CHAPTER FIVE

SUMMARY

5.1 Introduction

The main purpose of this study was to ascertain the effectiveness of CAI method in improving academic achievement in Geography. It also investigated how gender influenced achievement and students’ perception of CAI.

The researcher chose a geographical topic for this CAI study. It involved 60 Form Four students divided into two groups, 30 for CAI Group and the rest for Non-CAI Group. The 60 students were first selected from 102 students who had sat for the Pre-treatment Test.

The CAI Group attended six CAI sessions under the guidance of a senior Geography teacher of a secondary school in the District of Temerloh, Pahang. They learned using an IMI software created by the researcher through computers. The Non-CAI Group was also being taught by the same teacher on the same topic but using the traditional classroom method.

Before the CAI treatment, the 30 CAI students answered the Questionnaire items to assess their perception of computers prior to the session. After the CAI treatment and the traditional classroom treatment, the 60 sample subjects sat for the Post-treatment Test to assess the gain. The CAI Group also answered the questionnaire items again to assess the changes in perception.
5.2 Discussions

5.2.1 CAI Achievement

The t-test analyses on mean achievement Gain scores of both groups were not significant at $p < .05$. This might be due to the small sample size. However, the Gain score of the CAI Group in the Post-treatment Test was higher than the score of the Non-CAI. This shows that CAI method was better than the traditional classroom method in improving academic achievement in Geography.

The not significant finding on effectiveness of CAI to achievement seems to be in contrast with many researchers (Thomas Kok, 1989; Brush, 1997; Mevarech, 1985; Zoraini, 1994; Kulik, Kulik and Cohen, 1980). The present finding on achievement is similar to what Mevarech and Sigal (1989) had obtained. This could have been due to a smaller sample size of this CAI study. Kok (1989), for example, engaged a bigger sample of 192 subjects in his CAI study.

5.2.2 Influence of Gender on Achievement

Each group had performed better compared to their earlier Pre-treatment achievement scores. Girls' performance was better than boys in both groups for the Pre, Post and the Gain. The girls' achievement in the CAI group was also higher than the boys in the CAI Group. Their mean Gain score were 2.83 and 1.37 respectively. Therefore, girls
achieved better than boys although t-test analyses were not significant at $p < .05$. A significant difference can possibly be obtained if a larger sample size was used.

5.2.3 Changes in Students’ Perception Towards CAI

This study also shows that the students developed positive perception towards the use of computers in learning. The t-test analyses showed that their mean perception scores in the Pre-CAI and Post-CAI differed significantly (6.90 compared to 23.80) at $p < .05$. By comparing the mean perception scores of boys and girls, girls’ score was higher (25.33) than the boys’ (22.27). However, t-test results were not significant at $p < .05$. Hence, boys’ perception towards CAI was as good as the girls’ although the girls’ mean perception score was higher.

The finding on students’ increased positive perception towards CAI is similar to what had been found by other researchers (Kok, 1989; Tham, 1995; Brush, 1997; Nickell, 1987; Fowler, 1983). The results of this study prove that teaching using computers could enhance students’ perception of CAI.
5.3 Limitations of the Study

After confirming the findings of this study, a few limitations of this study are identified as follows:

1) Some of the interactive buttons in the IMI software, may have some influence in achievement. This was indicated in the result of the Post-CAI scores where the CAI Group did not improve as much as expected. A few of them who did not improve, also indicated that perhaps they just looked through the notes of the program and answered the questions without any deep thinking. Perhaps, they just clicked the mouse at those interactive buttons as they liked. This aspect could not be controlled by the program and it might influence students' achievement.

2) The difficulty index of the two achievement tests may not possibly be the same. If the Pre-CAI Test was set too difficult to answer, many students would not qualified to be selected. If the Post-CAI Test was set easier than the earlier one, then the students' achievement scores would be significantly higher. Although both tests in this study consisted similar items, but the difficulty index of the tests might influence the students' achievement score.

3) The questionnaire to assess students' perception of CAI was also not easy to get reliable results. The students were given three choices (Not Sure, Agree and Strongly Agree). Their perception of CAI might be influenced by their peers.

4) The sample size of 30 each for both groups was relatively small. The small sample size has an influence on t-test analyses. A not significant result might be significant for a big sample.
5.4 Conclusions

The conclusions for this study are listed as the following:

1) It was found that CAI method improved students' gain after the CAI treatment. However, *t*-test analyses on the achievement scores of both groups were not significant.

2) Girls' mean achievement scores were higher than the boys', but the *t*-test analyses did not show significance. It is therefore concluded that girls' performance in the achievement tests was as good as the boys' in this study.

3) The study found that teaching using computers enhanced students' perception of CAI. The *t*-test analyses of comparisons of mean perception scores for both groups were significant. It indicates that students had positive perception of learning using computers.

4) It is also concluded that boys and girls did not differ in perception towards CAI. Although girls obtained higher mean perception scores than boys, but *t*-test analyses did not show significance. The results suggest that boys' perception towards CAI was the same as girls'.

In conclusion, it can be said that further studies on CAI should be done with larger samples. As mentioned earlier, the findings that were not significant might be significant if the sample size was big enough.
5.5 Implications

Based on the findings of positive students' perception towards CAI in this study, it is recommended that more parents equip their homes with personal computers (PC) for their kids to learn using PCs. It will be a failure for parents to deprive their kids of this need to gather more learning materials from sources like Internet.

Besides that, the Government of Malaysia, especially the Ministry of Education should also equip more schools with computer laboratories for the students' advantages. The Ministry's plan to create ninety Smart Schools in 1999 is a commendable move to enable students to learn using computers.

5.6 Recommendations for Further Research

This study has some short-comings such as the small sample size and the limited CAI sessions (only 6 sessions). Based on the results of this study, the following recommendations are suggested as follow:

1) Future CAI researches should focus on bigger sample size. However, this is usually limited to the availability of computers in the computer lab. It is suggested that the effects of students learning in pairs or threes to one unit of computer to be re-examined again so that more students can participate in CAI in the future.
2) Researchers should also focus on areas of motivation where students use computers as a learning tool. Most students nowadays play computer games with PCs and it is difficult to contain their motivation in learning if the learning materials are not interesting enough. Researches should focus on how to increase motivation with IMI softwares. IMI softwares should give more learning activities that motivate the students to improve academically.

3) It is also recommended that further researches are needed to find out the real factors that determine the effectiveness of CAI on achievement. The questions that need to be addressed are the motivation level of the students and the quality of the IMI softwares.