.00, and 154.0000 respectively, but 106, 245, and 176.3667 respectively in post study test. All the corresponding values have increased.

c) the minimum, the maximum, and the mean of average word length in pre study test are 3.95, 5.08, and 4.5240 respectively, but 4.19, 5.60, and 4.8750 respectively in post study test. All the corresponding values have increased.

d)the minimum, the maximum, and the mean of number of sentences in pre study test are 6.00, 19.00, and 10.7333 respectively, but 6.00, 20.00, and 12.5000 respectively. It is obviously seen that in post study the participants' maximum and the mean of number of sentences have increased

e) the minimum, the maximum, and the mean of average sentence length in pre study test are 9.4, 27.1, and 15.0310 respectively, but 10.40, 32.00, and 14.8907in post study test. In pre study test, the mean of average sentence length is 15.0310, while in post study, it is 14.8907. It seems that the participants' performance has not enhanced in this aspect. But please look at item b), the mean of number of words in pre study test is 154.0000, but 176.3667 in post study test. And the researcher discovers that students pay more attention to the use of the punctuation and make more sentences in post study when the total number of words stays the same.

From the results of Table 4.6, it is seen clearly that:

f) the minimum, the maximum, and the mean of number of simple or compound sentences in pre study are 2.00, 18.00, and 7.8667, but 2.00, 15.00, and 8.2333 in post study test.

g) the minimum, the maximum, and the mean of number of compound or complex sentences in pre study are 1.00, 7.00, and 2.8667, but 1.00,8.00, and 4.2667 in post study test. Comparing the data from the post study test with that from the pre study test, participants' linguistic complexity is improved.

Generally speaking, linguistic complexity of the participants has improved significantly.

C.   Strengths and Potentials of QQ

According to the observation of the study process and the results of data analysis, the researcher perceived some strong points and the possibilities of implementing English writing program in QQ. This section is presented in three parts: perceived strengths, perceived potential as a supportive learning environment, and perceived problems.

1 Perceived Strengths

This study suggests that QQ is able to create a relaxing and effective learning environment for English learners. Such a relaxing learning environment is attributed to the practical functions of QQ where interactions are conducted easily. In the interview, the participants say that learning in QQ makes them feel less anxious and they really learned something from it.

Another strong point of English writing in QQ is that the learning process is easy-operated and meaningful. Some participants asserted that, "I look forward to the next week's communication" and "I really appreciated the feedback from my teacher and my classmates."

2 Perceived Potentials as a Supportive Learning Environment

To investigate the potential of implementing QQ into English learning in China, two aspects may be considered: technology readiness and learner attitude. In terms of technology readiness, two more aspects may be counted. One is students' basic computer knowledge and Internet access ability; another is students' operating skills of QQ. In the pre study survey, the questionnaire that focuses on students' technology readiness on basic operations of computer is designed. The results demonstrated that Chinese students have the basic computer operating skills, e.g., how to save files, how to use chatting tools, and how to download files. While in the post study survey, there are seven items designed to examine participants' technology readiness for using QQ. All the seven items received a mean of above 4.00, suggesting that participants have the basic operating ability of QQ.

Participants also hold relatively positive attitude toward their learning process in QQ. This could be explained from three aspects: the relaxing environment provided in QQ; the feedback got form teachers almost immediately; and interesting discussion topics for their essays.

3 Perceived Problems

One of the most important problems perceived during the study are the lack of personal computers needed by the participants. They have to go to the public computer room to communicate with their classmates and foreign teachers and to write the essays. Sometimes, the computers there fail and they lose everything they have done. That is frustrating. Another problem is that each fifteen-student group is very big in quantity, sometimes it will rouse confusion so that you don't know who is talking to whom. In the future study, these problems should be solved properly.

The strengths of learning in QQ are that, QQ is a good stage which is able to create a relaxing and interesting atmosphere for English learners and participants gain more confidence in English writing after their study. Major problems perceived by the participants in the study are the participant lacking personal computers which brings about much inconvenience and the discussion group being too big. From the analysis of learner technology readiness and attitude, it could be found that QQ has the potential to be a supportive learning environment.

V. CONCLUSIONS

The IMs, QQ can provide learners' with many useful functions, such as the chatting stage, the audio and video functions. Findings of this study not only demonstrate English learners' positive attitude toward the design of the program, the effectiveness of interaction and the communication produced in QQ, but also detect positive effects on participants' language performance in terms of linguistic accuracy and complexity.

The findings of this study on the use of QQ for English writing provide several pedagogical implications. The participants in the study show a highly positive attitude toward the arrangement of all the learning activities and the interaction with native speakers online using QQ. They appreciate it a lot for their classmates' assessment on their essays and for the feedback and suggestions from the teachers. This may enhance English learners' interest in using the target language for communication. In addition, the results also indicate that interacting with native speakers could be very beneficial to English learners in improving their language performance in terms of accuracy and complexity.

Small size of participants is one limitation of this study. Due to the limitation of resources, such as equipment and financial cost, it is not feasible to conduct a large-scaled study. This study has 30 English learners from a Chinese college university.

Many Chinese are familiar with QQ software, but there are rare people who combine the English writing with the use of QQ, for most people, it is only one of the chatting tools. QQ represents a new technology that may afford Chinese English learners the opportunity to practice English writing online instead of hand-writing in a traditional way. At this point, issues of design are worthy of attention. With the further exploitation of computer and Internet technology, computer aided English teaching is an inevitable trend. Traditional teaching methods will be challenged. However, for Chinese teachers and EFL students, this is also a valuable opportunity.

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