CHAPTER V
FINDINGS, CONCLUSION AND SUGGESTIONS

5.1 MAJOR FINDINGS

Following are the findings that are summed up according to the objectives of the study.

The study examined the attitude of secondary students towards computer education in relation to academic achievement.

Objective 1: To find out the attitude of students towards computer education with accessibility of computers at home.

Findings 1: There is a significant difference on the accessibility of computers at home as a factor in the attitude of students towards computer education. Thus, this indicated that students in Dimapur town having accessibility of computers at home have a positive to computer education. This finding falls in the same line with that found by Spiezia (2011). It was assessed whether the use of ICT has an effect on academic performance using Programme for International Student Assessment (PISA), 2006. He found a positive effect of the frequency of computer use on the final scores in science. But what was most interesting was that the size of the effect depended on the place where the teenager had access (home or school), being higher the marginal effect of having computer at home.

However the study conducted by Mukadder Baran, Medine Baran & Hulya Aslan (2011) on high school students attitude towards computer in terms of certain variables in Western Anatolia found that attitude did not change for those students who did not have access to computer at home.
Objective 2(a): To find out the computer education attitude between male and female secondary school students.

Findings 2(a): It is found that there exist no differences in computer education attitude between the male and female secondary students of Dimapur town. It is concluded that gender has no role to have a better attitude towards computer education. The statistics shows \( t= 0.4032, P > 0.01 \) taken with total number of 199 males and 177 females.

This also confirms the previous findings by Hunt & Bohlin (1996) and Celik & Ceylan (2009) who came to the same conclusion that gender has no influence. Kose & Gezer (2006), who demonstrated that high school student’s attitude, did not vary in function of gender. It also leads to credence to earlier findings by Seads & Weil (1987) as cited by Todman & Lawrence (1992).

Objective 2(b): To find out the computer education attitude between high achievers and low achievers.

Findings 2(b): The findings in this study show that there exists a difference between the different levels of academic achievers in their attitude towards computer education. It is found that those students performing well academically tend to have more positive attitude as compared to those on the lower achievement scale. The highest academic achiever in the sample has a 95% achievement record with a 90 score on the CAS. On the other hand a lower academic achiever with a 8% achievement record has a 55 score on the CAS.

In relation to the higher achievers studies argue that improvements in student learning occur when technology is paired with instructional strategies like project-
based instruction, which actively involves students in intellectually complex work that demands higher-order thinking and problem solving skills.

But concerning the low achievers according to, Harold Wenglinsky's study argues that not all uses of technology were beneficial. Wenglinsky found using computers to teach low order thinking skills, "...Was negatively related to academic achievement...." Put another way, this type of computer use was worse than doing nothing.

**Objective 3(a):** To find out the academic achievement between male and female secondary schools students.

**Findings 3(a):** The secondary students of Dimapur town showed no significant difference between the male and female students in their academic achievement. As such it is found that gender has no role in the mental ability for academic performance in this study.

This result is similar in line with that of Jehanzeb R. Cheema & Bo Zhang (2003), in their study Quantity and quality of computer use and academic achievement found evidence from a large-scale international test program in Achievement was found to be not correlated with gender, $r = .03$, $p = .174$ but had significant correlations with both variables for race.

But in contrast to it Luis Fernando Gamboa & Andrés Felipe Garcia-Suaza (2011), found an interesting thing to note in their study of Access to Computer and Academic Achievement. Where is it best: at home or at school? Found that the main difference in the estimated co-efficient was related to the sign of gender. Boys out-performed the academic achievement in Math; however the size of this coefficient was very small. Other emerging fact, which is common in the literature, is the over
representation of boys in the top quartiles of the distribution in sciences and mathematics, but in the case of science the share of boys do not have a lineal trend over distribution.

However the findings of N.Vidiyageetha & B.Padma, (2011) in Higher Secondary Student’s Achievement in Computer Science and their Attitude towards Computer found there is significant difference between the Boys and Girls in the Achievement in Computer Science. The Girls showed better results than the Boys in their achievement in Computer Science.

Objective 3(b): To find out the academic achievement between government schools and private schools.

Findings 3(b): There exist no significant differences in the academic achievement between government and private school students. The type of school was found to have no influence on their academic performance. It is found therefore that students of the private school and the student’s belonging to the government institutions did not show much difference in their academic results.

However there was found some reasons and some major findings on lower academic achievement in the government schools were the quality of education was imparted, especially with the policy of no detention student with very poor results and to be categorized as “NEEDS IMPROVEMENT” (NI) in their end year result was promoted. This is one cause and effect of the overall problems of government institutions. Though this case is prevalent in the private institutions it is marginally low as compared to the government run schools.

A different scenario was found by Vidiyageetha & Padma, (2011) that showed a significant difference between the students studying in Government
Schools and the students studying in Private Schools in the Achievement in Computer Science. The students studying in Government Schools were found to be better than the students studying in Private Schools in their Achievement in Computer Science.

A similar situation is reflected in the research, students attending scientific high school and Anatolia high school scored higher on the attitude scale than students attending general high school. It is a well-known fact that the cognitive levels of the students of Anatolia and Scientific high schools are proportionally higher than those of general high schools' students. Because of the fact that they had to pass an examination to enter these high schools.

Furthermore, in Anatolia and Scientific high school’s computer classes, there is a ratio of about 1 or 2 students per computer; whilst this number is significantly higher in general high school’s computer classes (Köse & Gezer, 2006).

**Objective 4(a):** To find out the difference in computer education attitude between government and private secondary school students.

**Findings 4(a):** This study finds that there is significant difference existing between government and private school students’ attitude towards computer education. The type of school that a student attends has an influence on the attitudinal level. The private school students have a better attitude towards computer education. The other reasons on lower attitude towards computer education in the government schools was due to poor computer laboratory facility, no appointment of computer teacher, very low practical classes on IT subject in the weeks routine and in some government schools IT subject is not provided as an optional paper due to lack of necessary facility.
This result is relevant to the results found by Mukadder Baran, Medine Baran & Hulya Aslan (2001) that the type of high schools attended by students showed to have significant impact on the students attitude score.


**Objective 4(b):** To find out the difference in Computer attitude between Nagaland Board of School Education and Central Board of Secondary Education

**Findings 4(b):** From the study done it was found that there is no difference in the computer attitude of the students studying in NBSE or CBSE schools. The curriculum provided in both the board is as a sixth IT subject and as an optional paper. The data collected from the respondents shows a total of 377 students, 309 from NBSE and 68 from CBSE. However, statistically there is no level of difference in any case and as such the type of school boards has no influence on the attitudinal level in the study undertaken here.

**Objective 5.** To find out the relationship between computer education attitude and academic achievement.

**Findings 5:** It was found in this study that there is a significant difference in the attitude of students towards computer education in relation to their academic achievement. Students having positive attitude have a better level of academic
achievement. As such the secondary students of Dimapur having positive attitude have an indirect positive effect on their academic level.

More recent reports on the use of computers for instruction are beginning to show evidence of relationships between computer use and academic achievement (Wenglinsky, 1998). Other researchers are finding positive relationships between using computers and improved performances by young children (Clements & Natasi, 1993). Laffey et al. (2003) showed that at-risk African American children who were exposed to interactive computer technology gained mathematics knowledge significantly greater than the comparison group.

N.Vidiyageetha & B.Padma, (2011) also found that the achievement in computer science and attitude towards computer is positive and significant. This shows that favorable attitude towards computer has great impact in the academic achievement of the students.

Not all the consequences have been positive. The evidence about the role of computer in student achievement is inconclusive. Some findings as Angrist & Levy (2002), Cuban (1993), Oppenheimer (1997), Kirkpatrick & Cuban (1998) and Wenglinsky (1998) are in the line of a negative effect of computers on the student performance. Gil-Flores (2009), analyze the differential effect of computer use at home and at school and finds a positive effect of ICT use on academic achievement for both cases. Using data of a specific test from students in Andalucia (Spain), this study points out that computer use at home has a positive effect on academic result, while computer use at school seems do not influence this outcome.

Supporters of educational technology continue to believe that technology will make a difference in academic achievement, but tend to rely on anecdotal evidence about student motivation and their development of critical thinking skills
to support this belief. They have been forced to depend on faith and their observations in a large measure because, "There still is very little scientifically-based research to gauge the effectiveness of technology," according to John Bailey, the Director of Educational Technology for the U.S. Department of Education (Murray, October 22, 2002).

5.2 RECOMMENDATIONS BASED ON THE MAJOR FINDINGS

Based on the findings, the investigator drew some practical suggestions and conclusions for the administration, authority, policy-makers, schools, teachers and parents concerning the importance of computer for students as listed below:

1. It can be said that the use of computers in the educational environment will help in creating a positive outlook towards computer education on the part of the students and also a positive impact on student’s achievement. As such an early learning of computer skills and education is advised.

2. An important part found on the researched group’s students found to have no access to computers at home which is a failure to meet the needs of the current age of technology. An alternate way to meet the equality of chances in terms of new technologies becomes necessary by making some practical adjustments. Having an extra practical class once a week under the supervision of the computer teacher or volunteer qualified for the said subject is suggested.

3. The results of the relationship between home computer availability and overall attitudes toward computer needs to be investigated further to determine if other
confounding variables exist, such as primary computer users and the specific types of computer use.

4. Teachers can assign high quality school works so that students are able to use computers at home to complete and spend more time on the computers for school work.

5. It is suggested that on the psychological basis of academic differences and contribution of these factors to computer attitude it requires the attention of researches. This will enable the school counselors and those in charge to design appropriate guidance and counseling programmes which can be tailored towards computer education.

6. A computer with internet access at home can have a positive relationship with the school academic achievement. This however is to be taken with the consent of parents and guardians. Since the syllabus at the secondary level includes introduction to internet it can be applied for educational purposes at home but taking into consideration on time, cost and on educational utility only. To find the right one, the students of the class need to be taught beforehand by talking with teachers, counselors, classmates on reading reviews on the Internet.

7. Students academic, career counseling’s and seminars can be held during the academic session by experts and professionals as a base to spread awareness on the importance of computers, its benefits for ones skills and future purposes.

8. In addition to classes, there are many books that cover various aspects of computer training, such as the popular 'For Dummies' series. There are also
many websites that devote themselves to this task as, “The Hitchhiker's Guide to the Internet.” Such tutorials often aim at gradually boosting readers' confidence, while teaching them how to troubleshoot computers, fix security issues, set up networks, and use software. The students can make use of these additional learning during their summer and winter breaks as an assignment from the concern computer teacher and authorities.

5.3 CONCLUSION

After having investigated the present problem under the study as, “Study of the attitude towards Computer Education in relation to the Academic Achievement of Secondary School Students in Dimapur Town” it was seen that there is a rising positive effect towards computer education in relation to the academic achievement. At the study of attitude towards computer and academic achievement, a majority of the students having access of computers at home have positive attitude. Overall the students have positive attitude without any gender difference. Different school boards showed no difference in attitude. A high academic achiever has a better positive attitude then a low academic achiever. However the type of schools the students attended showed a difference in their attitude. Students with positive computer education attitude had a positive effect in their achievement. The type of school board that the student attended did not affect the attitude towards computer.

The trend towards this is seen with the use of technology in everyday lives from a simple typing of documents to major decision in choosing an occupation, be it in the software or hardware skills. The need is so much so that computers have become the pen and pencil of the mass. The term computer literate is as much equivalent to being a literate. So much so also the term “DIGITAL DIVIDE” is now a concern for the educators and educates. This is reflected in the rising technical
know-how of the society, of the nation and if taken further then globally. The very foundation of making this a success and reality lies from the school. In Nagaland this can be done if computer education subject in the school curriculum is made a major and compulsory subject to disseminate the education.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

Research of this nature can be taken up in areas where access of computers has not been established in schools as well as at homes in the rural and remote areas of Nagaland. Research can be conducted on possible negative effects of computers use and usage on secondary school students besides that is prescribed in the school syllabus.