CHAPTER 5

FINDINGS AND CONCLUSION

5.0 Introduction

This chapter aims to provide an overview of the research study with an explanation of the findings resulting from the analyses of data, with reference to each of the research questions laid out by the study and other significant findings of the study. While the study has been conducted in a Hong Kong context, the possible implications of the study for the teaching of English with the help of technology in general, and for research in the areas of technology-enabled language learning, will also be considered. Finally, the chapter summarizes the limitations and achievements of the study and makes suggestions for further research.

5.1 Overview of the Study

In an effort to investigate the effectiveness of using technology in language programs to develop the written communication skills of ESL learners at the tertiary level, a technology-enabled language enhancement program was designed, developed, and administered to a group of tertiary level ESL

students. The study was a one group pre-test post-test experimental research design. The participants of the study constituted an intact group of first-year university students who took the common English course, English for Communication II in the second term of the academic year at Lingnan University in Hong Kong, as a required course on their degree programs. A total of 41 students participated in the study. Twenty one were females and twenty were males within the age group of eighteen to twenty three years with the average age being twenty years. Students belonged to various degree programs mainly classified into Business Administration majors and Arts or Social Sciences majors. Of these participants, twenty six participants were BBA majors and fifteen were Arts or Social Sciences majors. The technology-enabled language enhancement program was administered to the participants during the second term of the academic year 2009-2010 to students undertaking the English for Communication II course over a period of 10 weeks. A pre-test was administered to the participants before they undertook the program and a post-test was given to them at the end of the program. Finally, as a means of evaluating effectiveness of the technology-enabled language enhancement program, a survey in the form of an online questionnaire was administered to the participants of the study. Two null hypothesis that guided the research.

5.2 Major findings

The major findings of the study could be established through the rejection of the two null hypotheses that guided the study. These findings also aim to answer the first two research questions set out by the study.

5.2.1 First hypothesis

In order to answer the first research question of the study which asked whether the incorporation of technology in language learning programs was effective in enhancing written communication skills of ESL learners at the tertiary level, the first hypothesis was used. The first hypothesis addressed finding differences between the mean scores on the pre-test and post-test of the students who underwent the technology-enabled language enhancement program to develop written communication skills. The results from the analysis of the pretest and post test scores established that there was a significant difference between the overall mean scores on the pre-test and post-test of the students who underwent the technology-enabled language enhancement program to develop written communication skills. A T-test analysis was carried out to obtain details of overall differences in the pre-test and post-test scores. The T-value obtained from the analysis of the overall mean scores of the pre-test and the post-test was 5.694 with a P-value or

value of significance was 0.000, at the level of 0.05. The mean of the paired difference was 5.35366 which suggested that the overall average score of the post-test was high compared to the pre-test score. Thus, the findings could determine that the significant differences found in the overall means scores of the pre-test and the post-test were not due to chance but due to the treatment, that is, due to the technology-enabled language enhancement program. As a result, the analysis obtained could be useful in rejecting the first null hypothesis of the study thereby answered the first question laid out by the research study.

5.2.2 Second hypothesis

In order to answer the second research question of the study which asked whether the incorporation of technology in language learning programs effective in enhancing various components within written communication of ESL learners at the tertiary level, the second hypothesis was used. The second hypothesis addressed finding differences among the mean scores on the pre-tests and post-tests of the students who underwent the technology-enabled language enhancement program to develop written communication skills in the various components of written communication skills. The results from the analysis of the pretest and post test scores established that there was a significant difference among the mean scores on the pre-tests

and post-tests of the students who underwent the technology-enabled language enhancement program to develop written communication skills in the various components of written communication skills. The ANOVA was carried out to obtain details of overall differences among various components of the pre-test and post-test scores. The F-value obtained from the analysis of the overall mean scores of the pre-test and the post-test was 4.647, with a P-value or value of significance was 0.000, at the level of 0.05. The findings could determine that the significant differences found in the overall means scores for various components of the pre-test and the post-test were not due to chance but due to the treatment, that is, due to the technology-enabled language enhancement program. Thus, the analysis was useful in rejecting the second null hypothesis of the study and as a result, answered the second question laid out by the research study.

5.3 Other significant findings

While the study established the technology-enabled language enhancement program was effective in developing overall as well as various components of written communication skills of ESL at tertiary level, the study also investigated whether the program was equally effective for both male and female participants. The study also tried to investigate the effectiveness of

the program on participants belonging to various academic disciplines. This analysis aimed to answer the other research questions laid out by the study.

5.3.1 Overall scores for male and female participants

In an effort to address the third research question of the study, an investigation of whether the technology-enabled language enhancement program was equally effective for both male and female participants of the study was carried out.

Details from the test scores for both male and female participants were collected. The difference in the means score of the pre-test and post-test for males was 5.65 and for females was 5.07. A T-test analysis was carried out to obtain details of differences in relation to gender, which showed a P-value of t-test with unequal variance was 0.766, which was greater than 0.05. This meant that there was no significance difference in mean score of pre-test and post-test with respect to gender at 5% level of significance. As a result, the finding suggested that there was no significant difference to be found in the mean scores of the pre-test and the post-test with respect to gender. Thus, it could be concluded that the technology-enabled language enhancement program was equally effective on male participants as well as female participants. Most importantly, the analysis also confirmed the finding that

the significant difference in the overall mean scores of the pre-test and post-test, was not due to any other factor such as gender, but due to the technology-enabled language enhancement program.

5.3.2 Overall scores for various program majors

In an effort to address the fourth research question of the study, an investigation of whether the technology-enabled language enhancement program was effective among various academic disciplines of the study was carried out.

Details collected from the test scores revealed that the difference in the means score of the pre-test and post-test for BBA majors was 4.50 and non-BBA was 6.83. The T-test analysis in relation to degree program major showed that the P-value or the significance value was 0.589 which is greater than 0.05. This suggested that there was no significance difference in mean score of pre-test and post-test with respect to degree program major at 5% level of significance. As a result, the finding suggested that since there was no significant difference to be found in the mean scores of the pre-test and the post-test with respect to degree program major. It could be concluded that the technology-enabled language enhancement program had equal effect on BBA majors as well as Non-BBA majors. Most importantly, the analysis

also confirmed the finding that the significant difference in the overall mean scores of the pre-test and post-test, was not due to any other factor such as program major, but due to the technology-enabled language enhancement program.

5.3.3 Scores of various components for male and female participants

In addition to finding differences in overall scores, an analysis of scores of various components of written communication among male and female participants was also carried out. An ANOVA was used to obtain details of these differences. The F-value obtained from the analysis of the mean scores of the pre-test and the post-test for males was 2.781 with a P-value of 0.021 and for females was 3.406 with a P-value of 0.007. This meant that there was a significant difference among means scores of various components of the pre-test and post-test for both male and female participants. Thus, the findings could determine that the significant differences found in the means scores for various components of the pre-test and the post-test in relation to gender were not due to chance but due to the treatment, that is, due to the technology-enabled language enhancement program. Thus, it could be concluded that while overall significant differences among various components of written communication were found, there were also

significant differences among the various components of written communication for both male and female participants.

5.3.4 Scores of various components for participants from different program majors

Moreover, an analysis of scores of various components of written communication among participants of different program majors, that is, the BBA and non-BBA majors was also carried out. An ANOVA was used to obtain details of these differences. The F-value obtained from the analysis of the mean scores of the pre-test and the post-test for BBA majors was 4.003 with a the P-value of 0.002 and for non-BBA majors was 1.241 with the P-value of 0.297. This meant that there was a significant difference among means scores of various components of the pre-test and post-test for BBA majors but, there was no significant difference among means scores of various components of the pre-test and post-test for non-BBA majors. Thus, the findings could determine that the significant differences found in the means scores for various components of the pre-test and the post-test for the BBA majors were not due to chance but due to the treatment, that is, due to the technology-enabled language enhancement program. On the other hand, since the P-value for non-BBA majors was more than 0.05, the findings could determine that there was no significant differences found in the means

scores for various components of the pre-test and the post-test for the non-BBA majors.

A possible explanation for this could be the academic needs of a particular discipline and the timing of the administering of the technology-enabled language enhancement program. Non-BBA participants belong to the Arts or Social Sciences stream, with majors in History, Philosophy, Cultural Studies, Visual Studies, or Translation Studies. The nature of assignments or assessments for participants from these majors is usually in the form of 5000 to 8000-word written essays or reports where considerable amount of writing skills are required. On the other hand, the nature of assignments or assessments for the BBA participants is usually group or individual presentations where the speaking skills are used. The amount of writing done by BBA participants is therefore less compared to the Arts or Social Sciences participants. The time when technology – enabled language enhancement program was administered to the participants, the Non-BBA or Arts and Social Sciences majors had already come in with an experience of a semester of utilizing various writing skills for their assignments or assessments. However, the BBA majors had come in with very little experience of writing for their assignments or assessments. Thus, while the program may have equally effective on participants from different majors, the differences in various components of written communication could be

seen for the BBA majors. The finding once again confirmed that the technology-enabled language enhancement program was effective in developing written communication skills.

5.3.5 Differences through post-hoc analysis

While the findings resulting from the ANOVA was significant is establishing that there were significant differences among the overall mean scores of the students who underwent the technology-enabled language enhancement program to develop written communication skills of the various components of written communication skills, in order to find out where the differences were, pairs of data sets of various components of written communication were compared through the means of post-hoc tests. Depending on the value of significance in the analysis of variance, various post-hoc tests, such as, the Tamhane, Tukey LSD, and Tukey HSD were conducted in order to find out differences among the various components of written communication skills.

a) Differences in overall scores of various components

First of all, the details showing the highest difference in the overall mean scores could be noted in the unity and cohesion component which was 1.95,

followed by the logical arrangement of sentences component which was 1.60. This suggested that there had been an overall improvement more in the unity and cohesion component followed by the logical arrangement of sentences component compared to the other components of the tests.

To also note where the significant differences were among the overall mean scores, the details revealed that the difference in the mean value of the unity and cohesion component and the grammar and error correction component was 1.51220 with a P-value of 0.015 and the difference in the mean value of the unity and cohesion component and the vocabulary component was 2.29268 with a P-value of 0.017. This suggested that the unity and cohesion component had a significantly higher mean score compared to the grammar and error correction and the vocabulary component.

b) Differences in scores of various components for males

The details showing the highest difference in the mean scores obtained by males could be noted in the logical arrangement of sentences component which was 2.33 followed by the paragraph writing component which was 1.50. This suggested that scores for males improved in the logical arrangement of sentences component.

To investigate where the significant differences were among the mean scores of the male participants, details revealed that the difference in the mean value of the logical arrangement of sentences component and the vocabulary, grammar and error correction, and summary writing components was 2.92500, 1.67500, and 1.80000 with P-values of 0.01, 0.05 and 0.035 respectively. This suggested that the logical arrangement of sentences component had a significantly higher mean score compared to the vocabulary, grammar and error correction, and summary writing components for male participants.

Moreover, the details presented for males also revealed that the difference in the mean value of the unity and cohesion component and the vocabulary component was 1.85000 with a P-value of 0.03. This suggested that the unity and cohesion component had a significantly higher mean score compared to the grammar and vocabulary component for male participants.

Thus, the findings for males suggested that the differences in their scores were in tune with the differences in the overall scores with significant differences seen in the logical arrangement of sentences and unity and cohesion components compared to other components.

c) Differences in scores of various components for females

The details showing the highest difference in mean scores obtained by females could be seen in the unity and cohesion component which is 2.62 followed by paragraph writing component which is 0.98. The scores for females improved in the unity and cohesion component compared to other components.

The details presented for females revealed that the difference in the mean value of the unity and cohesion component and the grammar and error correction, summary writing, and paragraph writing components were 2.38095, 2.19048, and 1.64286 with P-values of 0, 0.006, and 0.001 respectively. This suggested that the unity and cohesion component had a significantly higher mean score compared to the grammar and error correction summary writing, and paragraph writing components for female participants.

Thus, the findings for females suggested that the differences in their scores were in tune with the differences in the overall scores with significant differences seen in the unity and cohesion component compared to other components.

Most importantly the findings also suggested that while scores for males improved in the logical arrangement of sentences component, and the scores for females improved in the unity and cohesion component compared to other components, the second best improvement of scores could be seen in both males and females in the paragraph writing component.

d) Differences in scores of various components for BBA majors

The details showing the highest difference in the mean scores for BBA majors could be seen in the unity and cohesion component which was 1.85 followed by logical arrangement of sentences which is 1.60. This suggested that BBA majors had improved scores in the unity and cohesion component followed by the logical arrangement of sentences component compared to the other components.

The details presented for BBA majors revealed that the difference in the mean value of the unity and cohesion component and the vocabulary and summary writing components was 2.46154 and 1.86538 with P-values of 0.031 and 0.05 respectively. This suggested that the unity and cohesion component had a significantly higher mean score compared to the vocabulary and summary writing component for BBA majors.

Thus, the findings for BBA majors suggested that the differences in their scores were in tune with the differences in the overall scores with significant differences seen in the unity and cohesion component compared to other components.

e) Differences in scores of various component for non-BBA majors

Similarly, the highest difference in mean values for non-BBA majors could be seen in the unity and cohesion component which was 2.13 followed by logical arrangement of sentences which was 1.60. This suggested that non-BBA majors had improved scores in the unity and cohesion component followed by the logical arrangement of sentences component compared to the other components.

Thus, the findings for non-BBA majors suggested that the differences in their scores were in tune with the differences in the overall scores with significant differences seen in the unity and cohesion component compared to other components.

Thus, the significant findings of the study revealed that while the significant differences could be noted among various components of the written communication skills, the highest difference could be seen in the unity and

cohesion component. This suggested that a marked improvement was noticed in the unity and cohesion component of the participants' written communication skills.

5.4 Findings from questionnaire for program evaluation

While the analysis of the pre-test and post-test scores measured and presented the findings on the enhancement of written communication skills of participants, an evaluation of the effectiveness of the technology-enabled language enhancement program was also conducted in the form of an online questionnaire sent out to the participants. The evaluation of the technology-enabled language enhancement program clarified how the participants perceived their experiences of the usefulness of technology in enhancing their written communication skills in English. The overall evaluation of the program revealed that there was a generally high degree of agreement for the various items on the questionnaire. The survey had a response rate of 82% with 37out of 41 participants responding to the survey. The findings from the questionnaire have been presented in accordance with responses elicited on various aspects and features provided by the technology-enabled language enhancement program could be noted as below.

Participants of the study generally enjoyed the program overall with which could be reflected with the mean score of 3.59.

5.4.1 Comprehensibility

The comprehensibility component of the questionnaire meant that the participants were able to easily follow the instructions and questions given in different sections of the units in the program. There was a high degree of agreement for the comprehensibility of various elements of the program with a mean score of 3.676. Moreover, majority of the participants were able to incorporate all the requirements of each of the activities quite easily, which again showed a higher degree of comprehensibility of the program, which also added to the enjoyment of the program.

5.4.2 Ease of access

It has been noted that easy accessibility and usability of technology in language programs could create a learning space that could move students from a closed and controlled learning environment to a more open, free, and authentic learning environment (Hayes, 2009). The accessibility component of the survey showed that most students accessed the program from more than one place which could be seen from mean score of 1.405. The

technology enabled language enhancement program was accessed mostly by the participants mostly from their hostel rooms, followed by the computer lab on campus, home, and finally, from any other place on campus or other portable devices used elsewhere. This showed that the students had no difficulty in terms of accessing the program at various venues which provided an added advantage to the program in terms of easy accessibility. Moreover, the time frame for the task completion was concerned the participants also responded positively with a mean score of 3.46.

5.4.3 Use of Resources

The use of interesting and challenging materials proved to have an effect on the interest and enjoyment of learners. To measure the interest and enjoyment of using various materials, the results showed that students enjoyed all the kinds resources used during the activities. Thus, the resource enjoyment component showed that most students enjoyed more than one resource made available in the program with a mean score of 1.378. The resources within technology-enabled language enhancement program that were enjoyed the most were the TV or movie related websites, followed by the travel websites, then the online news articles, then the current issue audio link and lastly the controversial issue video link. Additionally, when asked about their comfort and other aspects for using the various resources

in the program, participants showed a high degree of agreement with a mean score of 3.50. A range of opportunities for autonomy in language learning could be provided by technology and this could be a key factor for students to engage in more language enhancement activities. This could be seen from the results of the features of the program where students were required to research materials on their own, thereby giving them an opportunity to take control and responsibility of their own learning. The findings indicated that most participants were not only comfortable with but also enjoyed the process of searching for information and resources such as online news reports, videos, etc. that were required for the different activities and tasks in the program. Moreover, most participants felt that the resources used in the activities provided them with an opportunity to enhance my English

language proficiency. This showed that a provision for web-based autonomy and the kinds of interesting, stimulating, and challenging resources used in the program have been a positive factor for students to work on their language skills.

5.4.5 Interactivity and Feedback

The attitudes of participants towards the interactivity and feedback feature of the program, participants also showed a high degree of agreement for the interactivity and feedback component of the program with a mean score of

3.4125. For this, participants enjoyed reading and reviewing what their classmates had posted onto the online discussion forum. While most participants felt that the feedback that they received from their classmates was useful in improving their work before submission, most of them also incorporated the feedback received from their classmates into their work online as required. Thus, the features of the program that provided opportunities for interacting, discussing, providing and incorporating review and feedback ascertained themselves as important factors in language enhancement activities.

5.4.6 Self-Perception

Along with this, participants also showed a high degree of agreement for the self-perception of language achievement item of the program with a mean score of 3.70. This showed that students therefore, ended up becoming confident about their writing. Again, this showed that the sense of self-achievement was fairly high in students after they took the program.

5.4.7 Attitudes towards Technology

Finally, participants also showed a high degree of agreement for the attitudes towards technology component of the program with a mean score

of 3.59 and a standard deviation of .852. The participants' attitudes towards technology were noted through comfort and enjoyment with using different forms of technology for studying English. Moreover, the majority of the participants felt that the technology-based activities in the program provided me with an opportunity to enhance my Writing Skills in English and that they would like to continue using various forms of technology to enhance my English Language Skills. This in itself was a positive sign whereby, the positive potential of technology could be channelled and incorporated into the language learning programs or language enhancement programs in the future.

5.4.8 Correlations between various components of questionnaire

While the descriptive findings obtained from the survey showed were useful in a obtaining a positive evaluation of the technology-enabled language enhancement program, a detailed evaluation of the relationships between various components of questionnaire through the Pearson's product-moment correlation analysis was also conducted. Significant positive correlations were found between the several components of the questionnaire.

First of all, participants who enjoyed the technology enabled language enhancement program overall, also enjoyed several individual aspects of the

program such as resource enjoyment, interactivity and feedback, self-perception, and attitudes towards technology. This showed that the overall enjoyment of the program could also be reflected in the enjoyment and usefulness of various individual aspects of the program. Secondly, it was noted that the participants' attitudes to technology highly correlated with several other components such as comprehensibility, resource enjoyment, and the interactivity and feedback components. This could be seen as positive in the sense that a positive attitude to technology also brought in positivity for individual elements and consequently the overall program. Thirdly, significant correlations were found between comprehensibility and other aspects such as ease of access, time, and resource enjoyment, and interactivity and feedback components. This meant that when the learners find the program comprehensible, they also are able to enjoy the other features of the program. In addition to a correlation being seen between resource enjoyment and three aspects of the program, that is, overall program enjoyment, attitudes towards technology, and comprehensibility, there were significant correlations found between resource enjoyment and the interactivity and feedback component. This meant that students who enjoyed the process of searching and using various resources, also enjoyed sharing and participating in collaborative tasks.

Thus, the detailed evaluation of the program through the questionnaire resulted in positive findings which in turn contributed to the effectiveness of the technology-enabled language enhancement program.

5.5 Implications

The research study established that the technology-enabled language learning program was effective in developing written communication skills of ESL learners at the tertiary level. The study found that the program provided students with an opportunity to experience language learning through technology. The effectiveness of the program could be seen in the achievement of students' performance in written communication skills. Moreover, the success of the program could also be seen through the positive response towards the evaluation of the technology-enabled language enhancement program.

On the whole, the study could be viewed as providing new directions in the study of role of technology-enhanced language learning in general. While the study focuses on the role that technology-enabled language learning designs could play in the enhancing written communication skills, the study could also provide guidelines for language teachers in the designing

language programs with by incorporating technology for enhancing other language skills such as speaking, reading, and listening.

5.6 Delimitations

Every study may contain some delimitation that may or may not have affected the outcome of the study. As with any study of this nature, the present study has some limitations which may limit the interpretability and applicability of its findings.

First of all, the groups participating in the study were convenience samples of intact classes of English for Communication II students, which were taught by the researcher who was also the instructor of the course. Thus, the randomization of sample selection could not occur. As a result, the generalization of information provided by the study may be limited to written communication skills of tertiary level students.

Another delimitation of the study's approach could be that the study could be taken as mainly quantitative with the analysis of scores and evaluation of the online questionnaire. Although the responses to the questionnaire could be taken as qualitative and useful in evaluating technology-enabled language enhancement program, more qualitative data in terms of participants'

interviews and open-ended comments would have helped to understand particular aspects of the technology-enabled language enhancement program.

5.7 Suggestions and recommendations

An analysis of the results on the participants' performance through the test scores suggest that the technology-enabled language enhancement program was effective in developing overall as well as various components of written communication skills of ESL learners at the tertiary level. Moreover, as responses to the survey resulted in an overall positive evaluation of the technology-enabled language enhancement program, the findings suggest that the use of technology could prove to be an important factor in language enhancement. An analysis of the results of the program evaluation shows that flexible delivery and the easy accessibility could provide potential opportunities for language learning. In addition, the evaluation results also show that the features such as comprehensible input, web-based autonomy, variety of interesting and stimulating resources, interactivity and feedback, could also provide an environment conducive for language learning and enhancement. Moreover, the overall perception of students for the program, their sense of achievement, their attitudes towards using technology for language enhancement and their attitudes towards the future use of

technology in language programs in only indicative of the fact that technology could be a useful tool in subsequently enhancing language proficiency.

Language programs could be designed and structured around features endorsed by researches most importantly features that could be easily offered by technology. Features such as easy accessibility, easy usability, a degree of autonomy, resource variety, authenticity, cognitive familiarity, sharing, interaction, and opportunities for self-improvement provided by technology could be incorporated into the language program designs. Consequently, the design and development of language programs with the optimum utilisation of the affordances made by technology could prove effective in enhancing language skills of the learners.

5.8 Conclusion

To conclude, the research study was significant in establishing that the incorporation of technology could provide innovative and creative ways of nurturing student learning potential and enhancement of language skills. As a result, the study advocated that the potential of various technologies could definitely be tapped in order to provide new ways of configuring and accessing language learning opportunities.